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Text Part Number: 78EE117C99-185933266

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Version 3, 29 June 2007

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## 1.2 bind 9.11.3

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\* configure.ac, Makefile.am: The original versions were derived from the ones in the XML Catalog Manager project, version 2.2.

Author: Julio Merino <jmmv@users.sourceforge.net>

\* atf-c/ui.c: The format\_paragraph and format\_text functions were derived from the ones in the Monotone project, revision 3a0982da308228d796df35f98d787c5cff2bb5b6.

Author: Julio Merino <jmmv@NetBSD.org>

\* atf-c++/detail/io.hpp, atf-c++/detail/io.cpp, atf-c++/detail/io\_test.cpp: These files were derived from the file\_handle, systembuf, pipe and pistream classes and tests found in the Boost.Process library.

Author: Julio Merino <jmmv84@gmail.com>

\* admin/check-style.sh, admin/check-style-common.awk, admin/check-style-cpp.awk, admin/check-style-shell.awk: These files, except the first one, were first implemented in the Buildtool project. They were later adapted to be part of Boost.Process and, during that process, the shell script was created.

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<!-- \$Id\$ -->

<!-- Generate ISC copyright comments from Docbook copyright metadata. -->

<xsl:stylesheet version="1.0"

xmlns:xsl="http://www.w3.org/1999/XSL/Transform"

xmlns:xi="http://www.w3.org/2001/XInclude"

xmlns:db="http://docbook.org/ns/docbook">

<xsl:template name="isc.copyright.format">

<xsl:param name="text"/>

<xsl:value-of select="\$isc.copyright.leader"/>

<xsl:value-of select="normalize-space(substring-before(\$text, '&#10;'))"/>

<xsl:text>&#10;</xsl:text>

<xsl:variable name="rest" select="substring-after(\$text, '&#10;')"/>

<xsl:if test="translate(\$rest, '&#9;&#32;', '')">

<xsl:call-template name="isc.copyright.format">

<xsl:with-param name="text" select="\$rest"/>

</xsl:call-template>

</xsl:if>

</xsl:template>

<xsl:variable name="isc.copyright.text">

<xsl:text>

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</xsl:text>

</xsl:variable>

<xsl:variable name="isc.copyright">

```

<xsl:call-template name="isc.copyright.format">
  <xsl:with-param name="text">
    <xsl:for-each select="book/info/copyright | refentry/docinfo/copyright">
<xsl:text>Copyright (C) </xsl:text>
<xsl:call-template name="copyright.years">
  <xsl:with-param name="years" select="year"/>
</xsl:call-template>
<xsl:text> </xsl:text>
<xsl:value-of select="holder"/>
  <xsl:value-of select="$isc.copyright.breakline"/>
<xsl:text> &#10;</xsl:text>
</xsl:for-each>
<xsl:value-of select="$isc.copyright.text"/>
  </xsl:with-param>
</xsl:call-template>
</xsl:variable>
</xsl:stylesheet>

```

<!--

- Local variables:
- mode: sgml
- End:

-->

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(This file is under construction.) -\*- text -\*-

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+++++

Dean Elsner wrote the original gas for vax. [more details?]

Jay Fenlason maintained gas for a while, adding support for gdb-specific debug information and the 68k series machines, most of the preprocessing pass, and extensive changes in messages.c, input-file.c, write.c.

K. Richard Pixley maintained gas for a while, adding various enhancements and many bug fixes, including merging support for several processors, breaking gas up to handle multiple object file format backends (including heavy rewrite, testing, an integration of the coff and b.out backends), adding configuration including heavy testing and verification of cross assemblers and file splits and renaming, converted gas to strictly ansi C including full prototypes, added support for m680[34]0 & cpu32, considerable work on i960 including a coff port (including considerable amounts of reverse engineering), a sparc opcode file rewrite, decstation, rs6000, and hp300hpux host ports, updated "know" assertions and made them work, much other reorganization, cleanup, and lint.

Ken Raeburn wrote the high-level BFD interface code to replace most of the code in format-specific I/O modules.

The original Vax-VMS support was contributed by David L. Kashtan. Eric Youngdale and Pat Rankin have done much work with it since.

The Intel 80386 machine description was written by Eliot Dresselhaus.

Minh Tran-Le at IntelliCorp contributed some AIX 386 support.

The Motorola 88k machine description was contributed by Devon Bowen of Buffalo University and Torbjorn Granlund of the Swedish Institute of Computer Science.

Keith Knowles at the Open Software Foundation wrote the original MIPS back end (tc-mips.c, tc-mips.h), and contributed Rose format support that hasn't been merged in yet. Ralph Campbell worked with the MIPS code to support a.out format.

Support for the Zilog Z8k and Hitachi H8/300, H8/500 and SH processors (tc-z8k, tc-h8300, tc-h8500, tc-sh), and IEEE 695 object file format (obj-ieee), was written by Steve Chamberlain of Cygnus Solutions. Steve also modified the COFF back end (obj-coffbfd) to use BFD for some low-level operations, for use with the Hitachi, 29k and Zilog targets.

John Gilmore built the AMD 29000 support, added .include support, and simplified the configuration of which versions accept which pseudo-ops. He updated the 68k machine description so that Motorola's opcodes always produced fixed-size instructions (e.g. jsr), while synthetic instructions remained shrinkable (jbsr). John fixed many bugs, including true tested cross-compilation support, and one bug in relaxation that took a week and required the proverbial one-bit fix.

Ian Lance Taylor of Cygnus Solutions merged the Motorola and MIT



syntaxes for the 68k, completed support for some COFF targets (68k, i386 SVR3, and SCO Unix), wrote the ECOFF support based on Michael Meissner's mips-tfile program, wrote the PowerPC and RS/6000 support, and made a few other minor patches. He handled the binutils releases for versions 2.7 through 2.9.

David Edelsohn contributed fixes for the PowerPC and AIX support.

Steve Chamberlain made gas able to generate listings.

Support for the HP9000/300 was contributed by Glenn Engel of HP.

Support for ELF format files has been worked on by Mark Eichin of Cygnus Solutions (original, incomplete implementation), Pete Hoogenboom at the University of Utah (HPPA mainly), Michael Meissner of the Open Software Foundation (i386 mainly), and Ken Raeburn of Cygnus Solutions (sparc, initial 64-bit support).

Several engineers at Cygnus Solutions have also provided many small bug fixes and configuration enhancements.

The initial Alpha support was contributed by Carnegie-Mellon University. Additional work was done by Ken Raeburn of Cygnus Solutions. Richard Henderson then rewrote much of the Alpha support.

Ian Dall updated the support code for the National Semiconductor 32000 series, and added support for Mach 3 and NetBSD running on the PC532.

Klaus Kaempf ported the assembler and the binutils to openVMS/Alpha.

Steve Haworth contributed the support for the Texas Instruction c30 (tms320c30).

H.J. Lu has contributed many patches and much testing.

Alan Modra reworked much of the i386 backend, improving the error checking, updating the code, and improving the 16 bit support, using patches from the work of Martynas Kunigelis and H.J. Lu.

Many others have contributed large or small bugfixes and enhancements. If you've contributed significant work and are not mentioned on this list, and want to be, let us know. Some of the history has been lost; we aren't intentionally leaving anyone out.

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Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that companies distributing free software will individually obtain patent licenses, thus in effect transforming the program into proprietary software. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License, which was designed for utility programs. This license, the GNU Library General Public License, applies to certain designated libraries. This license is quite different from the ordinary one; be sure to read it in full, and don't assume that anything in it is the same as in the ordinary license.

The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, while the latter only

works together with the library.

Note that it is possible for a library to be covered by the ordinary General Public License rather than by this special one.

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0. This License Agreement applies to any software library which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Library General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

- a) The modified work must itself be a software library.
- b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.
- c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.
- d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a

derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also compile or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

c) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

d) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

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## END OF TERMS AND CONDITIONS

### Appendix: How to Apply These Terms to Your New Libraries

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To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>  
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Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990  
Ty Coon, President of Vice

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Version 2.1, February 1999

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### Preamble

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free

software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

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You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

- a) The modified work must itself be a software library.
- b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.
- c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.
- d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If

identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

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3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

- a) Accompany the work with the complete corresponding



machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

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It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library

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@center END OF TERMS AND CONDITIONS
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@page
@appendixsubsec How to Apply These Terms to Your New Libraries
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If you modify a copy of the Library, and, in your modifications, a facility refers to a function or data to be supplied by an Application that uses the facility (other than as an argument passed when the facility is invoked), then you may convey a copy of the modified version:

- a) under this License, provided that you make a good faith effort to ensure that, in the event an Application does not supply the function or data, the facility still operates, and performs whatever part of its purpose remains meaningful, or
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### 3. Object Code Incorporating Material from Library Header Files.

The object code form of an Application may incorporate material from a header file that is part of the Library. You may convey such object code under terms of your choice, provided that, if the incorporated material is not limited to numerical parameters, data structure layouts and accessors, or small macros, inline functions and templates (ten or fewer lines in length), you do both of the following:

- a) Give prominent notice with each copy of the object code that the Library is used in it and that the Library and its use are covered by this License.
- b) Accompany the object code with a copy of the GNU GPL and this license document.

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You may convey a Combined Work under terms of your choice that, taken together, effectively do not restrict modification of the portions of the Library contained in the Combined Work and reverse engineering for debugging such modifications, if you also do each of the following:

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1) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (a) uses at run time a copy of the Library already present on the user's computer system, and (b) will operate properly with a modified version of the Library that is interface-compatible with the Linked Version.

e) Provide Installation Information, but only if you would otherwise be required to provide such information under section 6 of the GNU GPL, and only to the extent that such information is necessary to install and execute a modified version of the Combined Work produced by recombining or relinking the Application with a modified version of the Linked Version. (If you use option 4d0, the Installation Information must accompany the Minimal Corresponding Source and Corresponding Application Code. If you use option 4d1, you must provide the Installation Information in the manner specified by section 6 of the GNU GPL for conveying Corresponding Source.)

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You may place library facilities that are a work based on the Library side by side in a single library together with other library facilities that are not Applications and are not covered by this License, and convey such a combined library under terms of your choice, if you do both of the following:

a) Accompany the combined library with a copy of the same work based

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## 1.4 binutils 2.28.1

### 1.4.1 Available under license :

@node Library Copying

@appendixsec GNU LESSER GENERAL PUBLIC LICENSE

@cindex LGPL, Lesser General Public License

@center Version 2.1, February 1999

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@end display

@appendixsubsec Preamble

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When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

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For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be

introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the `Lesser` General Public License because it does `Less` to protect the user's freedom than the ordinary General Public License. It also provides other free software developers `Less` of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is `Less` protective of the

users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a ``work based on the library" and a ``work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

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@appendixsubsec TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

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@center GNU LESSER GENERAL PUBLIC LICENSE

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``Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

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You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

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If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must



be optional: if the application does not supply it, the square root function must still compute square roots.)

@end enumerate

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This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

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If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

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A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a ``work that uses the Library''. Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a ``work that uses the Library'' with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a ``work that uses the library''. The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

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If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

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As an exception to the Sections above, you may also combine or link a ``work that uses the Library'' with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

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Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable ``work that uses the Library'', as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

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Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

@item

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@item

Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

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It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

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@heading END OF TERMS AND CONDITIONS

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@page

@appendixsubsec How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the ``copyright" line and a pointer to where the full notice is found.

@smallexample

@var{one line to give the library's name and an idea of what it does.}

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USA.

@end smallexample

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a ``copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

@smallexample

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`Frob' (a library for tweaking knobs) written by James Random Hacker.

@var{signature of Ty Coon}, 1 April 1990

Ty Coon, President of Vice

@end smallexample

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Version 2.1, February 1999

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as the successor of the GNU Library Public License, version 2, hence  
the version number 2.1.]

Preamble

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Free Software Foundation and other authors who decide to use it. You  
can use it too, but we suggest you first think carefully about whether  
this license or the ordinary General Public License is the better  
strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use,  
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it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with

the library.

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For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

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"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

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(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

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When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

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c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the

Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

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Version 2, June 1991

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The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, while the latter only works together with the library.

Note that it is possible for a library to be covered by the ordinary General Public License rather than by this special one.

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(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If

identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

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If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

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If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

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machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

c) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

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It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

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+++++

Dean Elsner wrote the original gas for vax. [more details?]

Jay Fenlason maintained gas for a while, adding support for gdb-specific debug information and the 68k series machines, most of the preprocessing pass, and extensive changes in messages.c, input-file.c, write.c.

K. Richard Pixley maintained gas for a while, adding various enhancements and many bug fixes, including merging support for several processors, breaking gas up to handle multiple object file format backends (including heavy rewrite, testing, an integration of the coff and b.out backends), adding configuration including heavy testing and verification of cross assemblers and file splits and renaming, converted gas to strictly ansi C including full prototypes, added support for m680[34]0 & cpu32, considerable work on i960 including a coff port (including considerable amounts of reverse engineering), a sparc opcode file rewrite, decstation, rs6000, and hp300hpux host

ports, updated "know" assertions and made them work, much other reorganization, cleanup, and lint.

Ken Raeburn wrote the high-level BFD interface code to replace most of the code in format-specific I/O modules.

The original Vax-VMS support was contributed by David L. Kashtan. Eric Youngdale and Pat Rankin have done much work with it since.

The Intel 80386 machine description was written by Eliot Dresselhaus.

Minh Tran-Le at IntelliCorp contributed some AIX 386 support.

The Motorola 88k machine description was contributed by Devon Bowen of Buffalo University and Torbjorn Granlund of the Swedish Institute of Computer Science.

Keith Knowles at the Open Software Foundation wrote the original MIPS back end (tc-mips.c, tc-mips.h), and contributed Rose format support that hasn't been merged in yet. Ralph Campbell worked with the MIPS code to support a.out format.

Support for the Zilog Z8k and Hitachi H8/300, H8/500 and SH processors (tc-z8k, tc-h8300, tc-h8500, tc-sh), and IEEE 695 object file format (obj-ieee), was written by Steve Chamberlain of Cygnus Solutions. Steve also modified the COFF back end (obj-coffbfd) to use BFD for some low-level operations, for use with the Hitachi, 29k and Zilog targets.

John Gilmore built the AMD 29000 support, added .include support, and simplified the configuration of which versions accept which pseudo-ops. He updated the 68k machine description so that Motorola's opcodes always produced fixed-size instructions (e.g. jsr), while synthetic instructions remained shrinkable (jbsr). John fixed many bugs, including true tested cross-compilation support, and one bug in relaxation that took a week and required the proverbial one-bit fix.

Ian Lance Taylor of Cygnus Solutions merged the Motorola and MIT syntaxes for the 68k, completed support for some COFF targets (68k, i386 SVR3, and SCO Unix), wrote the ECOFF support based on Michael Meissner's mips-tfile program, wrote the PowerPC and RS/6000 support, and made a few other minor patches. He handled the binutils releases for versions 2.7 through 2.9.

David Edelsohn contributed fixes for the PowerPC and AIX support.

Steve Chamberlain made gas able to generate listings.

Support for the HP9000/300 was contributed by Glenn Engel of HP.

Support for ELF format files has been worked on by Mark Eichin of Cygnus Solutions (original, incomplete implementation), Pete Hoogenboom at the University of Utah (HPPA mainly), Michael Meissner of the Open Software Foundation (i386 mainly), and Ken Raeburn of Cygnus Solutions (sparc, initial 64-bit support).

Several engineers at Cygnus Solutions have also provided many small bug fixes and configuration enhancements.

The initial Alpha support was contributed by Carnegie-Mellon University. Additional work was done by Ken Raeburn of Cygnus Solutions. Richard Henderson then rewrote much of the Alpha support.

Ian Dall updated the support code for the National Semiconductor 32000 series, and added support for Mach 3 and NetBSD running on the PC532.

Klaus Kaempf ported the assembler and the binutils to openVMS/Alpha.

Steve Haworth contributed the support for the Texas Instruction c30 (tms320c30).

H.J. Lu has contributed many patches and much testing.

Alan Modra reworked much of the i386 backend, improving the error checking, updating the code, and improving the 16 bit support, using patches from the work of Martynas Kunigelis and H.J. Lu.

Many others have contributed large or small bugfixes and enhancements. If you've contributed significant work and are not mentioned on this list, and want to be, let us know. Some of the history has been lost; we aren't intentionally leaving anyone out.

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```
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jseward@bzip.org

bzip2/libbzip2 version 1.0.4 of 20 December 2006

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jseward@bzip.org

bzip2/libbzip2 version 1.0.4 of 20 December 2006

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```

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```
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```

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## 1.8 busybox-1.21 1.21

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```

```
<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice
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```
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of bzip2 version 1.0.4. bzip2 source is distributed
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```

```
=====
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Julian Seward, Cambridge, UK.  
jseward@bzip.org  
bzip2/libbzip2 version 1.0.4 of 20 December 2006

## 1.9 bzip2 1.0.6

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Julian Seward, Cambridge, UK.

[jseward@acm.org](mailto:jseward@acm.org)

bzip2/libbzip2 version 1.0.2 of 30 December 2001

/\*

minibz2

libbz2.dll test program.

by Yoshioka Tsuneo ([tsuneo@rr.iij4u.or.jp](mailto:tsuneo@rr.iij4u.or.jp))

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usage: minibz2 [-d] [-{1,2,...9}] [[srcfilename] destfilename]

\*/

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## 1.12 curl 7.56.1

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=====

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## 1.18 GCC Compiler ,GCC C++ run-time library and GCC STL 3.2.1

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## 1.19 GCC Compiler ,GCC C++ run-time library and GCC STL - libs 3.2.1

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```
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```

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<signature of Ty Coon>, 1 April 1989  
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```
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#~ "\n"
#~ "License GPLv3+: GNU GPL version 3 or later <http://gnu.org/licenses/gpl.html>.\n"
#~ "This is free software: you are free to change and redistribute it.\n"
#~ "There is NO WARRANTY, to the extent permitted by law.\n"
#~ "\n"
#~ msgstr ""
#~ "\n"
#~ "&#12521;&#12452;&#12475;&#12531;&#12473; GPLv3+: GNU GPL version 3 or later
<http://gnu.org/licenses/gpl.html>.\n"
#~ "This is free software: you are free to change and redistribute it.\n"
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## 1.22 glibc/gplv3-subpart 2.23

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```
<one line to give the program's name and a brief idea of what it does.>  
Copyright (C) <year> <name of author>
```

```
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it under the terms of the GNU General Public License as published by  
the Free Software Foundation, either version 3 of the License, or  
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Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short notice like this when it starts in an interactive mode:

```
<program> Copyright (C) <year> <name of author>  
This program comes with ABSOLUTELY NO WARRANTY; for details type 'show w'.  
This is free software, and you are welcome to redistribute it  
under certain conditions; type 'show c' for details.
```

The hypothetical commands 'show w' and 'show c' should show the appropriate parts of the General Public License. Of course, your program's commands might be different; for a GUI interface, you would use an "about box".

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```

may consider it more useful to permit linking proprietary applications with
the library. If this is what you want to do, use the GNU Lesser General
Public License instead of this License. But first, please read
<http://www.gnu.org/philosophy/why-not-lgpl.html>.
eval '(exit $?0) && eval 'exec perl -wS -0777 -pi "$0" ${1+"$@"}'
& eval 'exec perl -wS -0777 -pi "$0" $argv:q'
if 0;
# Update an FSF copyright year list to include the current year.

my $VERSION = '2012-02-05.21:39'; # UTC

# Copyright (C) 2009-2012 Free Software Foundation, Inc.
#
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# Written by Jim Meyering and Joel E. Denny

# The arguments to this script should be names of files that contain
# copyright statements to be updated. The copyright holder's name
# defaults to "Free Software Foundation, Inc." but may be changed to
# any other name by using the "UPDATE_COPYRIGHT_HOLDER" environment
# variable.
#
# For example, you might wish to use the update-copyright target rule
# in maint.mk from gnulib's maintainer-makefile module.
#
# Iff a copyright statement is recognized in a file and the final
# year is not the current year, then the statement is updated for the
# new year and it is reformatted to:
#
# 1. Fit within 72 columns.
# 2. Convert 2-digit years to 4-digit years by prepending "19".
# 3. Expand copyright year intervals. (See "Environment variables"
#    below.)
#
# A warning is printed for every file for which no copyright
# statement is recognized.

```

```

#
# Each file's copyright statement must be formatted correctly in
# order to be recognized. For example, each of these is fine:
#
# Copyright @copyright{ } 1990-2005, 2007-2009 Free Software
# Foundation, Inc.
#
# # Copyright (C) 1990-2005, 2007-2009 Free Software
# # Foundation, Inc.
#
# /*
# * Copyright &copy; 90,2005,2007-2009
# * Free Software Foundation, Inc.
# */
#
# However, the following format is not recognized because the line
# prefix changes after the first line:
#
# ## Copyright (C) 1990-2005, 2007-2009 Free Software
# # Foundation, Inc.
#
# However, any correctly formatted copyright statement following
# a non-matching copyright statements would be recognized.
#
# The exact conditions that a file's copyright statement must meet
# to be recognized are:
#
# 1. It is the first copyright statement that meets all of the
# following conditions. Subsequent copyright statements are
# ignored.
# 2. Its format is "Copyright (C)", then a list of copyright years,
# and then the name of the copyright holder.
# 3. The "(C)" takes one of the following forms or is omitted
# entirely:
#
# A. (C)
# B. (c)
# C. @copyright{ }
# D. &copy;
#
# 4. The "Copyright" appears at the beginning of a line, except that it
# may be prefixed by any sequence (e.g., a comment) of no more than
# 5 characters -- including white space.
# 5. Iff such a prefix is present, the same prefix appears at the
# beginning of each remaining line within the FSF copyright
# statement. There is one exception in order to support C-style
# comments: if the first line's prefix contains nothing but
# whitespace surrounding a "/*", then the prefix for all subsequent

```

```

# lines is the same as the first line's prefix except with each of
# "/" and possibly "*" replaced by a " ". The replacement of "*"
# by " " is consistent throughout all subsequent lines.
# 6. Blank lines, even if preceded by the prefix, do not appear
# within the FSF copyright statement.
# 7. Each copyright year is 2 or 4 digits, and years are separated by
# commas or dashes. Whitespace may appear after commas.
#
# Environment variables:
#
# 1. If UPDATE_COPYRIGHT_FORCE=1, a recognized FSF copyright statement
# is reformatted even if it does not need updating for the new
# year. If unset or set to 0, only updated FSF copyright
# statements are reformatted.
# 2. If UPDATE_COPYRIGHT_USE_INTERVALS=1, every series of consecutive
# copyright years (such as 90, 1991, 1992-2007, 2008) in a
# reformatted FSF copyright statement is collapsed to a single
# interval (such as 1990-2008). If unset or set to 0, all existing
# copyright year intervals in a reformatted FSF copyright statement
# are expanded instead.
# If UPDATE_COPYRIGHT_USE_INTERVALS=2, convert a sequence with gaps
# to the minimal containing range. For example, convert
# 2000, 2004-2007, 2009 to 2000-2009.
# 3. For testing purposes, you can set the assumed current year in
# UPDATE_COPYRIGHT_YEAR.
# 4. The default maximum line length for a copyright line is 72.
# Set UPDATE_COPYRIGHT_MAX_LINE_LENGTH to use a different length.
# 5. Set UPDATE_COPYRIGHT HOLDER if the copyright holder is other
# than "Free Software Foundation, Inc.".

```

```

use strict;
use warnings;

```

```

my $copyright_re = 'Copyright';
my $circle_c_re = '(?:\([cC]\))|@copyright{ }|&copy;';
my $holder = $ENV{UPDATE_COPYRIGHT HOLDER};
$holder ||= 'Free Software Foundation, Inc.';
my $prefix_max = 5;
my $margin = $ENV{UPDATE_COPYRIGHT_MAX_LINE_LENGTH};
!$margin || $margin !~ m/^\d+$/
and $margin = 72;

```

```

my $tab_width = 8;

```

```

my $this_year = $ENV{UPDATE_COPYRIGHT_YEAR};
if (!$this_year || $this_year !~ m/^\d{4}$/)
{
    my ($sec, $min, $hour, $mday, $month, $year) = localtime (time ());

```

```

    $this_year = $year + 1900;
}

# Unless the file consistently uses "\r\n" as the EOL, use "\n" instead.
my $eol = /(?:^[^\r])\n/ ? "\n" : "\r\n";

my $leading;
my $prefix;
my $ws_re;
my $stmt_re;
while ((/^(^\\n){0,$prefix_max}$copyright_re/g)
{
    $leading = "$1$2";
    $prefix = $2;
    if ($prefix =~ /^(\\s*\\)*\\s*/)
    {
        $prefix =~ s/,/,;
        my $prefix_ws = $prefix;
        $prefix_ws =~ s/^//; # Only whitespace.
        if (/G(?:[^\n])*\^[^\n]*\?*\n$prefix_ws/)
        {
            $prefix = $prefix_ws;
        }
    }
    $ws_re = '[\t\r\f]'; # \s without \n
    $ws_re =
        "(?:$ws_re*(?:$ws_re\\n" . quotemeta($prefix) . ")$ws_re*)";
    my $holder_re = $holder;
    $holder_re =~ s/\s/$ws_re/g;
    my $stmt_remainder_re =
        "(?:$ws_re$circle_c_re)?"
        . "$ws_re(?:\d\d)?\d\d(?:,$ws_re?-)*"
        . "((?:\d\d)?\d\d)$ws_re$holder_re";
    if (/G$stmt_remainder_re/)
    {
        $stmt_re =
            quotemeta($leading) . "($copyright_re$stmt_remainder_re)";
        last;
    }
}
if (defined $stmt_re)
{
    /$stmt_re/ or die; # Should never die.
    my $stmt = $1;
    my $final_year_orig = $2;

    # Handle two-digit year numbers like "98" and "99".
    my $final_year = $final_year_orig;

```

```

$final_year <= 99
and $final_year += 1900;

if ($final_year != $this_year)
{
# Update the year.
$stmt =~ s/$final_year_orig/$final_year, $this_year/;
}
if ($final_year != $this_year || $ENV{'UPDATE_COPYRIGHT_FORCE'})
{
# Normalize all whitespace including newline-prefix sequences.
$stmt =~ s/$ws_re/ /g;

# Put spaces after commas.
$stmt =~ s/, ?/, /g;

# Convert 2-digit to 4-digit years.
$stmt =~ s/(\b\d\d\b)/19$1/g;

# Make the use of intervals consistent.
if (!$ENV{UPDATE_COPYRIGHT_USE_INTERVALS})
{
$stmt =~ s/(\d{4})-(\d{4})/join(', ', $1..$2)/eg;
}
else
{
$stmt =~
s/
(\d{4})
(?:
(\ \ | -)
((?){
if ($2 eq '-') { '\d{4}'; }
elsif (!$3) { $1 + 1; }
else { $3 + 1; }
}))
)+
/$1-$3/gx;

# When it's 2, emit a single range encompassing all year numbers.
$ENV{UPDATE_COPYRIGHT_USE_INTERVALS} == 2
and $stmt =~ s/(\b\d{4})\b.*\b(\d{4})\b/$1-$2/;
}

# Format within margin.
my $stmt_wrapped;
my $text_margin = $margin - length($prefix);
if ($prefix =~ /^(t+)/)

```



```

    {
        $text_margin -= length($1) * ($tab_width - 1);
    }
while (length $stmt)
{
    if (($stmt =~ s/^(.{1,$text_margin})(?:|$)/)
        || ($stmt =~ s/^([\S]+)(?:|$)/))
    {
        my $line = $1;
        $stmt_wrapped .= $stmt_wrapped ? "$eol$prefix" : $leading;
        $stmt_wrapped .= $line;
    }
    else
    {
        # Should be unreachable, but we don't want an infinite
        # loop if it can be reached.
        die;
    }
}

# Replace the old copyright statement.
s/$stmt_re/$stmt_wrapped/;
}
}
else
{
    print STDERR "$ARGV: warning: copyright statement not found\n";
}

# Local variables:
# mode: perl
# indent-tabs-mode: nil
# eval: (add-hook 'write-file-hooks 'time-stamp)
# time-stamp-start: "my $VERSION = ""
# time-stamp-format: "%:y-%02m-%02d.%02H:%02M"
# time-stamp-time-zone: "UTC"
# time-stamp-end: "; # UTC"
# End:

```

## 1.30 https2 0.1.4

### 1.30.1 Available under license :

```

/*
 * (c) 2006 hmb marionraven at users.sourceforge.net
 * This 'beam me up, Scotty'-branch of https2 tries to achieve,
 * that the mount-point-folder behaves as before.

```

- \* But how can you access the original folder after the mount?
- \* Answer comes from FuseCompress:
  - \* Open the folder before the mount,
  - \* keep it open all the time,
  - \* make a chdir to it
  - \* and always use a relative path.
- \* It suffices not to chdir in main() and it's unnecessary to
- \* do it in every function. httpfs\_init is the right place.
- \*
- \*/

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Download: <http://sourceforge.net/projects/httpfs/>

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```

```
<signature of Ty Coon>, 1 April 1989  
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## 1.39 libdaemon 0.13

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```
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# @configure_input@
```

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```

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Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

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```
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Ty Coon, President of Vice

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## 1.44 libgcc 5.5.0

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Version 3, 29 June 2007

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```
/* Definitions for BSD assembler syntax for Intel 386  
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```

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```
/* Use the Sequent Symmetry assembler syntax. */
```

/\* Define the syntax of pseudo-ops, labels and comments. \*/

/\* Prefix for internally generated assembler labels. If we aren't using  
underscores, we are using prefix `.'s to identify labels that should  
be ignored, as in `i386/gas.h' --karl@cs.umb.edu \*/

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Version 2.1, February 1999

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GCC RUNTIME LIBRARY EXCEPTION

Version 3.1, 31 March 2009

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```
/* gnu.classpath.tools.taglets.CopyrightTaglet
```

```
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```

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```
package gnu.classpath.tools.taglets;
```

```
import java.util.Map;
```

```

import com.sun.tools.doclets.Taglet;

import com.sun.javadoc.Tag;

/**
 * A simple Taglet which handles Copyright information.
 */
public class CopyrightTaglet implements Taglet {

    private static final String NAME = "copyright";
    private static final String HEADER = "Copyright:";

    public String getName() {
        return NAME;
    }

    public boolean inField() {
        return true;
    }

    public boolean inConstructor() {
        return true;
    }

    public boolean inMethod() {
        return true;
    }

    public boolean inOverview() {
        return true;
    }

    public boolean inPackage() {
        return true;
    }

    public boolean inType() {
        return true;
    }

    public boolean isInlineTag() {
        return false;
    }

    public static void register(Map tagletMap) {
        CopyrightTaglet copyrightTaglet = new CopyrightTaglet();
        tagletMap.put(copyrightTaglet.getName(), copyrightTaglet);
    }
}

```

```

public String toString(Tag tag) {
    return toString(new Tag[] { tag });
}

public String toString(Tag[] tags) {
    if (tags.length == 0) {
        return null;
    }
    else {
        boolean haveValidTag = false;
        for (int i = 0; i < tags.length && !haveValidTag; ++i) {
            if (tags[i].text().length() > 0) {
                haveValidTag = true;
            }
        }

        if (haveValidTag) {
            StringBuffer result = new StringBuffer();
            result.append("<dl>");
            for (int i = 0; i < tags.length; i++) {
                if (tags[i].text().length() > 0) {
                    result.append("<dt><i>Copyright &#169; " + tags[i].text() + "</i></dt>");
                }
            }
            result.append("</dl>");
            return result.toString();
        }
        else {
            return null;
        }
    }
}

```

Jan 21, 2002

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Version 3, 29 June 2007

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```
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 * src/genl-ctrl-list.c List Generic Netlink Families
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*
* @(#) $Header: /tcpdump/master/libpcap/pcap.h,v 1.52.2.6 2006/02/09 22:26:49 guy Exp $ (LBL)
*/

```

## 1.49 libpcap 1.3.0

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## 1.50 libpcap/ndsu-portions 1.3.0

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- \*
- \* @(#) \$Header: /tcpdump/master/libpcap/sunatmpos.h,v 1.1 2002-07-11 09:06:47 guy Exp \$ (LBL)
- \*/

## 1.51 libpng1.6 1.6.34 :1

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## 1.55 libxml2 2.6.30

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## 1.56 linux 3.4.30

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Thanks go to the following people for patches and contributions:

Michael Hunold <m.hunold@gmx.de>  
for the initial saa7146 driver and its recent overhaul

Christian Theiss  
for his work on the initial Linux DVB driver

Marcus Metzler <mocm@metzlerbros.de>  
Ralph Metzler <rjkm@metzlerbros.de>  
for their continuing work on the DVB driver

Michael Holz <kju@debian.org>  
for his contributions to the dvb-net driver

Diego Picciani <d.picciani@novacompt.it>  
for CyberLogin for Linux which allows logging onto EON  
(in case you are wondering where CyberLogin is, EON changed its login procedure and CyberLogin is no longer used.)

Martin Schaller <martin@smurf.franken.de>  
for patching the cable card decoder driver

Klaus Schmidinger <Klaus.Schmidinger@cadsoft.de>  
for various fixes regarding tuning, OSD and CI stuff and his work on VDR

Steve Brown <sbrown@cortland.com>  
for his AFC kernel thread

Christoph Martin <martin@uni-mainz.de>  
for his LIRC infrared handler

Andreas Oberritter <obi@linuxtv.org>

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Florian Schirmer <jolt@tuxbox.org>

Ronny Strutz <3des@elitedvb.de>

Wolfram Joost <dbox2@frokaschwei.de>

...and all the other dbox2 people

for many bugfixes in the generic DVB Core, frontend drivers and their work on the dbox2 port of the DVB driver

Oliver Endriss <o.endriss@gmx.de>

for many bugfixes

Andrew de Quincey <adq\_dvb@lidskialf.net>

for the tda1004x frontend driver, and various bugfixes

Peter Schildmann <peter.schildmann@web.de>

for the driver for the Technisat SkyStar2 PCI DVB card

Vadim Catana <skystar@moldova.cc>

Roberto Ragusa <r.ragusa@libero.it>

Augusto Cardoso <augusto@carhil.net>

for all the work for the FlexCopII chipset by B2C2,Inc.

Davor Emard <emard@softhome.net>

for his work on the budget drivers, the demux code, the module unloading problems, ...

Hans-Frieder Vogt <hfvogt@arcor.de>

for his work on calculating and checking the crc's for the TechnoTrend/Hauppage DEC driver firmware

Michael Dreher <michael@5dot1.de>

Andreas 'randy' Weinberger

for the support of the Fujitsu-Siemens Activy budget DVB-S

Kenneth Aafly <ke-aa@frisurf.no>

for adding support for Typhoon DVB-S budget card

Ernst Peinlich <e.peinlich@inode.at>

for tuning/DiSEqC support for the DEC 3000-s

Peter Beutner <p.beutner@gmx.net>

for the IR code for the ttusb-dec driver

Wilson Michaels <wilsonmichaels@earthlink.net>

for the lgdt330x frontend driver, and various bugfixes

Michael Krufky <mkrufky@m1k.net>  
for maintaining v4l/dvb inter-tree dependencies

Taylor Jacob <rtjacob@earthlink.net>  
for the nxt2002 frontend driver

Jean-Francois Thibert <jeanfrancois@sagetv.com>  
for the nxt2004 frontend driver

Kirk Lapray <kirk.lapray@gmail.com>  
for the or51211 and or51132 frontend drivers, and  
for merging the nxt2002 and nxt2004 modules into a  
single nxt200x frontend driver.

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/\* nicstar.c v0.22 Jawaid Bazyar (bazyar@hypermall.com)

\* nicstar.c, M. Welsh (matt.welsh@cl.cam.ac.uk)

\*

\* Hacked October, 1997 by Jawaid Bazyar, Interlink Advertising Services Inc.

\* <http://www.hypermall.com/>

\* 10/1/97 - commented out CFG\_PHYIE bit - we don't care when the PHY

\* interrupts us (except possibly for removal/insertion of the cable?)

\* 10/4/97 - began heavy inline documentation of the code. Corrected typos

\* and spelling mistakes.

\* 10/5/97 - added code to handle PHY interrupts, disable PHY on

\* loss of link, and correctly re-enable PHY when link is

\* re-established. (put back CFG\_PHYIE)

\*

\* Modified to work with the IDT7721 nicstar -- AAL5 (tested) only.

\*

\* R. D. Rechenmacher <ron@fnal.gov>, Aug. 6, 1997

\*

```

* Linux driver for the IDT77201 NICStAR PCI ATM controller.
* PHY component is expected to be 155 Mbps S/UNI-Lite or IDT 77155;
* see init_nicstar() for PHY initialization to change this. This driver
* expects the Linux ATM stack to support scatter-gather lists
* (skb->atm.iovcnt != 0) for Rx skb's passed to vcc->push.
*
* Implementing minimal-copy of received data:
* IDT always receives data into a small buffer, then large buffers
* as needed. This means that data must always be copied to create
* the linear buffer needed by most non-ATM protocol stacks (e.g. IP)
* Fix is simple: make large buffers large enough to hold entire
* SDU, and leave <small_buffer_data> bytes empty at the start. Then
* copy small buffer contents to head of large buffer.
* Trick is to avoid fragmenting Linux, due to need for a lot of large
* buffers. This is done by 2 things:
* 1) skb->destructor / skb->atm.recycle_buffer
*    combined, allow nicstar_free_rx_skb to be called to
*    recycle large data buffers
* 2) skb_clone of received buffers
* See nicstar_free_rx_skb and linearize_buffer for implementation
* details.
*
*
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* Foundation, Inc., 675 Mass Ave, Cambridge, MA 02139, USA.
*
* M. Welsh, 6 July 1996
*
*
*/

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## 1.57 linux kernel 4.4.20

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Thanks go to the following people for patches and contributions:

Michael Hunold <m.hunold@gmx.de>  
for the initial saa7146 driver and its recent overhaul

Christian Theiss  
for his work on the initial Linux DVB driver

Marcus Metzler <mocm@metzlerbros.de>  
Ralph Metzler <rjkm@metzlerbros.de>  
for their continuing work on the DVB driver

Michael Holzt <kju@debian.org>  
for his contributions to the dvb-net driver

Diego Picciani <d.picciani@novacomp.it>  
for CyberLogin for Linux which allows logging onto EON  
(in case you are wondering where CyberLogin is, EON changed its login  
procedure and CyberLogin is no longer used.)

Martin Schaller <martin@smurf.franken.de>  
for patching the cable card decoder driver

Klaus Schmidinger <Klaus.Schmidinger@cadsoft.de>  
for various fixes regarding tuning, OSD and CI stuff and his work on VDR

Steve Brown <sbrown@cortland.com>  
for his AFC kernel thread

Christoph Martin <martin@uni-mainz.de>  
for his LIRC infrared handler

Andreas Oberritter <obi@linuxtv.org>

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...and all the other dbox2 people

for many bugfixes in the generic DVB Core, frontend drivers and  
their work on the dbox2 port of the DVB driver

Oliver Endriss <o.endriss@gmx.de>

for many bugfixes

Andrew de Quincey <adq\_dvb@lidskialf.net>

for the tda1004x frontend driver, and various bugfixes

Peter Schildmann <peter.schildmann@web.de>

for the driver for the Technisat SkyStar2 PCI DVB card

Vadim Catana <skystar@moldova.cc>

Roberto Ragusa <r.ragusa@libero.it>

Augusto Cardoso <augusto@carhil.net>

for all the work for the FlexCopII chipset by B2C2, Inc.

Davor Emard <emard@softhome.net>

for his work on the budget drivers, the demux code,  
the module unloading problems, ...

Hans-Frieder Vogt <hfvogt@arcor.de>

for his work on calculating and checking the crc's for the  
TechnoTrend/Hauppauge DEC driver firmware

Michael Dreher <michael@5dot1.de>

Andreas 'randy' Weinberger

for the support of the Fujitsu-Siemens Activy budget DVB-S

Kenneth Aafly <ke-aa@frisurf.no>

for adding support for Typhoon DVB-S budget card

Ernst Peinlich <e.peinlich@inode.at>

for tuning/DiSEqC support for the DEC 3000-s



Peter Beutner <p.beutner@gmx.net>  
for the IR code for the ttusb-dec driver

Wilson Michaels <wilsonmichaels@earthlink.net>  
for the lgdt330x frontend driver, and various bugfixes

Michael Krufky <mkrufky@linuxtv.org>  
for maintaining v4l/dvb inter-tree dependencies

Taylor Jacob <rtjacob@earthlink.net>  
for the nxt2002 frontend driver

Jean-Francois Thibert <jeanfrancois@sagetv.com>  
for the nxt2004 frontend driver

Kirk Lapray <kirk.lapray@gmail.com>  
for the or51211 and or51132 frontend drivers, and  
for merging the nxt2002 and nxt2004 modules into a  
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/\* nicstar.c v0.22 Jawaid Bazyar (bazyar@hypermall.com)

\* nicstar.c, M. Welsh (matt.welsh@cl.cam.ac.uk)

\*

\* Hacked October, 1997 by Jawaid Bazyar, Interlink Advertising Services Inc.



- \* <http://www.hypermall.com/>
- \* 10/1/97 - commented out CFG\_PHYIE bit - we don't care when the PHY
- \* interrupts us (except possibly for removal/insertion of the cable?)
- \* 10/4/97 - began heavy inline documentation of the code. Corrected typos
- \* and spelling mistakes.
- \* 10/5/97 - added code to handle PHY interrupts, disable PHY on
- \* loss of link, and correctly re-enable PHY when link is
- \* re-established. (put back CFG\_PHYIE)
- \*
- \* Modified to work with the IDT7721 nicstar -- AAL5 (tested) only.
- \*
- \* R. D. Rechenmacher <ron@fnal.gov>, Aug. 6, 1997
- \*
- \* Linux driver for the IDT77201 NICStAR PCI ATM controller.
- \* PHY component is expected to be 155 Mbps S/UNI-Lite or IDT 77155;
- \* see init\_nicstar() for PHY initialization to change this. This driver
- \* expects the Linux ATM stack to support scatter-gather lists
- \* (skb->atm.iovcnt != 0) for Rx skb's passed to vcc->push.
- \*
- \* Implementing minimal-copy of received data:
- \* IDT always receives data into a small buffer, then large buffers
- \* as needed. This means that data must always be copied to create
- \* the linear buffer needed by most non-ATM protocol stacks (e.g. IP)
- \* Fix is simple: make large buffers large enough to hold entire
- \* SDU, and leave <small\_buffer\_data> bytes empty at the start. Then
- \* copy small buffer contents to head of large buffer.
- \* Trick is to avoid fragmenting Linux, due to need for a lot of large
- \* buffers. This is done by 2 things:
- \* 1) skb->destructor / skb->atm.recycle\_buffer
- \* combined, allow nicstar\_free\_rx\_skb to be called to
- \* recycle large data buffers
- \* 2) skb\_clone of received buffers
- \* See nicstar\_free\_rx\_skb and linearize\_buffer for implementation
- \* details.
- \*
- \*
- \*
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\*  
\* M. Welsh, 6 July 1996  
\*  
\*  
\*/

## 1.58 linux kernel 3.14.35 3.14.35

### 1.58.1 Available under license :

Thanks go to the following people for patches and contributions:

Michael Hunold <m.hunold@gmx.de>  
for the initial saa7146 driver and its recent overhaul

Christian Theiss  
for his work on the initial Linux DVB driver

Marcus Metzler <mocm@metzlerbros.de>  
Ralph Metzler <rjkm@metzlerbros.de>  
for their continuing work on the DVB driver

Michael Holz <kju@debian.org>  
for his contributions to the dvb-net driver

Diego Picciani <d.picciani@novacomp.it>  
for CyberLogin for Linux which allows logging onto EON  
(in case you are wondering where CyberLogin is, EON changed its login  
procedure and CyberLogin is no longer used.)

Martin Schaller <martin@smurf.franken.de>  
for patching the cable card decoder driver

Klaus Schmidinger <Klaus.Schmidinger@cadsoft.de>  
for various fixes regarding tuning, OSD and CI stuff and his work on VDR

Steve Brown <sbrown@cortland.com>  
for his AFC kernel thread

Christoph Martin <martin@uni-mainz.de>  
for his LIRC infrared handler

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Ronny Strutz <3des@elitedvb.de>

Wolfram Joost <dbox2@frokaschwei.de>

...and all the other dbox2 people

for many bugfixes in the generic DVB Core, frontend drivers and their work on the dbox2 port of the DVB driver

Oliver Endriss <o.endriss@gmx.de>

for many bugfixes

Andrew de Quincey <adq\_dvb@lidskialf.net>

for the tda1004x frontend driver, and various bugfixes

Peter Schildmann <peter.schildmann@web.de>

for the driver for the Technisat SkyStar2 PCI DVB card

Vadim Catana <skystar@moldova.cc>

Roberto Ragusa <r.ragusa@libero.it>

Augusto Cardoso <augusto@carhil.net>

for all the work for the FlexCopII chipset by B2C2, Inc.

Davor Emard <emard@softhome.net>

for his work on the budget drivers, the demux code, the module unloading problems, ...

Hans-Frieder Vogt <hfvogt@arcor.de>

for his work on calculating and checking the crc's for the TechnoTrend/Hauppage DEC driver firmware

Michael Dreher <michael@5dot1.de>

Andreas 'randy' Weinberger

for the support of the Fujitsu-Siemens Activy budget DVB-S

Kenneth Aafly <ke-aa@frisurf.no>

for adding support for Typhoon DVB-S budget card

Ernst Peinlich <e.peinlich@inode.at>

for tuning/DiSEqC support for the DEC 3000-s

Peter Beutner <p.beutner@gmx.net>

for the IR code for the ttusb-dec driver

Wilson Michaels <wilsonmichaels@earthlink.net>

for the lgdt330x frontend driver, and various bugfixes

Michael Krufky <mkrufky@linuxtv.org>

for maintaining v4l/dvb inter-tree dependencies

Taylor Jacob <rtjacob@earthlink.net>  
for the nxt2002 frontend driver

Jean-Francois Thibert <jeanfrancois@sagetv.com>  
for the nxt2004 frontend driver

Kirk Lapray <kirk.lapray@gmail.com>  
for the or51211 and or51132 frontend drivers, and  
for merging the nxt2002 and nxt2004 modules into a  
single nxt200x frontend driver.

(If you think you should be in this list, but you are not, drop a  
line to the DVB mailing list)

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Version 1.0

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/\* nicstar.c v0.22 Jawaid Bazyar (bazyar@hypermall.com)

\* nicstar.c, M. Welsh (matt.welsh@cl.cam.ac.uk)

\*

\* Hacked October, 1997 by Jawaid Bazyar, Interlink Advertising Services Inc.

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\* 10/1/97 - commented out CFG\_PHYIE bit - we don't care when the PHY

\* interrupts us (except possibly for removal/insertion of the cable?)

\* 10/4/97 - began heavy inline documentation of the code. Corrected typos

\* and spelling mistakes.

\* 10/5/97 - added code to handle PHY interrupts, disable PHY on

\* loss of link, and correctly re-enable PHY when link is

\* re-established. (put back CFG\_PHYIE)

\*

\* Modified to work with the IDT7721 nicstar -- AAL5 (tested) only.

\*

\* R. D. Rechenmacher <ron@fnal.gov>, Aug. 6, 1997

\*

\* Linux driver for the IDT77201 NICStAR PCI ATM controller.

\* PHY component is expected to be 155 Mbps S/UNI-Lite or IDT 77155;

```

* see init_nicstar() for PHY initialization to change this. This driver
* expects the Linux ATM stack to support scatter-gather lists
* (skb->atm.iovcnt != 0) for Rx skb's passed to vcc->push.
*
* Implementing minimal-copy of received data:
* IDT always receives data into a small buffer, then large buffers
* as needed. This means that data must always be copied to create
* the linear buffer needed by most non-ATM protocol stacks (e.g. IP)
* Fix is simple: make large buffers large enough to hold entire
* SDU, and leave <small_buffer_data> bytes empty at the start. Then
* copy small buffer contents to head of large buffer.
* Trick is to avoid fragmenting Linux, due to need for a lot of large
* buffers. This is done by 2 things:
* 1) skb->destructor / skb->atm.recycle_buffer
*    combined, allow nicstar_free_rx_skb to be called to
*    recycle large data buffers
* 2) skb_clone of received buffers
* See nicstar_free_rx_skb and linearize_buffer for implementation
* details.
*
*
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*
* M. Welsh, 6 July 1996
*
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LuaJIT -- a Just-In-Time Compiler for Lua. <http://luajit.org/>

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## 1.61 Izo 2.10

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That's all there is to it!

File loading code for Mini-XML, a small XML-like file parsing library.

\*

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## 1.67 ncurses 6.0 :+20161126-1+deb9u1

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## 1.68 ncurses 6.0

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4. [4]Viraj Bais <vbais@mailman1.intel.com> and [5]Clayton Kirkwood <kirkwood@striderfm.intel.com> port to WindowsNT 3.5
5. [6]Michael Barone <michael,barone@lmco.com> GPSVME fixes
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7. [8]Greg Brackley <greg.brackley@bigfoot.com> Major rework of WINNT port. Clean up recvbuf and iosignal code into separate modules.
8. [9]Marc Brett <Marc.Brett@westgeo.com> Magnavox GPS clock driver
9. [10]Piete Brooks <Piete.Brooks@cl.cam.ac.uk> MSF clock driver, Trimble PARSE support
10. [11]Nelson B Bolyard <nelson@bolyard.me> update and complete broadcast and crypto features in sntp
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14. [15]Casey Crellin <casey@csc.co.za> vxWorks (Tornado) port and help with target configuration
15. [16]Sven Dietrich <sven\_dietrich@trimble.com> Palisade reference clock driver, NT adj. residuals, integrated Greg's Winnt port.

16. [17]John A. Dundas III <dundas@salt.jpl.nasa.gov> Apple A/UX port
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44. [48]Rainer Pruy <Rainer.Pruy@informatik.uni-erlangen.de> monitoring/trap scripts, statistics file handling
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46. [50]Wilfredo Snchez <wsanchez@apple.com> added support for NetInfo
  47. [51]Nick Sayer <mrapple@quack.kfu.com> SunOS streams modules
  48. [52]Jack Sasportas <jack@innovativeinternet.com> Saved a Lot of space on the stuff in the html/pic/ subdirectory
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  52. [56]Harlan Stenn <harlan@pfcs.com> GNU automake/autoconfigure makeover, various other bits (see the ChangeLog)
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  59. [63]Ulrich Windl <Ulrich.Windl@rz.uni-regensburg.de> corrected and validated HTML documents according to the HTML DTD
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*
* Optimised ANSI C code for the Rijndael cipher (now AES)
*
* @author Vincent Rijmen <vincent.rijmen@esat.kuleuven.ac.be>
* @author Antoon Bosselaers <antoon.bosselaers@esat.kuleuven.ac.be>
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## 1.86 PyQt5 5.9.2

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want  
wants  
was  
way  
ways  
we  
web  
website  
well



were  
what  
when  
whenever  
where  
whether  
which  
while  
whistle  
white  
who  
whole  
why  
widget  
widgets  
width  
widths  
will  
window  
windows  
wish  
with  
without  
word  
words  
work  
working  
works  
would  
wrap  
wrapper  
write  
writes  
writing  
writings  
written  
X  
X11  
XOR  
year  
years  
yes  
you  
your  
zero  
<d!`BhQ\*%&G;M PZe1zD<SyeN0&icLTRQ  
Vista  
&File\*%

```

&EsciG
PrimoM
TerzoZLingua: % 11ObliquaSecondoDIsoMetrica<SProspectivayeItalianoN02Esempio di localizzazione/>
MainWindow
<d!' BhQ*%"G5M PZg1~D<SyeN0i_LTRQVis&Fil*%&AvsluttGFrsteM TredjeZSprk: % 11Skjevt
AndreDIsoMetricisk<SPerspektivye
NorskN0:Internasjonaliseringseksempel/>
MainWindow
<d!' BhQ*%"G9M LZ]1pD<SyeN0iRTLQE1&I
'DEDA*%#.1,G#HDM +D+Z'DD:): % 11E5E*+'FIDE*E'+D<S
EF8H1ye'D91(J)N0E+'D 'D*/HJD/>
MainWindow
<d!' BhQ*%"G;M TZi1~D<SyeN0 $i_LTRQ&*%&G
M
Z: % 11D<SyeN00 />
MainWindow
<d!' BhQ*%"&GAM VZq1D<SyeN0:iLTRQ
Viso&Arquivo*%
&SairGPrimeiroM TerceiroZIdioma: % 11OblquoSegundoDIsoMetrico<SPerspectivayePortugusN0<Exemplo de
Internacionalizao/>
MainWindow
<d!' BhQ*%"*GAM \Zu1D<SyeN0+DiLTRQAnsicht&Datei*%Be&endenGERstensM DritzensZSprache:
% 11SchiefZweitensDIsoMetricisch<SPerspektivischeyeDeutschN0<Internationalisierungsbeispiel/>
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KE>4G5@2K9M "@5B89Z/7K:: % 11C@A82B>@>9D7><5B@8G5A:89<S5@A?5:B820ye CAA:89N04@8<5@
8=B5@=0F8=>0;870F88/>
MainWindow
<ui version="4.0" >
<author></author>
<comment></comment>
<exportmacro></exportmacro>
<class>MainWindow</class>
<widget class="QMainWindow" name="MainWindow" >
<property name="geometry" >
<rect>
<x>0</x>
<y>0</y>
<width>412</width>
<height>294</height>
</rect>
</property>
<property name="windowTitle" >
<string>Title</string>
</property>
<widget class="QWidget" name="centralwidget" >
<layout class="QVBoxLayout" >
<property name="margin" >

```

```

    <number>9</number>
  </property>
  <property name="spacing" >
    <number>6</number>
  </property>
  <item>
    <widget class="QLabel" name="label" >
      <property name="text" >
        <string>Text</string>
      </property>
      <property name="alignment" >
        <set>Qt::AlignCenter</set>
      </property>
    </widget>
  </item>
</layout>
</widget>
<widget class="QMenuBar" name="menubar" >
  <property name="geometry" >
    <rect>
      <x>0</x>
      <y>0</y>
      <width>412</width>
      <height>21</height>
    </rect>
  </property>
</widget>
<widget class="QStatusBar" name="statusbar" />
</widget>
<pixmapfunction></pixmapfunction>
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<connections/>
</ui>
<d!`BhQ*%$G9M NZc1xD<SyeN0 "ieLTRQView
&File*%
E&xitG
FirstM
ThirdZLanguage: %11ObliqueSecondDIsoMetric<SPerspectiveyeEnglishN08Internationalization Example/>
MainWindow
<d!`BhQ*%$G;M VZm1D<SyeN0
&iiLTRQVisa&Arkiv*%&AvslutaGFrstaM TredjeZSprk: %11
Skevt
AndraDIsoMetric<SPerspektivtyeSvenskaN08Internationaliseringsexempel/>
MainWindow
<d!`BhQ*% G7M NZ_1pD<SyeN0iLTRQVeN[&F]*%Q[&x]G{,NN*M {,N N*Z:
%11eb_q{,NN*D{Ib_q<Sb_qye{OSN-eN0
VESO/>
MainWindow

```

<d!'BhQ\*%\*GEM ZZm1D<SyeN0\$iaLTRQAspekto&Dosiero\*%  
&FiniGUNueM TrieZLingvo: %11OblikvaDueDIsonmetria<SPerspektivayeEsperantoN02Ekzemplo pri  
internaciigo/>  
MainWindow  
<d!'BhQ\*%\$G?M VZg1xD<SyeN0i  
LTRQhy:e\_0000(&F)\*% }BN(&X)G{,NLM {,NLZ: %11  
e0b\_ql{,NLD  
{Ib\_ql<S`lyeeg,N0VS(i18n)0nO/>  
MainWindow  
<d!'BhQ\*%"G=M XZq1D<SyeN0% @iLTRQVue&Fichier\*%&QuitterGPremierM TroisièmeZLangue :  
%11ObliqueDeuxièmeDIsonmetrie<SPerspektiveyeFranaisN0<Exemple d'internationalisation/>  
MainWindow  
<d!'BhQ\*%(GAM XZm1D<SyeN0\*iWLTRQPohled&Soubor\*%&KonecG  
PrvnM  
TYetZJayzk: %11Naklonn  
DruhDIsonmetrick<SPerspektivnye  
eskN0"Ukzka lokalizace/>  
MainWindow  
<d!'BhQ\*% G3M FZW1hD<SyeN0iLTRQ0|&F\*%&XGM 8Z : %11WPD!<STye\mN0mT />  
MainWindow  
Paulo Coelho: O Gnio e as Rosas  
Jean-Pierre Coffe: table en famille avec 15 par jour  
Anna Hallstrm, Urban stberg: Svr svenska  
Darrell Huff: How to Lie with Statistics  
Franz Kafka: Das Schlo  
Helena Leheckov: Tekki suomalaisille  
Arthur Rimbaud: uvres compltes  
Dag Solstad: Forsk p beskrive det ugjennomtrengelige  
Sprk: Norsk  
:  
/7K:: CAA:89  
:\m  
:e,g  
Langage : Franais  
<d!'B[%N(i=SzvegCm[%  
NyelvN/>  
MainWindow  
Paulo Coelho: O Gnio e as Rosas  
Anna Hallstrm, Urban stberg: Svr svenska  
Darrell Huff: How to Lie with Statistics  
Franz Kafka: Das Schlo  
Walter Moers: Die 13 Leben des Kpt'n Blaubr  
Dag Solstad: Forsk p beskrive det ugjennomtrengelige  
Sprk: Norsk  
:  
:  
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:

Langage : Franais

Sprk: Norsk

:

/7K:: CAA:89

: \m

: eg,

Langage : Franais

```
<?xml version="1.0" encoding="UTF-8"?>
```

```
<ui version="4.0">
```

```
<class>Form</class>
```

```
<widget class="QWidget" name="Form">
```

```
<property name="geometry">
```

```
<rect>
```

```
<x>0</x>
```

```
<y>0</y>
```

```
<width>545</width>
```

```
<height>471</height>
```

```
</rect>
```

```
</property>
```

```
<property name="windowTitle">
```

```
<string>Easing curves</string>
```

```
</property>
```

```
<layout class="QGridLayout" name="gridLayout">
```

```
<item row="0" column="0" colspan="2">
```

```
<widget class="QListWidget" name="easingCurvePicker">
```

```
<property name="sizePolicy">
```

```
<sizepolicy hsiptype="Expanding" vsizetype="Preferred">
```

```
<horstretch>0</horstretch>
```

```
<verstretch>0</verstretch>
```

```
</sizepolicy>
```

```
</property>
```

```
<property name="maximumSize">
```

```
<size>
```

```
<width>16777215</width>
```

```
<height>120</height>
```

```
</size>
```

```
</property>
```

```
<property name="verticalScrollBarPolicy">
```

```
<enum>Qt::ScrollBarAlwaysOff</enum>
```

```
</property>
```

```
<property name="movement">
```

```
<enum>QListView::Static</enum>
```

```
</property>
```

```
<property name="isWrapping" stdset="0">
```

```
<bool>>false</bool>
```

```
</property>
```

```
<property name="viewMode">
```

```
<enum>QListView::IconMode</enum>
```

```

</property>
<property name="selectionRectVisible">
  <bool>>false</bool>
</property>
</widget>
</item>
<item row="1" column="0">
  <layout class="QVBoxLayout" name="verticalLayout">
    <item>
      <widget class="QGroupBox" name="groupBox_2">
        <property name="title">
          <string>Path type</string>
        </property>
        <layout class="QVBoxLayout" name="verticalLayout_2">
          <item>
            <widget class="QRadioButton" name="lineRadio">
              <property name="text">
                <string>Line</string>
              </property>
              <property name="checked">
                <bool>>true</bool>
              </property>
              <attribute name="buttonGroup">
                <string>buttonGroup</string>
              </attribute>
            </widget>
          </item>
          <item>
            <widget class="QRadioButton" name="circleRadio">
              <property name="text">
                <string>Circle</string>
              </property>
              <attribute name="buttonGroup">
                <string>buttonGroup</string>
              </attribute>
            </widget>
          </item>
        </layout>
      </widget>
    </item>
    <item>
      <widget class="QGroupBox" name="groupBox">
        <property name="sizePolicy">
          <sizepolicy hstypetype="Fixed" vstypetype="Preferred">
            <horstretch>0</horstretch>
            <verstretch>0</verstretch>
          </sizepolicy>
        </property>

```

```

<property name="title">
  <string>Properties</string>
</property>
<layout class="QFormLayout" name="formLayout">
  <property name="fieldGrowthPolicy">
    <enum>QFormLayout::AllNonFixedFieldsGrow</enum>
  </property>
  <item row="0" column="0">
    <widget class="QLabel" name="label">
      <property name="text">
        <string>Period</string>
      </property>
    </widget>
  </item>
  <item row="0" column="1">
    <widget class="QDoubleSpinBox" name="periodSpinBox">
      <property name="enabled">
        <bool>>false</bool>
      </property>
      <property name="minimum">
        <double>-1.0000000000000000</double>
      </property>
      <property name="singleStep">
        <double>0.1000000000000000</double>
      </property>
      <property name="value">
        <double>-1.0000000000000000</double>
      </property>
    </widget>
  </item>
  <item row="1" column="0">
    <widget class="QLabel" name="label_2">
      <property name="text">
        <string>Amplitude</string>
      </property>
    </widget>
  </item>
  <item row="1" column="1">
    <widget class="QDoubleSpinBox" name="amplitudeSpinBox">
      <property name="enabled">
        <bool>>false</bool>
      </property>
      <property name="minimum">
        <double>-1.0000000000000000</double>
      </property>
      <property name="singleStep">
        <double>0.1000000000000000</double>
      </property>
    </widget>
  </item>

```

```

    <property name="value">
      <double>-1.0000000000000000</double>
    </property>
  </widget>
</item>
<item row="2" column="0">
  <widget class="QLabel" name="label_3">
    <property name="text">
      <string>Overshoot</string>
    </property>
  </widget>
</item>
<item row="2" column="1">
  <widget class="QDoubleSpinBox" name="overshootSpinBox">
    <property name="enabled">
      <bool>>false</bool>
    </property>
    <property name="minimum">
      <double>-1.0000000000000000</double>
    </property>
    <property name="singleStep">
      <double>0.1000000000000000</double>
    </property>
    <property name="value">
      <double>-1.0000000000000000</double>
    </property>
  </widget>
</item>
</layout>
</widget>
</item>
<item>
  <spacer name="verticalSpacer">
    <property name="orientation">
      <enum>Qt::Vertical</enum>
    </property>
    <property name="sizeHint" stdset="0">
      <size>
        <width>20</width>
        <height>40</height>
      </size>
    </property>
  </spacer>
</item>
</layout>
</item>
<item row="1" column="1">
  <widget class="QGraphicsView" name="graphicsView">

```



```

<property name="sizePolicy">
  <sizepolicy hsizeType="Expanding" vsizetype="Expanding">
    <horstretch>0</horstretch>
    <verstretch>0</verstretch>
  </sizepolicy>
</property>
</widget>
</item>
</layout>
</widget>
<resources/>
<connections/>
<buttongroups>
  <buttongroup name="buttonGroup"/>
</buttongroups>
</ui>
@8L?J$b2]@:%EX T@1-NN/b@P
]C>/>j`;@E5/n0\@2S@JD~}-
~]"7ZciyaG@PxZ[yn{w@<x$zbA^PFQW@P,Y@6ZU3<@Sd|s@Z:%g$@ij@aP3@^C@`x'@k3><U@8Lu|bF
@:XC@7)qNN)c@P
zuC>$1@E5B#@2S5@J~D~sDQ`]ZUc@"iYPMci2@Px[yzfyk@<w=bFN6@P,1sM@6@S2 d|Z@Z9Cg$v@ij
pN@a@^y@`Dn@k2G'X@8Lu|bF@:XC@7)qNN)c@P
zuC>$1@E5B#@2S5@J~D~sDQ`]ZUc@"iYPMci2@Px[yzfyk@<w=bFN6@P,1sM@6@S2 d|Z@Z9Cg$v@ij
pN@a@^y@`Dn@k2G'X@8L8b+*:@:RX%S@+RuNN @P
h+
yCy>6N@E5Q@2SsH@JD~`]"AsciCDi@Px[yb%B@<xmdbXcFSJ@P,y@6vs@SY}d|]
@Z;lg%n@ijk;@ar@^i@`j@k4Bu@8LsFb7@:UIX%f@+hNNL}@P
VtCwg>)h@E5R@2Sq5V'@J:dD~_]"@,ciN@Px
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,O@:W"$}X&]]@+c;NNf@P
IMCv
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+@^e@`<@k4Z@8LMb W;@:Y^X&]/@+NN>R@P
8Cu>|@E5V>@2Sm{|@JV{s{D~e`]hj@"eci"@Px-S[y`[|@<xb9JFT@P,L|@65ad@SHd|%-#@Z;b.g%g@ij@a
/@^&N@`i@k4h
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bxFT,0@P,`E@6x@SOD|]k@Z;g%e@ij@a R$@^4
K@`cx@k4mxg@8LSb t@:|>-X&tb@*HNN5@P
!0sCtQ
>
@E5W 4_@2Sk{a@J@7]D~|q`]co@"qciK.@PxW9[y_5"@<x rbFOFT.@
@P,@6e@Sd|Z< )sg%n@ij8@a b^Q@`@k4w@8LgWb @:|9]X&}@*`NNJ@P
&-d
Ct->EM/@E5W@2Sk^h/2@J#"D~ ^Γ]F@"2cilX@Px[y_g@<x br*FT0Da@P,D#@6@S&d|a@Z<
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!FT2|f@P,B@6

```

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#Cte>% @E5XF@2Sk  
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bFT4@P,`1@6O;@S\_Nd|@Z<Hg% @ijX@a S@^Yze@`#1@k4y0@8L\$Bb Q@:\JX&\*@\*LNNY@P  
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Z@^ZL@`Kw@k4y\*c@8L<b /@:\X&@\*4NNi@P  
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B5LcTd^@aSH8C@evn? "Qe&uIF\$@Q/g@-  
pn@V?ehrr% @Z&gI"1@iq/@`=^6@`V5F@k5OR@:"hazqW@7W+'eVz-  
\$IB/!4J@MEy=pBv8@HST@\$L@NOjNC {  
n}  
\_&-p@ WcU)G9@`Gn{=y@Yn}S-Jcs% @QN@+,p@VPe`K@Z&  
g  
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@?z@f-@=@<gV@q4G}0iZcIcN9ZF\$I\GLH@H1NNJ,w)A@Ghj@A]O@Db)\_y,iXxB9@  
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</ui>
<ui version="4.0" >
<class>Dialog</class>
<widget class="QDialog" name="Dialog" >
  <property name="geometry" >
    <rect>
      <x>0</x>
      <y>0</y>
      <width>451</width>
      <height>322</height>
    </rect>
  </property>
  <property name="windowTitle" >
    <string>Dialog</string>
  </property>
  <layout class="QGridLayout" >
    <item row="0" column="0" >
      <widget class="QPushButton" name="loadFromFileButton" >
        <property name="text" >
          <string>Load Image From File...</string>
        </property>
      </widget>
    </item>
    <item row="1" column="0" >
      <widget class="QLabel" name="label" >
        <property name="text" >
          <string>Launch two of these dialogs. In the first, press the top button and load an image from a file. In the
second, press the bottom button and display the loaded image from shared memory.</string>
        </property>
        <property name="alignment" >
          <set>Qt::AlignCenter</set>
        </property>
        <property name="wordWrap" >
          <bool>true</bool>
        </property>
      </widget>
    </item>
    <item row="2" column="0" >
      <widget class="QPushButton" name="loadFromSharedMemoryButton" >
        <property name="text" >
          <string>Display Image From Shared Memory</string>
        </property>
      </widget>

```





DV @d"h!l[2IENDB`  
IHDRddpTMIDATx@?6rd=B5p2y  
H, H, H, 2 { @c.nd8@c.nd8@c.nd8@c.nvgH, H, H, H, H, H, H\V;{H, H, H, H, H, H, n=1 8<: H, H,  
z6wMOQIENDB`  
IHDRddpTMIDATx1n@A>?"#)T.?J\$X@b\$X@b\$X@u= d8@c.nd8@c.nd8@c.nd8@iw@( H, H, H, H, H, H,  
z;u){OH, nH, H, H, H, H, H, VHH, H, H?X|wTIENDB`  
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b){R\$IENDB`  
IHDRddpT;IDATx  
AAus{oj5{  
H, H, H, twd

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17\?  
Q@b\$X@b\$X@b\$X@b\$X@b\$X@b\$X@b\$X@b\$X@b\$X@b\$X@b\$X@b\$X@b\$X@b\$X@b\$X@b\$X@b\$X@b\$X@  
b){IENDB`  
IHDRddpTIDATx17RL!B0`  
)SL!B0`  
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)SL!B0`  
)SL!B0`  
)SL!B0`  
)SL!+hQIENDB`MEND!

```
<?xml version="1.0" encoding="UTF-8"?>  
<ui version="4.0">  
<class>StyleSheetEditor</class>  
<widget class="QWidget" name="StyleSheetEditor">  
<property name="geometry">  
<rect>  
<x>0</x>  
<y>0</y>  
<width>445</width>
```

```

    <height>289</height>
  </rect>
</property>
<property name="windowTitle">
  <string>Style Editor</string>
</property>
<layout class="QGridLayout">
  <property name="margin">
    <number>9</number>
  </property>
  <property name="spacing">
    <number>6</number>
  </property>
  <item row="0" column="6">
    <spacer>
      <property name="orientation">
        <enum>Qt::Horizontal</enum>
      </property>
      <property name="sizeType">
        <enum>QSizePolicy::MinimumExpanding</enum>
      </property>
      <property name="sizeHint" stdset="0">
        <size>
          <width>32</width>
          <height>20</height>
        </size>
      </property>
    </spacer>
  </item>
  <item row="0" column="0">
    <spacer>
      <property name="orientation">
        <enum>Qt::Horizontal</enum>
      </property>
      <property name="sizeType">
        <enum>QSizePolicy::MinimumExpanding</enum>
      </property>
      <property name="sizeHint" stdset="0">
        <size>
          <width>32</width>
          <height>20</height>
        </size>
      </property>
    </spacer>
  </item>
  <item row="0" column="5">
    <widget class="QComboBox" name="styleSheetCombo">
    <item>

```

```

<property name="text">
  <string>Default</string>
</property>
</item>
<item>
  <property name="text">
    <string>Coffee</string>
  </property>
</item>
<item>
  <property name="text">
    <string>Pagefold</string>
  </property>
</item>
</widget>
</item>
<item row="0" column="3">
  <spacer>
    <property name="orientation">
      <enum>Qt::Horizontal</enum>
    </property>
    <property name="sizeType">
      <enum>QSizePolicy::Fixed</enum>
    </property>
    <property name="sizeHint" stdset="0">
      <size>
        <width>10</width>
        <height>16</height>
      </size>
    </property>
  </spacer>
</item>
<item row="0" column="2">
  <widget class="QComboBox" name="styleCombo">
    <property name="sizePolicy">
      <sizepolicy hsizeType="Preferred" vsizeType="Fixed">
        <horstretch>0</horstretch>
        <verstretch>0</verstretch>
      </sizepolicy>
    </property>
  </widget>
</item>
<item row="0" column="1">
  <widget class="QLabel" name="label_7">
    <property name="sizePolicy">
      <sizepolicy hsizeType="Fixed" vsizeType="Preferred">
        <horstretch>0</horstretch>
        <verstretch>0</verstretch>
      </sizepolicy>
    </property>
  </widget>
</item>

```

```

</sizepolicy>
</property>
<property name="text">
  <string>Style:</string>
</property>
</widget>
</item>
<item row="2" column="0" colspan="7">
<layout class="QHBoxLayout">
  <property name="spacing">
    <number>6</number>
  </property>
  <property name="margin">
    <number>0</number>
  </property>
  <item>
    <spacer>
      <property name="orientation">
        <enum>Qt::Horizontal</enum>
      </property>
      <property name="sizeHint" stdset="0">
        <size>
          <width>321</width>
          <height>20</height>
        </size>
      </property>
    </spacer>
  </item>
  <item>
    <widget class="QPushButton" name="saveButton">
      <property name="enabled">
        <bool>true</bool>
      </property>
      <property name="text">
        <string>&Save</string>
      </property>
    </widget>
  </item>
  <item>
    <widget class="QPushButton" name="applyButton">
      <property name="enabled">
        <bool>>false</bool>
      </property>
      <property name="text">
        <string>&Apply</string>
      </property>
    </widget>
  </item>

```

```

</layout>
</item>
<item row="1" column="0" colspan="7">
  <widget class="QTextEdit" name="styleTextEdit"/>
</item>
<item row="0" column="4">
  <widget class="QLabel" name="label_8">
    <property name="sizePolicy">
      <sizepolicy hsize="Fixed" vsize="Preferred">
        <horstretch>0</horstretch>
        <verstretch>0</verstretch>
      </sizepolicy>
    </property>
    <property name="text">
      <string>Style Sheet:</string>
    </property>
  </widget>
</item>
</layout>
</widget>
<resources/>
<connections/>
</ui>
/* empty stylesheet */
/* Customize any plain widget that is a child of a QMainWindow. */
QMainWindow > .QWidget {
  background-color: gainsboro;
  background-image: url(/images/pagefold.png);
  background-position: top right;
  background-repeat: no-repeat
}

/* Provide a padding for the layout inside the frame. The frame
exists only to provide a padding for the top-right image, so we
explicitly disable the border. */
#mainFrame {
  padding-right: 30px;
  border-style: none;
  border-image: none; /* since we set a border-image below */
}

/* mainFrame won't have this border-image since we have
explicitly set it to 'none' using a more specific selector. */
QFrame, QLineEdit, QComboBox[editable="true"], QSpinBox {
  border-image: url(/images/frame.png) 4;
  border-width: 3;
}

```

```

QLabel {
    border: none;
    border-image: none;
    padding: 0;
    background: none;
}

/* Make text in message boxes selectable. */
QMessageBox {
    /* LinksAccessibleByMouse | TextSelectableByMouse */
    messagebox-text-interaction-flags: 5;
}

/* Set the selection colors for all widgets. */
QWidget {
    selection-color: black;
    selection-background-color: Silver;
    color: black;
}

/* Make the entire row selected in item views. */
QAbstractItemView {
    show-decoration-selected: 1;
}

/* Nice WindowsXP-style password character for password line edits. */
QLineEdit[echoMode="2"] {
    linedit-password-character: 9679;
}

/* Customize tooltips. */
QToolTip {
    background-color: rgb(200,200,255);
    border-color: darkslategray;
    border-width: 1px;
    border-style: solid;
    padding: 3px;
    font: bold;
    border-radius: 3px;
    opacity: 200;
}

/* Customize radio buttons. */

QRadioButton {
    spacing: 5px;
}

```

```

QRadioButton::indicator {
    width: 13px;
    height: 13px;
}

QRadioButton::indicator::unchecked {
    image: url(/images/radiobutton_unchecked.png);
}

QRadioButton::indicator:unchecked:hover {
    image: url(/images/radiobutton_unchecked_hover.png);
}

QRadioButton::indicator:unchecked:pressed {
    image: url(/images/radiobutton_unchecked_pressed.png);
}

QRadioButton::indicator::checked {
    image: url(/images/radiobutton_checked.png);
}

QRadioButton::indicator:checked:hover {
    image: url(/images/radiobutton_checked_hover.png);
}

QRadioButton::indicator:checked:pressed {
    image: url(/images/radiobutton_checked_pressed.png);
}

/* Customize arrows. */

*::down-arrow, *::menu-indicator {
    image: url(/images/down_arrow.png);
    width: 7px;
    height: 7px;
}

*::down-arrow:disabled, *::down-arrow:off {
    image: url(/images/down_arrow_disabled.png);
}

*::up-arrow {
    image: url(/images/up_arrow.png);
    width: 7px;
    height: 7px;
}

*::up-arrow:disabled, *::up-arrow:off {

```



```

    image: url(/images/up_arrow_disabled.png);
}

/* Customize push buttons and comboboxes. Our read-only combobox
   is very similar to a push button, so they share the same border image. */

QPushButton {
    min-width: 4em;
}

QPushButton, QComboBox[editable="false"],
QComboBox[editable="true"]::drop-down {
    border-image: url(/images/pushbutton.png) 5;
    border-width: 5;
}

QPushButton:hover, QComboBox[editable="false"]:hover,
QComboBox[editable="true"]::drop-down:hover, QMenuBar::item:hover {
    border-image: url(/images/pushbutton_hover.png) 5;
    border-width: 5;
}

QPushButton:pressed, QComboBox[editable="false"]:on,
QComboBox[editable="true"]::drop-down:on, QMenuBar::item:on {
    border-image: url(/images/pushbutton_pressed.png) 5;
    border-width: 5;
}

/* Customize read-only comboboxes. */

QComboBox[editable="false"] {
    padding-left: 3px;
    padding-right: 20px; /* space for the arrow */
}

QComboBox[editable="false"]::drop-down {
    subcontrol-origin: padding;
    subcontrol-position: top right;
    width: 15px;
    border-left-style: solid;
    border-left-color: darkgray;
    border-left-width: 1px;
}

QComboBox[editable="false"]::down-arrow {
    subcontrol-origin: content;
    subcontrol-position: center;
    position: relative;

```

```

    left: 1px; /* 1 pixel dropdown border */
}

/* The combobox arrow is on when the popup is open. */
QComboBox[editable="false"]::down-arrow:on {
    position: relative;
    top: 1px;
    left: 2px;
}

/* Customize editable comboboxes. */

QComboBox[editable="true"] {
    padding-right: 16px;
}

QComboBox[editable="true"]::drop-down {
    subcontrol-origin: border;
    subcontrol-position: top right;
    width: 13px;
    position: absolute;
    top: 2px;
    bottom: 2px;
    right: 2px;
}

QComboBox[editable="true"]::drop-down,
QComboBox[editable="true"]::drop-down:hover,
QComboBox[editable="true"]::drop-down:on {
    border-width: 0px;
    border-left-width: 3px; /* we need only left and center part */
}

/* Shift the arrow when it's open. */
QComboBox[editable="true"]::down-arrow:on {
    position: relative;
    top: 1px;
    left: 1px;
}

/* Customize check boxes. */
QCheckBox {
    spacing: 5px;
}

QCheckBox::indicator {
    width: 13px;
    height: 13px;
}

```

```

}

QCheckBox::indicator:unchecked {
    image: url(/images/checkbox_unchecked.png);
}

QCheckBox::indicator:unchecked:hover {
    image: url(/images/checkbox_unchecked_hover.png);
}

QCheckBox::indicator:unchecked:pressed {
    image: url(/images/checkbox_unchecked_pressed.png);
}

QCheckBox::indicator:checked {
    image: url(/images/checkbox_checked.png);
}

QCheckBox::indicator:checked:hover {
    image: url(/images/checkbox_checked_hover.png);
}

QCheckBox::indicator:checked:pressed {
    image: url(/images/checkbox_checked_pressed.png);
}

/* Customize the size grip. */
QSizeGrip {
    image: url(/images/sizegrip.png);
    width: 16px;
    height: 16px;
}

/* Customize the menu bar. */
QMenuBar {
    border-image: none;
    border-style: none;
    border-width: 1px;
    border-bottom-style: solid;
    border-bottom-color: darkslategray;
    padding: 2px;
}

/* Customize spin boxes. */

QSpinBox {
    padding-right: 15px;
}

```

```

QSpinBox::up-button {
    subcontrol-origin: border;
    subcontrol-position: top right;

    width: 16px; /* 16 + 2*1px border-width = 15px padding + 3px parent border */
    border-image: url(/images/spinup.png) 1;
    border-width: 1px;
}

QSpinBox::up-button:hover {
    border-image: url(/images/spinup_hover.png) 1;
}

QSpinBox::up-button:pressed {
    border-image: url(/images/spinup_pressed.png) 1;
}

QSpinBox::down-button {
    subcontrol-origin: border;
    subcontrol-position: bottom right;

    width: 16px;
    border-image: url(/images/spindown.png) 1;
    border-width: 1px;
    border-top-width: 0;
}

QSpinBox::down-button:hover {
    border-image: url(/images/spindown_hover.png) 1;
}

QSpinBox::down-button:pressed {
    border-image: url(/images/spindown_pressed.png) 1;
}

.QWidget {
    background-color: beige;
}

/* Nice Windows-XP-style password character. */
QLineEdit[echoMode="2"] {
    linedit-password-character: 9679;
}

/* We provide a min-width and min-height for push buttons
so that they look elegant regardless of the width of the text. */
QPushButton {
    background-color: palegoldenrod;
}

```

```

border-width: 2px;
border-color: darkkhaki;
border-style: solid;
border-radius: 5;
padding: 3px;
min-width: 9ex;
min-height: 2.5ex;
}

QPushButton:hover {
    background-color: khaki;
}

/* Increase the padding, so the text is shifted when the button is
pressed. */
QPushButton:pressed {
    padding-left: 5px;
    padding-top: 5px;
    background-color: #d0d67c;
}

QLabel, QAbstractButton {
    font: bold;
}

/* Mark mandatory fields with a brownish color. */
.mandatory {
    color: brown;
}

/* Bold text on status bar looks awful. */
QStatusBar QLabel {
    font: normal;
}

QStatusBar::item {
    border-width: 1;
    border-color: darkkhaki;
    border-style: solid;
    border-radius: 2;
}

QComboBox, QLineEdit, QSpinBox, QTextEdit, QListView {
    background-color: cornsilk;
    selection-color: #0a214c;
    selection-background-color: #C19A6B;
}

```

```

QListView {
    show-decoration-selected: 1;
}

QListView::item:hover {
    background-color: wheat;
}

/* We reserve 1 pixel space in padding. When we get the focus,
we kill the padding and enlarge the border. This makes the items
glow. */
QLineEdit, QFrame {
    border-width: 2px;
    padding: 1px;
    border-style: solid;
    border-color: darkkhaki;
    border-radius: 5px;
}

/* As mentioned above, eliminate the padding and increase the border. */
QLineEdit:focus, QFrame:focus {
    border-width: 3px;
    padding: 0px;
}

/* A QLabel is a QFrame ... */
QLabel {
    border: none;
    padding: 0;
    background: none;
}

/* A QToolTip is a QLabel ... */
QToolTip {
    border: 2px solid darkkhaki;
    padding: 5px;
    border-radius: 3px;
    opacity: 200;
}

/* Nice to have the background color change when hovered. */
QRadioButton:hover, QCheckBox:hover {
    background-color: wheat;
}

/* Force the dialog's buttons to follow the Windows guidelines. */
QDialogButtonBox {
    button-layout: 0;
}

```

```

}
<ui version="4.0" >
<class>MainWindow</class>
<widget class="QMainWindow" name="MainWindow" >
  <property name="geometry" >
    <rect>
      <x>0</x>
      <y>0</y>
      <width>400</width>
      <height>413</height>
    </rect>
  </property>
  <property name="windowTitle" >
    <string>Style Sheet</string>
  </property>
  <widget class="QWidget" name="centralwidget" >
    <layout class="QVBoxLayout" >
      <property name="margin" >
        <number>9</number>
      </property>
      <property name="spacing" >
        <number>6</number>
      </property>
      <item>
        <widget class="QFrame" name="mainFrame" >
          <property name="frameShape" >
            <enum>QFrame::StyledPanel</enum>
          </property>
          <property name="frameShadow" >
            <enum>QFrame::Raised</enum>
          </property>
          <layout class="QGridLayout" >
            <property name="margin" >
              <number>9</number>
            </property>
            <property name="spacing" >
              <number>6</number>
            </property>
            <item row="6" column="0" colspan="5" >
              <widget class="QCheckBox" name="agreeCheckBox" >
                <property name="toolTip" >
                  <string>Please read the LICENSE file before checking</string>
                </property>
                <property name="text" >
                  <string>I accept the terms and &conditions</string>
                </property>
              </widget>
            </item>
          </layout>
        </widget>
      </item>
    </layout>
  </widget>
</ui>

```

```

<item row="5" column="0" >
  <widget class="QLabel" name="label" >
    <property name="text" >
      <string>Profession:</string>
    </property>
    <property name="alignment" >
      <set>Qt::AlignRight|Qt::AlignTop|Qt::AlignTrailing</set>
    </property>
    <property name="buddy" >
      <cstring>professionList</cstring>
    </property>
  </widget>
</item>
<item row="0" column="0" >
  <widget class="QLabel" name="nameLabel" >
    <property name="text" >
      <string>&Name:</string>
    </property>
    <property name="alignment" >
      <set>Qt::AlignRight|Qt::AlignTrailing|Qt::AlignVCenter</set>
    </property>
    <property name="buddy" >
      <cstring>nameCombo</cstring>
    </property>
  </widget>
</item>
<item row="1" column="1" >
  <widget class="QRadioButton" name="maleRadioButton" >
    <property name="toolTip" >
      <string>Check this if you are male</string>
    </property>
    <property name="text" >
      <string>&Male</string>
    </property>
  </widget>
</item>
<item row="3" column="0" >
  <widget class="QLabel" name="passwordLabel" >
    <property name="text" >
      <string>&Password:</string>
    </property>
    <property name="alignment" >
      <set>Qt::AlignRight|Qt::AlignTrailing|Qt::AlignVCenter</set>
    </property>
    <property name="buddy" >
      <cstring>passwordEdit</cstring>
    </property>
  </widget>

```



```

</item>
<item row="4" column="1" colspan="4" >
<widget class="QComboBox" name="countryCombo" >
  <property name="toolTip" >
    <string>Specify country of origin</string>
  </property>
  <property name="statusTip" >
    <string>Specify country of origin</string>
  </property>
  <property name="currentIndex" >
    <number>6</number>
  </property>
  <item>
    <property name="text" >
      <string>Egypt</string>
    </property>
  </item>
  <item>
    <property name="text" >
      <string>France</string>
    </property>
  </item>
  <item>
    <property name="text" >
      <string>Germany</string>
    </property>
  </item>
  <item>
    <property name="text" >
      <string>India</string>
    </property>
  </item>
  <item>
    <property name="text" >
      <string>Italy</string>
    </property>
  </item>
  <item>
    <property name="text" >
      <string>Norway</string>
    </property>
  </item>
  <item>
    <property name="text" >
      <string>Pakistan</string>
    </property>
  </item>
</widget>

```

```

</item>
<item row="2" column="0" >
  <widget class="QLabel" name="ageLabel" >
    <property name="text" >
      <string>&Age:</string>
    </property>
    <property name="alignment" >
      <set>Qt::AlignRight|Qt::AlignTrailing|Qt::AlignVCenter</set>
    </property>
    <property name="buddy" >
      <cstring>ageSpinBox</cstring>
    </property>
  </widget>
</item>
<item row="4" column="0" >
  <widget class="QLabel" name="countryLabel" >
    <property name="text" >
      <string>Country:</string>
    </property>
    <property name="alignment" >
      <set>Qt::AlignRight|Qt::AlignTrailing|Qt::AlignVCenter</set>
    </property>
    <property name="buddy" >
      <cstring>countryCombo</cstring>
    </property>
  </widget>
</item>
<item row="1" column="0" >
  <widget class="QLabel" name="genderLabel" >
    <property name="text" >
      <string>Gender:</string>
    </property>
    <property name="alignment" >
      <set>Qt::AlignRight|Qt::AlignTrailing|Qt::AlignVCenter</set>
    </property>
  </widget>
</item>
<item row="3" column="1" colspan="4" >
  <widget class="QLineEdit" name="passwordEdit" >
    <property name="toolTip" >
      <string>Specify your password</string>
    </property>
    <property name="statusTip" >
      <string>Specify your password</string>
    </property>
    <property name="text" >
      <string>Password</string>
    </property>
  </widget>

```

```

<property name="echoMode" >
  <enum>QLineEdit::Password</enum>
</property>
</widget>
</item>
<item row="1" column="2" colspan="2" >
  <widget class="QRadioButton" name="femaleRadioButton" >
    <property name="toolTip">
      <string>Check this if you are female</string>
    </property>
    <property name="text" >
      <string>&Female</string>
    </property>
  </widget>
</item>
<item row="2" column="1" colspan="2" >
  <widget class="QSpinBox" name="ageSpinBox" >
    <property name="toolTip" >
      <string>Specify your age</string>
    </property>
    <property name="statusTip" >
      <string>Specify your age</string>
    </property>
    <property name="minimum" >
      <number>12</number>
    </property>
    <property name="value" >
      <number>22</number>
    </property>
  </widget>
</item>
<item row="0" column="1" colspan="4" >
  <widget class="QComboBox" name="nameCombo" >
    <property name="toolTip" >
      <string>Specify your name</string>
    </property>
    <property name="editable" >
      <bool>true</bool>
    </property>
  </widget>
</item>
<item row="1" column="4" >
  <spacer>
    <property name="orientation" >
      <enum>Qt::Horizontal</enum>
    </property>
    <property name="sizeHint" >
      <size>

```

```

    <width>40</width>
    <height>20</height>
  </size>
</property>
</spacer>
</item>
<item row="2" column="3" colspan="2" >
  <spacer>
    <property name="orientation" >
      <enum>Qt::Horizontal</enum>
    </property>
    <property name="sizeHint" >
      <size>
        <width>61</width>
        <height>20</height>
      </size>
    </property>
  </spacer>
</item>
<item row="7" column="3" colspan="2" >
  <widget class="QDialogButtonBox" name="buttonBox" >
    <property name="orientation" >
      <enum>Qt::Horizontal</enum>
    </property>
    <property name="standardButtons" >
      <set>QDialogButtonBox::Cancel|QDialogButtonBox::NoButton|QDialogButtonBox::Ok</set>
    </property>
  </widget>
</item>
<item row="5" column="1" colspan="4" >
  <widget class="QListWidget" name="professionList" >
    <property name="toolTip" >
      <string>Select your profession</string>
    </property>
    <property name="statusTip" >
      <string>Specify your name here</string>
    </property>
    <property name="whatsThis" >
      <string>Specify your name here</string>
    </property>
    <property name="currentRow" >
      <number>0</number>
    </property>
  <item>
    <property name="text" >
      <string>Developer</string>
    </property>
  </item>

```

```

<item>
  <property name="text" >
    <string>Student</string>
  </property>
</item>
<item>
  <property name="text" >
    <string>Fisherman</string>
  </property>
</item>
</widget>
</item>
</layout>
</widget>
</item>
</layout>
</widget>
<widget class="QMenuBar" name="menubar" >
  <property name="geometry" >
    <rect>
      <x>0</x>
      <y>0</y>
      <width>400</width>
      <height>29</height>
    </rect>
  </property>
  <widget class="QMenu" name="menu_File" >
    <property name="title" >
      <string>&File</string>
    </property>
    <addaction name="editStyleAction" />
    <addaction name="separator" />
    <addaction name="exitAction" />
  </widget>
  <widget class="QMenu" name="menu_Help" >
    <property name="title" >
      <string>&Help</string>
    </property>
    <addaction name="aboutAction" />
    <addaction name="aboutQtAction" />
  </widget>
  <addaction name="menu_File" />
  <addaction name="menu_Help" />
</widget>
<widget class="QStatusBar" name="statusbar" />
<action name="exitAction" >
  <property name="text" >
    <string>&Exit</string>

```

```

</property>
</action>
<action name="aboutQtAction" >
  <property name="text" >
    <string>About Qt</string>
  </property>
</action>
<action name="editStyleAction" >
  <property name="text" >
    <string>Edit &Style...</string>
  </property>
</action>
<action name="aboutAction" >
  <property name="text" >
    <string>About</string>
  </property>
</action>
</widget>
<resources/>
<connections/>
</ui>
<RCC>
<qresource prefix="/">
  <file>qss/coffee.qss</file>
  <file>qss/default.qss</file>
  <file>qss/pagefold.qss</file>
  <file>images/pagefold.png</file>
  <file>images/frame.png</file>
  <file>images/radiobutton_unchecked.png</file>
  <file>images/radiobutton_unchecked_pressed.png</file>
  <file>images/radiobutton_unchecked_hover.png</file>
  <file>images/radiobutton_checked.png</file>
  <file>images/radiobutton_checked_pressed.png</file>
  <file>images/radiobutton_checked_hover.png</file>
  <file>images/pushbutton.png</file>
  <file>images/pushbutton_hover.png</file>
  <file>images/pushbutton_pressed.png</file>
  <file>images/checkbox_unchecked.png</file>
  <file>images/checkbox_unchecked_pressed.png</file>
  <file>images/checkbox_unchecked_hover.png</file>
  <file>images/checkbox_checked.png</file>
  <file>images/checkbox_checked_pressed.png</file>
  <file>images/checkbox_checked_hover.png</file>
  <file>images/down_arrow.png</file>
  <file>images/down_arrow_disabled.png</file>
  <file>images/up_arrow.png</file>
  <file>images/up_arrow_disabled.png</file>
  <file>images/sizegrip.png</file>

```

```

<file>images/spinup.png</file>
<file>images/spinup_off.png</file>
<file>images/spinup_hover.png</file>
<file>images/spinup_pressed.png</file>
<file>images/spindown.png</file>
<file>images/spindown_off.png</file>
<file>images/spindown_hover.png</file>
<file>images/spindown_pressed.png</file>
</qresource>
</RCC>
<d!`B[%Ni![%N/>
MainWindow
.. _ref-deploy-commercial:

```

## Deploying Commercial PyQt4 Applications

When deploying commercial PyQt4 applications it is necessary to discourage users from accessing the underlying PyQt4 modules for themselves. A user that used the modules shipped with your application to develop new applications would themselves be considered a developer and would need their own commercial PyQt4 license.

One solution to this problem is the `VendorID`

`<http://www.riverbankcomputing.com/software/vendorid/>` `__` package. This allows you to build Python extension modules that can only be imported by a digitally signed custom interpreter. The package enables you to create such an interpreter with your application embedded within it. The result is an interpreter that can only run your application, and PyQt4 modules that can only be imported by that interpreter. You can use the package to similarly restrict access to any extension module.

In order to build PyQt4 with support for the `VendorID` package, pass the `:option:--vendorid <configure.py --vendorid>` command line option to `:program:configure.py``.

### Support for Keyword Arguments

Starting with v4.7 PyQt4 supports the use of keyword arguments for optional arguments.

One thing to be aware of is that, although the PyQt4 and Qt documentation may indicate that an argument has a particular name, you may find that PyQt4 actually uses a different name. This is because the name of an argument is not part of the Qt API and there is some inconsistency in the way that similar arguments are named. Different versions of Qt may use a different name for an argument which wouldn't affect the C++ API but would break the Python API.

The docstrings that PyQt4 generates for all classes, functions and methods will contain the correct argument names. In a future version of PyQt4 the documentation will also contain the correct argument names.

#### Internationalisation of PyQt4 Applications

=====

PyQt4 and Qt include a comprehensive set of tools for translating applications into local languages. For a full description, see the Qt Linguist Manual in the Qt documentation.

The process of internationalising an application comprises the following steps.

- The programmer uses `:program:`pylupdate4`` to create or update a ``.ts`` translation file for each language that the application is to be translated into. A ``.ts`` file is an XML file that contains the strings to be translated and the corresponding translations that have already been made. `:program:`pylupdate4`` can be run any number of times during development to update the ``.ts`` files with the latest strings for translation.
- The translator uses Qt Linguist to update the ``.ts`` files with translations of the strings.
- The release manager then uses Qt's `:program:`lrelease`` utility to convert the ``.ts`` files to ``.qm`` files which are compact binary equivalents used by the application. If an application cannot find an appropriate ``.qm`` file, or a particular string hasn't been translated, then the strings used in the original source code are used instead.
- The release manager may optionally use `:program:`pyrcc4`` to embed the ``.qm`` files, along with other application resources such as icons, in a Python module. This may make packaging and distribution of the application easier.

`:program:`pylupdate4``

-----

`.. program:: pylupdate4`

`:program:`pylupdate4`` is PyQt4's equivalent to Qt's `:program:`lupdate`` utility and is used in exactly the same way. A Qt ``.pro`` project file is read that specifies the Python source files and Qt Designer interface files from which the text that needs to be translated is extracted. The ``.pro`` file also specifies the ``.ts`` translation files that `:program:`pylupdate4`` updates (or creates if necessary) and are subsequently used by Qt Linguist.

`:program:`pylupdate4`` will only be included if your copy of Qt includes the XML module.



## Differences Between PyQt4 and Qt

-----

Qt implements internationalisation support through the `QTranslator` class, and the `QCoreApplication::translate()`, `QObject::tr()` and `QObject::trUtf8()` methods. Usually the `tr()` method is used to obtain the correct translation of a message. The translation process uses a message context to allow the same message to be translated differently. `tr()` is actually generated by `moc` and uses the hardcoded class name as the context. On the other hand, `QCoreApplication::translate()` allows the context to be explicitly stated.

Unfortunately, because of the way Qt implements `tr()` (and `trUtf8()`) it is not possible for PyQt4 to exactly reproduce its behaviour. The PyQt4 implementation of `tr()` (and `trUtf8()`) uses the class name of the instance as the context. The key difference, and the source of potential problems, is that the context is determined dynamically in PyQt4, but is hardcoded in Qt. In other words, the context of a translation may change depending on an instance's class hierarchy. For example::

```
class A(QtCore.QObject):
    def hello(self):
        return self.tr("Hello")

class B(A):
    pass

a = A()
a.hello()

b = B()
b.hello()
```

In the above the message is translated by `a.hello()` using a context of `A`, and by `b.hello()` using a context of `B`. In the equivalent C++ version the context would be `A` in both cases.

The PyQt4 behaviour is unsatisfactory and may be changed in the future. It is recommended that `QCoreApplication.translate()` be used in preference to `tr()` (and `trUtf8()`). This is guaranteed to work with current and future versions of PyQt4 and makes it much easier to share message files between Python and C++ code. Below is the alternative implementation of `A` that uses `QCoreApplication.translate()`:

```
class A(QtCore.QObject):
    def hello(self):
```

```
return QtCore.QCoreApplication.translate("A", "Hello")
```

## New-style Signal and Slot Support

=====

This section describes the new style of connecting signals and slots introduced in PyQt4 v4.5.

One of the key features of Qt is its use of signals and slots to communicate between objects. Their use encourages the development of reusable components.

A signal is emitted when something of potential interest happens. A slot is a Python callable. If a signal is connected to a slot then the slot is called when the signal is emitted. If a signal isn't connected then nothing happens. The code (or component) that emits the signal does not know or care if the signal is being used.

The signal/slot mechanism has the following features.

- A signal may be connected to many slots.
- A signal may also be connected to another signal.
- Signal arguments may be any Python type.
- A slot may be connected to many signals.
- Connections may be direct (ie. synchronous) or queued (ie. asynchronous).
- Connections may be made across threads.
- Signals may be disconnected.

## Unbound and Bound Signals

-----

A signal (specifically an unbound signal) is an attribute of a class that is a sub-class of `QObject`. When a signal is referenced as an attribute of an instance of the class then PyQt4 automatically binds the instance to the signal in order to create a *bound signal*. This is the same mechanism that Python itself uses to create bound methods from class functions.

A bound signal has `connect()`, `disconnect()` and `emit()` methods that implement the associated functionality. It also has a `signal` attribute that is the signature of the signal that would be returned by Qt's `SIGNAL()` macro.

A signal may be overloaded, ie. a signal with a particular name may support

more than one signature. A signal may be indexed with a signature in order to select the one required. A signature is a sequence of types. A type is either a Python type object or a string that is the name of a C++ type. The name of a C++ type is automatically normalised so that, for example, ``QString`` can be used instead of the non-normalised ``const QString &``.

If a signal is overloaded then it will have a default that will be used if no index is given.

When a signal is emitted then any arguments are converted to C++ types if possible. If an argument doesn't have a corresponding C++ type then it is wrapped in a special C++ type that allows it to be passed around Qt's meta-type system while ensuring that its reference count is properly maintained.

Defining New Signals with :func:`~PyQt4.QtCore.pyqtSignal`  
-----

PyQt4 automatically defines signals for all Qt's built-in signals. New signals can be defined as class attributes using the :func:`~PyQt4.QtCore.pyqtSignal` factory.

```
.. function:: PyQt4.QtCore.pyqtSignal(types[, name])
```

Create one or more overloaded unbound signals as a class attribute.

:param types:

the types that define the C++ signature of the signal. Each type may be a Python type object or a string that is the name of a C++ type. Alternatively each may be a sequence of type arguments. In this case each sequence defines the signature of a different signal overload. The first overload will be the default.

:param name:

the name of the signal. If it is omitted then the name of the class attribute is used. This may only be given as a keyword argument.

:rtype:

an unbound signal

The following example shows the definition of a number of new signals::

```
from PyQt4.QtCore import QObject, pyqtSignal

class Foo(QObject):

    # This defines a signal called 'closed' that takes no arguments.
    closed = pyqtSignal()

    # This defines a signal called 'rangeChanged' that takes two
```

```

# integer arguments.
range_changed = pyqtSignal(int, int, name='rangeChanged')

# This defines a signal called 'valueChanged' that has two overloads,
# one that takes an integer argument and one that takes a QString
# argument. Note that because we use a string to specify the type of
# the QString argument then this code will run under Python v2 and v3.
valueChanged = pyqtSignal([int], ['QString'])

```

New signals should only be defined in sub-classes of `QObject`.

New signals defined in this way will be automatically added to the class's `QMetaObject`. This means that they will appear in Qt Designer and can be introspected using the `QMetaObject` API.

Overloaded signals should be used with care when an argument has a Python type that has no corresponding C++ type. PyQt4 uses the same internal C++ class to represent such objects and so it is possible to have overloaded signals with different Python signatures that are implemented with identical C++ signatures with unexpected results. The following is an example of this:

```

class Foo(QObject):

    # This will cause problems because each has the same C++ signature.
    valueChanged = pyqtSignal([dict], [list])

```

## Connecting, Disconnecting and Emitting Signals

-----

Signals are connected to slots using the `connect` method of a bound signal.

```
.. method:: connect(slot[, type=PyQt4.QtCore.Qt.AutoConnection])
```

Connect a signal to a slot. An exception will be raised if the connection failed.

```

:param slot:
    the slot to connect to, either a Python callable or another bound
    signal.
:param type:
    the type of the connection to make.

```

Signals are disconnected from slots using the `disconnect` method of a bound signal.

```
.. method:: disconnect([slot])
```

Disconnect one or more slots from a signal. An exception will be raised if the slot is not connected to the signal or if the signal has no connections at all.

:param slot:

the optional slot to disconnect from, either a Python callable or another bound signal. If it is omitted then all slots connected to the signal are disconnected.

Signals are emitted from using the :meth:`emit` method of a bound signal.

```
.. method:: emit(*args)
```

Emit a signal.

:param args:

the optional sequence of arguments to pass to any connected slots.

The following code demonstrates the definition, connection and emit of a signal without arguments::

```
from PyQt4.QtCore import QObject, pyqtSignal

class Foo(QObject):

    # Define a new signal called 'trigger' that has no arguments.
    trigger = pyqtSignal()

    def connect_and_emit_trigger(self):
        # Connect the trigger signal to a slot.
        self.trigger.connect(self.handle_trigger)

        # Emit the signal.
        self.trigger.emit()

    def handle_trigger(self):
        # Show that the slot has been called.

        print "trigger signal received"
```

The following code demonstrates the connection of overloaded signals::

```
from PyQt4.QtGui import QComboBox

class Bar(QComboBox):

    def connect_activated(self):
```

```

# The PyQt4 documentation will define what the default overload is.
# In this case it is the overload with the single integer argument.
self.activated.connect(self.handle_int)

# For non-default overloads we have to specify which we want to
# connect. In this case the one with the single string argument.
# (Note that we could also explicitly specify the default if we
# wanted to.)
self.activated[str].connect(self.handle_string)

def handle_int(self, index):
    print "activated signal passed integer", index

def handle_string(self, text):
    print "activated signal passed QString", text

```

### Connecting Signals Using Keyword Arguments

-----

It is also possible to connect signals by passing a slot as a keyword argument corresponding to the name of the signal when creating an object, or using the `pyqtConfigure()` method of `QObject`. For example the following three fragments are equivalent::

```

act = QtGui.QAction("Action", self)
act.triggered.connect(self.on_triggered)

act = QtGui.QAction("Action", self, triggered=self.on_triggered)

act = QtGui.QAction("Action", self)
act.pyqtConfigure(triggered=self.on_triggered)

```

### The `~PyQt4.QtCore.pyqtSlot` Decorator

-----

Although PyQt4 allows any Python callable to be used as a slot when connecting signals, it is sometimes necessary to explicitly mark a Python method as being a Qt slot and to provide a C++ signature for it. PyQt4 provides the `~PyQt4.QtCore.pyqtSlot` function decorator to do this.

```
.. function:: PyQt4.QtCore.pyqtSlot(types[, name][, result])
```

Decorate a Python method to create a Qt slot.

`:param types:`

the types that define the C++ signature of the slot. Each type may be

a Python type object or a string that is the name of a C++ type.

:param name:

the name of the slot that will be seen by C++. If omitted the name of the Python method being decorated will be used. This may only be given as a keyword argument.

:param result:

the type of the result and may be a Python type object or a string that specifies a C++ type. This may only be given as a keyword argument.

Connecting a signal to a decorated Python method also has the advantage of reducing the amount of memory used and is slightly faster.

For example::

```
from PyQt4.QtCore import QObject, pyqtSlot
```

```
class Foo(QObject):
```

```
    @pyqtSlot()
```

```
    def foo(self):
```

```
        """ C++: void foo() """
```

```
    @pyqtSlot(int, str)
```

```
    def foo(self, arg1, arg2):
```

```
        """ C++: void foo(int, QString) """
```

```
    @pyqtSlot(int, name='bar')
```

```
    def foo(self, arg1):
```

```
        """ C++: void bar(int) """
```

```
    @pyqtSlot(int, result=int)
```

```
    def foo(self, arg1):
```

```
        """ C++: int foo(int) """
```

```
    @pyqtSlot(int, QObject)
```

```
    def foo(self, arg1):
```

```
        """ C++: int foo(int, QObject *) """
```

It is also possible to chain the decorators in order to define a Python method several times with different signatures. For example::

```
from PyQt4.QtCore import QObject, pyqtSlot
```

```
class Foo(QObject):
```

```
    @pyqtSlot(int)
```

```
    @pyqtSlot('QString')
```

```
    def valueChanged(self, value):
```

```
""" Two slots will be defined in the QMetaObject. """
```

## Connecting Slots By Name

-----

PyQt4 supports the `QtCore.QMetaObject.connectSlotsByName()` function that is most commonly used by `:program:`pyuic4`` generated Python code to automatically connect signals to slots that conform to a simple naming convention. However, where a class has overloaded Qt signals (ie. with the same name but with different arguments) PyQt4 needs additional information in order to automatically connect the correct signal.

For example the `QtGui.QSpinBox` class has the following signals::

```
void valueChanged(int i);
void valueChanged(const QString &text);
```

When the value of the spin box changes both of these signals will be emitted. If you have implemented a slot called `on_spinbox_valueChanged` (which assumes that you have given the `QSpinBox` instance the name `spinbox`) then it will be connected to both variations of the signal. Therefore, when the user changes the value, your slot will be called twice - once with an integer argument, and once with a unicode or `QString` argument.

This also happens with signals that take optional arguments. Qt implements this using multiple signals. For example, `QtGui.QAbstractButton` has the following signal::

```
void clicked(bool checked = false);
```

Qt implements this as the following::

```
void clicked();
void clicked(bool checked);
```

The `:func:`~PyQt4.QtCore.pyqtSlot`` decorator can be used to specify which of the signals should be connected to the slot.

For example, if you were only interested in the integer variant of the signal then your slot definition would look like the following::

```
@pyqtSlot(int)
def on_spinbox_valueChanged(self, i):
    # i will be an integer.
    pass
```

If you wanted to handle both variants of the signal, but with different Python



methods, then your slot definitions might look like the following::

```
@pyqtSlot(int, name='on_spinbox_valueChanged')
def spinbox_int_value(self, i):
    # i will be an integer.
    pass

@pyqtSlot(str, name='on_spinbox_valueChanged')
def spinbox_qstring_value(self, s):
    # s will be a Python string object (or a QString if they are enabled).
    pass
```

The following shows an example using a button when you are not interested in the optional argument::

```
@pyqtSlot()
def on_button_clicked(self):
    pass
```

#### Mixing New-style and Old-style Connections

-----

The implementation of new-style connections is slightly different to the implementation of old-style connections. An application can freely use both styles subject to the restriction that any individual new-style connection should only be disconnected using the new style. Similarly any individual old-style connection should only be disconnected using the old style.

You should also be aware that `pyuic4` generates code that uses old-style connections.

#### Integrating Python and JavaScript in QtWebKit

=====

QtWebKit uses slots to expose class methods implemented in C++ as JavaScript methods that can be called from scripts embedded in HTML. Python class methods that have been decorated behave in exactly the same way.

In the same way, properties created using `PyQt4.QtCore.pyqtProperty` are also automatically exposed as JavaScript properties.

#### Things to be Aware Of

=====

#### Python Strings, Qt Strings and Unicode

-----

PyQt4 uses the `QString` class to represent Unicode strings, and the `QByteArray` to represent byte arrays or strings. In Python v3 the

corresponding native object types are `str` and `bytes`. In Python v2 the corresponding native object types are `unicode` and `str`.

PyQt4 does its best to automatically convert between objects of the various types. Explicit conversions can be easily made where necessary.

In some cases PyQt4 will not perform automatic conversions where it is necessary to distinguish between different overloaded methods.

For Python v3 the following conversions are done by default.

- If Qt expects a `char *` (or a `const` version) then PyQt4 will accept a `str` or `QString` that contains only ASCII characters, a `bytes`, a `QByteArray`, or a Python object that implements the buffer protocol.
- If Qt expects a `char` (or a `const` version) then PyQt4 will accept the same types as for `char *` and also require that a single character is provided.
- If Qt expects a `signed char *` or an `unsigned char *` (or a `const` version) then PyQt4 will accept a `bytes`.
- If Qt expects a `signed char` or an `unsigned char` (or a `const` version) then PyQt4 will accept a `bytes` of length 1.
- If Qt expects a `QString` then PyQt4 will accept a `str`, a `bytes` that contains only ASCII characters, a `QChar` or a `QByteArray`.
- If Qt expects a `QByteArray` then PyQt4 will also accept a `str` that contains only Latin-1 characters, or a `bytes`.

For Python v2 the following conversions are done by default.

- If Qt expects a `char *`, `signed char *` or an `unsigned char *` (or a `const` version) then PyQt4 will accept a `unicode` or `QString` that contains only ASCII characters, a `str`, a `QByteArray`, or a Python object that implements the buffer protocol.
- If Qt expects a `char`, `signed char` or an `unsigned char` (or a `const` version) then PyQt4 will accept the same types as for `char *`, `signed char *` and `unsigned char *` and also require that a single character is provided.
- If Qt expects a `QString` then PyQt4 will accept a `unicode`, a `str` that contains only ASCII characters, a `QChar` or a `QByteArray`.
- If Qt expects a `QByteArray` then PyQt4 will accept a `unicode` that contains only Latin-1 characters, or a `str`.

Note that the different behaviour between Python v2 and v3 is due to v3's reduced support for the buffer protocol.

## Garbage Collection

-----

C++ does not garbage collect unreferenced class instances, whereas Python does. In the following C++ fragment both colours exist even though the first can no longer be referenced from within the program::

```
col = new QColor();
col = new QColor();
```

In the corresponding Python fragment, the first colour is destroyed when the second is assigned to `col`::

```
col = QtGui.QColor()
col = QtGui.QColor()
```

In Python, each colour must be assigned to different names. Typically this is done within class definitions, so the code fragment would be something like::

```
self.col1 = QtGui.QColor()
self.col2 = QtGui.QColor()
```

Sometimes a Qt class instance will maintain a pointer to another instance and will eventually call the destructor of that second instance. The most common example is that a `QObject` (and any of its sub-classes) keeps pointers to its children and will automatically call their destructors. In these cases, the corresponding Python object will also keep a reference to the corresponding child objects.

So, in the following Python fragment, the first `QLabel` is not destroyed when the second is assigned to `lab` because the parent `QWidget` still has a reference to it::

```
parent = QtGui.QWidget()
lab = QtGui.QLabel("First label", parent)
lab = QtGui.QLabel("Second label", parent)
```

## Multiple Inheritance

-----

It is not possible to define a new Python class that sub-classes from more than one Qt class.

## Access to Protected Member Functions

-----

When an instance of a C++ class is not created from Python it is not possible to access the protected member functions, or emit any signals, of that instance. Attempts to do so will raise a Python exception. Also, any Python methods corresponding to the instance's virtual member functions will never be called.

## ``None`` and ``NULL``

-----

Throughout PyQt4, the ``None`` value can be specified wherever ``NULL`` is acceptable to the underlying C++ code.

Equally, ``NULL`` is converted to ``None`` whenever it is returned by the underlying C++ code.

## Support for ``void \*``

-----

PyQt4 (actually SIP) represents ``void \*`` values as objects of type ``sip.voidptr``. Such values are often used to pass the addresses of external objects between different Python modules. To make this easier, a Python integer (or anything that Python can convert to an integer) can be used whenever a ``sip.voidptr`` is expected.

A ``sip.voidptr`` may be converted to a Python integer by using the ``int()`` builtin function.

A ``sip.voidptr`` may be converted to a Python string by using its ``asstring()`` method. The ``asstring()`` method takes an optional integer argument which is the length of the data in bytes.

A ``sip.voidptr`` may also be given a size (ie. the size of the block of memory that is pointed to) by calling its ``setsize()`` method. If it has a size then it is also able to support Python's buffer protocol and behaves like a Python ``memoryview`` object so that the block of memory can be treated as a mutable list of bytes. It also means that the Python `struct` module can be used to unpack and pack binary data structures in memory, memory mapped files or shared memory.

## ``super`` and PyQt4 Classes

-----  
In versions of PyQt4 earlier than v4.5 there were restrictions on the use of  
``super`` with PyQt4 classes. These restrictions no longer apply with v4.5 and  
later.

#### The PyQt4 Resource System

=====

PyQt4 supports Qt's resource system. This is a facility for embedding  
resources such as icons and translation files in an application. This makes  
the packaging and distribution of those resources much easier.

A ``.qrc`` resource collection file is an XML file used to specify which  
resource files are to be embedded. The application then refers to the resource  
files by their original names but preceded by a colon.

For a full description, including the format of the ``.qrc`` files, see the Qt  
Resource System in the Qt documentation.

:program:`pyrcc4`  
-----

:program:`pyrcc4` is PyQt4's equivalent to Qt's :program:`rcc` utility and is  
used in exactly the same way. :program:`pyrcc4` reads the ``.qrc`` file, and  
the resource files, and generates a Python module that only needs to be  
``import``ed by the application in order for those resources to be made  
available just as if they were the original files.

In addition to the command line options that are common with :program:`rcc`,  
the following are also supported:

.. program:: pyrcc4

.. cmdoption:: -py2

Generate code that will work for all versions of Python v2.x. Although  
this is the default, the option should be specified explicitly in case the  
default is changed in a future version.

.. cmdoption:: -py3

Generate code that will work for all versions of Python starting with  
Python v2.6.

:program:`pyrcc4` will only be included if your copy of Qt includes the XML  
module.

## Using PyQt4 from the Python Shell

PyQt4 installs an input hook (using `PyOS_InputHook`) that processes events when an interactive interpreter is waiting for user input. This means that you can, for example, create widgets from the Python shell prompt, interact with them, and still being able to enter other Python commands.

For example, if you enter the following in the Python shell::

```
>>> from PyQt4 import QtGui
>>> a = QtGui.QApplication([])
>>> w = QtGui.QWidget()
>>> w.show()
>>> w.hide()
>>>
```

The widget would be displayed when `w.show()` was entered and hidden as soon as `w.hide()` was entered.

The installation of an input hook can cause problems for certain applications (particularly those that implement a similar feature using different means).

The `PyQt4.QtCore` module contains the

`PyQt4.QtCore.pyqtRemoveInputHook` and

`PyQt4.QtCore.pyqtRestoreInputHook` functions that remove and restore the input hook respectively.

PyQt4 and Python v3

PyQt4 fully supports all versions of Python v3. The default behaviour is different in some areas to the default behaviour with Python v2. These incompatible differences were introduced in order to make PyQt4 more Pythonic. However it is very easy to revert to the default Python v2 behaviour on a class by class basis if required. (See the section [ref-incompat-apis](#).)

### QAbstractSpinBox

The following PyQt4 calls have changed signatures to avoid the need for mutable strings::

```
QAbstractSpinBox.fixup(str input) -> str
QAbstractSpinBox.validate(str input, int pos) -> QValidator.State, str, int
```

### QChar

-----

The `QChar` class is implemented as a mapped type that is automatically converted to and from a Python string.

#### QClipboard

-----

The following PyQt4 call has a changed signature to avoid the need for mutable strings::

```
QClipboard.text(str subtype, QClipboard.Mode mode=QClipboard.Clipboard) -> str, str
```

#### QDate

-----

The `QDate.__hash__()` returns a hash of the string representation so that two objects with the same date will have the same hash.

The default behaviour with Python v2 is to return the object's `id()` so that two objects with the same date will have different hashes.

#### QDateTime

-----

The `QDateTime.__hash__()` method returns a hash of the string representation so that two objects with the same date and time will have the same hash.

The default behaviour with Python v2 is to return the object's `id()` so that two objects with the same date and time will have different hashes.

#### QDateTimeEdit

-----

The following PyQt4 calls have changed signatures to avoid the need for mutable strings::

```
QDateTimeEdit.fixup(str input) -> str
QDateTimeEdit.validate(str input, int pos) -> QValidator.State, str, int
```

#### QDoubleSpinBox

-----

The following PyQt4 calls have changed signatures to avoid the need for mutable

strings::

```
QDoubleSpinBox.fixup(str input) -> str
QDoubleSpinBox.validate(str input, int pos) -> QValidator.State, str, int
```

QDoubleValidator

-----

The following PyQt4 call has a changed signature to avoid the need for mutable strings::

```
QDoubleValidator.validate(str input, int pos) -> QValidator.State, str, int
```

QFileDialog

-----

The following PyQt4 calls have changed signatures to avoid the need for mutable strings::

```
QFileDialog.getOpenFileName(QWidget parent=None, str caption=None, str dir=None, str filter=None,
QFileDialog.Options options=0) -> str
QFileDialog.getOpenFileNames(QWidget parent=None, str caption=None, str dir=None, str filter=None,
QFileDialog.Options options=0) -> list(str)
QFileDialog.getSaveFileName(QWidget parent=None, str caption=None, str dir=None, str filter=None,
QFileDialog.Options options=0) -> str
```

The static methods `QFileDialog.getOpenFileNameAndFilter()`, `QFileDialog.getOpenFileNamesAndFilter()` and `QFileDialog.getSaveFileNameAndFilter()` have been added which return a tuple of the name(s) and the selected filter. These can also be used with Python v2.

QFontMetrics

-----

The methods `QFontMetrics.widthChar()` and `QFontMetrics.boundingRectChar()` have been added which accept a Python string of length one and call the C++ `QFontMetrics::width()` and `QFontMetrics::boundingRect()` methods passing the character as a `QChar` (rather than a single character `QString`).

QFontMetricsF

-----

The methods `QFontMetricsF.widthChar()` and



`QFontMetricsF.boundingRectChar()` have been added which accept a Python string of length one and call the C++ `QFontMetricsF::width()` and `QFontMetricsF::boundingRect()` methods passing the character as a `QChar` (rather than a single character `QString`).

#### QIntValidator

-----

The following PyQt4 call has a changed signature to avoid the need for mutable strings::

```
QIntValidator.validate(str input, int pos) -> QValidator.State, str, int
```

#### QLatin1Char

-----

The `QLatin1Char` class is not implemented.

#### QLatin1String

-----

The `QLatin1String` class is not implemented.

#### QPyNullVariant

-----

The `QPyNullVariant` class is used to represent a null `QVariant`. It is automatically converted to a C++ `QVariant` when required.

A null C++ `QVariant` is automatically converted to a `QPyNullVariant` unless the type of the data in the `QVariant` itself supports the concept of a null value (i.e. it has an `isNull()` method). In this case a null C++ `QVariant` is converted to a null instance of the data type. The exception to this rule is that a C++ `QVariant` containing a null `QString` is always converted to a `QPyNullVariant`.

#### QRegExpValidator

-----

The following PyQt4 call has a changed signature to avoid the need for mutable strings::

```
QRegExpValidator.validate(str input, int pos) -> QValidator.State, str, int
```

## QSettings

-----

The `QSettings.value()` method takes an optional `type` keyword argument that specifies the type of the value to return. It can either be a Python type object or a string specifying the name of a C++ type.

Using this argument avoids potential portability problems where the type of a value may not be as expected because the platform specific backend to `QSettings` may not store the necessary type information.

The argument can also be used with Python v2.

## QSpinBox

-----

The following PyQt4 calls have changed signatures to avoid the need for mutable strings::

```
QSpinBox.fixup(str input) -> str
QSpinBox.validate(str input, int pos) -> QValidator.State, str, int
```

## QString

-----

The `QString` class is implemented as a mapped type that is automatically converted to and from a Python string. In addition a `None` is converted to a null `QString`. However, a null `QString` is converted to an empty Python string (and not `None`). (This is because Qt often returns a null `QString` when it should probably return an empty `QString`.)

## QStringList

-----

The `QStringList` class is implemented as a mapped type that is automatically converted to and from a Python list of strings.

## QStringMatcher

-----

The `QStringMatcher` class is not implemented.

## QStringRef

-----

The `QStringRef` class is implemented as a mapped type that is automatically converted to and from a Python string.

## QTextDecoder

-----

The following C++ call is not wrapped because it expects `QString` to be mutable::

```
void toUnicode(QString *target, const char *chars, int len)
```

## QTextStream

-----

The C++ functions `bin()`, `hex()` and `oct()` are named `bin_()`, `hex_()` and `oct_()` respectively in Python. This allows the import style `from PyQt4.QtCore import *` to be used without them clashing with the Python built-in functions with the same names.

The following C++ calls are not wrapped because they expect `QString` to be mutable::

```
QTextStream(QString *string, QIODevice::OpenMode openMode = QIODevice::ReadWrite)
void setString(QString *string, QIODevice::OpenMode openMode = QIODevice::ReadWrite)
QString *string()
QTextStream &operator>>(QChar &c)
QTextStream &operator>>(QString &s)
```

## QTime

-----

The `QTime.__hash__()` returns a hash of the string representation so that two objects with the same time will have the same hash.

The default behaviour with Python v2 is to return the object's `id()` so that two objects with the same time will have different hashes.

## QUrl

-----

The `QUrl.__hash__()` method returns a hash of the string representation so that two objects with the same URL will have the same hash.

The default behaviour with Python v2 is to return the object's `id()` so that two objects with the same URL will have different hashes.

#### QValidator

-----

The following PyQt4 calls have changed signatures to avoid the need for mutable strings::

```
QValidator.fixup(str input) -> str
QValidator.validate(str input, int pos) -> QValidator.State, str, int
```

#### QVariant

-----

The `QVariant` class is implemented as a mapped type. Any Python object can be passed when a `QVariant` instance is expected. When Qt returns a `QVariant` then it will automatically be converted to the original Python object or an equivalent.

`None` is interpreted as an invalid `QVariant` and vice versa.

The `QPyNullVariant` class is used to represent a null `QVariant`.

#### QWebPage

-----

The following PyQt4 call has a changed signature to avoid the need for mutable strings::

```
QWebPage.javaScriptPrompt(QWebFrame originatingFrame, str msg, str defaultValue) -> bool, str
```

#### QXmlStreamWriter

-----

The following C++ call is not wrapped because it expects `QString` to be mutable::

```
QXmlStreamWriter(QString *string)
```

Integrating Python and QML

=====

Qt v4.7 introduced QML as a means of declaratively describing a user interface and using JavaScript as a scripting language within QML. It is possible to write complete standalone QML applications, or to combine them with C++.

PyQt4 supports the integration of Python and QML as far as it can - given the limitations of the QML implementation.

There are three types of QML application:

- *Pure* applications that are written entirely in QML and can be run using the `:program:`qmlviewer`` tool provided with Qt. PyQt4 fully supports this type of application. The examples provided by `:program:`qtdemo.py`` under the *Qt Declarative Examples* heading are all of this type.
- QML allows `QObject`` instances to be used in QML applications. QML code is able to call an object's slots and has read and write access to the object's properties. QML code can also respond to changes to the value of a property. PyQt4 fully supports the use objects created in Python in this way. The `:program:`minehunt.py`` example under the *Demonstrations* heading of `:program:`qtdemo.py`` is an example of this type of application.
- QML also allows `QObject`` sub-classes to be used in QML applications so that new instances are created from QML. PyQt4 does not support this. The reason is that QML uses information generated at compile time (specifically it uses `QObject::staticMetaObject``) rather than information created dynamically at run time (i.e. `QObject::metaObject()``). This approach is fine for a static language like C++ but causes problems for languages such as Python that allow types to be created dynamically. This limitation doesn't place any restriction on the functionality of a Python/QML application, it only places restrictions on how that application is written.

QML can implement JavaScript functions and define signals. PyQt4 allows both of these to be accessed transparently from Python. The following is a simple example application that displays the current date and time when the user clicks on it.

The following is the QML (in the `:file:`message.qml``) that defines the user interface::

```
import Qt 4.7

Rectangle {
    signal messageRequired;

    function updateMessage(text) {
        messageText.text = text
    }
}
```

```

    }

    anchors.fill: parent; color: "black"

    Text {
        id: messageText
        anchors.centerIn: parent; color: "white"
    }

    MouseArea {
        anchors.fill: parent
        onClicked: messageRequired()
    }
}

```

This defines a signal ``messageRequired`` which is emitted when the user clicks on the mouse area. It also implements a function ``updateMessage()`` which updates the message being displayed.

The following is the Python code that implements the application logic::

```

import sys

from PyQt4.QtCore import QDateTime, QObject, QUrl, pyqtSignal
from PyQt4.QtGui import QApplication
from PyQt4.QtDeclarative import QDeclarativeView

# This class will emit the current date and time as a signal when
# requested.
class Now(QObject):

    now = pyqtSignal(str)

    def emit_now(self):
        formatted_date = QDateTime.currentDateTime().toString()
        self.now.emit(formatted_date)

app = QApplication(sys.argv)

now = Now()

# Create the QML user interface.
view = QDeclarativeView()
view.setSource(QUrl('message.qml'))
view.setResizeMode(QDeclarativeView.SizeRootObjectToView)

```

```

# Get the root object of the user interface. It defines a
# 'messageRequired' signal and JavaScript 'updateMessage' function. Both
# can be accessed transparently from Python.
rootObject = view.rootObject()

# Provide the current date and time when requested by the user interface.
rootObject.messageRequired.connect(now.emit_now)

# Update the user interface with the current date and time.
now.now.connect(rootObject.updateMessage)

# Provide an initial message as a prompt.
rootObject.updateMessage("Click to get the current date and time")

# Display the user interface and allow the user to interact with it.
view.setGeometry(100, 100, 400, 240)
view.show()

app.exec_()

```

Hopefully the comments in the code are sufficient explanation. The important things to note are that the signal and JavaScript function appear as appropriate attributes of the root object `QDeclarativeItem` returned by the `rootObject()` method of `QDeclarativeView` and can be connected to and called respectively.

```

<d!`B[%N(i=Text
Titel[%
SprkN/>

```

MainWindow

Support for QSettings

```

=====

```

```

.. versionadded:: v4.8.3

```

Qt provides the `QSettings` class as a platform independent API for the persistent storage and retrieval of application settings. Settings are retrieved using the `QSettings.value()` method which, when using v1 of PyQt4's `QVariant` API returns a `QVariant` object. An application will then typically convert the `QVariant` to the appropriate fundamental type using `QVariant.toBool()`, `QVariant.toInt()`.

The explicit use of these conversion methods works around a problem with the way different platforms implement the storage of settings. Some platforms only ever store string values which means that the type of the original value is lost. Explicitly calling a conversion method provides the missing type information about the value being retrieved.

A problem then arises when v2 of the `QVariant` API is used (i.e. the default

for Python v3) because those explicit conversion methods are not available. Therefore a setting with an integer value of `42` may be retrieved as a string value of `'42'`. This inconsistency is made worse by being platform specific.

As a solution to the problem PyQt4's implementation of `QSettings.value()` takes an optional third argument called `type`. This is either a Python type object, e.g. `int`, or a string that is the name of a C++ type, e.g. `'QStringList'`. The value returned will be an object of the requested type.

For example::

```
from PyQt4.QtCore import QSettings, QPoint

settings = QSettings('foo', 'foo')

settings.setValue('int_value', 42)
settings.setValue('point_value', QPoint(10, 12))

# This will write the setting to the platform specific storage.
del settings

settings = QSettings('foo', 'foo')

int_value = settings.value('int_value', type=int)
print("int_value: %s" % repr(int_value))

point_value = settings.value('point_value', type=QPoint)
print("point_value: %s" % repr(point_value))
```

When this is executed then the following will be displayed for all platforms::

```
int_value: 42
point_value: PyQt4.QtCore.QPoint(10, 20)
```

If the value of the setting is a container (corresponding to either `QVariantList`, `QVariantMap` or `QVariantHash`) then the type is applied to the contents of the container.

For example::

```
from PyQt4.QtCore import QSettings

settings = QSettings('foo', 'foo')

settings.setValue('list_value', [1, 2, 3])
settings.setValue('dict_value', {'one': 1, 'two': 2})
```



```
# This will write the setting to the platform specific storage.
del settings

settings = QSettings('foo', 'foo')

list_value = settings.value('list_value', type=int)
print("list_value: %s" % repr(list_value))

dict_value = settings.value('dict_value', type=int)
print("dict_value: %s" % repr(dict_value))
```

When this is executed then the following will be displayed for all platforms::

```
list_value: [1, 2, 3]
dict_value: {'one': 1, 'two': 2}
.. _ref-dbus:
```

## DBus Support

=====

PyQt4 provides two different modules that implement support for DBus. The `:mod:`~PyQt4.QtDBus`` module provides wrappers for the standard Qt DBus classes. The `:mod:`dbus.mainloop.qt`` module add support for the Qt event loop to the standard ```dbus-python``` Python module.

```
:mod:`~PyQt4.QtDBus`
```

-----

The `:mod:`~PyQt4.QtDBus`` module is used in a similar way to the C++ library it wraps. The main difference is in the way it supports the demarshalling of DBus structures. C++ relies on the template-based registration of types using ```qDBusRegisterMetaType()``` which isn't possible from Python. Instead a slot that accepts a DBus structure in an argument should specify a slot with a single `:class:`~PyQt4.QtDBus.QDBusMessage`` argument. The implementation of the slot should then extract the arguments from the message using its `:meth:`~PyQt4.QtDBus.QDBusMessage.arguments`` method.

For example, say we have a DBus method called ```setColors()``` that has a single argument that is an array of structures of three integers (red, green and blue). The DBus signature of the argument would then be ```a(iii)```. In C++ you would typically define a class to hold the red, green and blue values and so your code would include the following (incomplete) fragments::

```
struct Color
{
    int red;
    int green;
```

```

    int blue;
};
Q_DECLARE_METATYPE(Color)

qDBusRegisterMetaType<Color>();

class ServerAdaptor : public QDBusAbstractAdaptor
{
    Q_OBJECT

public slots:
    void setColors(QList<const Color &> colors);
};

```

The Python version is, of course, much simpler::

```

class ServerAdaptor(QDBusAbstractAdaptor):

    @pyqtSlot(QDBusMessage)
    def setColors(self, message):
        # Get the single argument.
        colors = message.arguments()[0]

        # The argument will be a list of 3-tuples of ints.
        for red, green, blue in colors:
            print("RGB:", red, green, blue)

```

Note that this technique can be used for arguments of any type, it is only require if Dbus structures are involved.

```

:mod:`dbus.mainloop.qt`
-----

```

The `dbus.mainloop.qt` module provides support for the Qt event loop to `dbus-python`. The module's API is almost identical to that of the `dbus.mainloop.glib` modules that provides support for the GLib event loop.

The `dbus.mainloop.qt` module contains the following function.

```

.. function:: DBusQtMainLoop(set_as_default=False)

```

Create a `dbus.mainloop.NativeMainLoop` object that uses the the Qt event loop.

```

:param set_as_default:
    is optionally set to make the main loop instance the default for all

```

new Connection and Bus instances. It may only be specified as a keyword argument, and not as a positional argument.

The following code fragment is all that is normally needed to set up the standard ``dbus-python`` language bindings package to be used with PyQt4::

```
from dbus.mainloop.qt import DBusQtMainLoop
```

```
DBusQtMainLoop(set_as_default=True)
```

Using Qt Designer

=====

Qt Designer is the Qt tool for designing and building graphical user interfaces. It allows you to design widgets, dialogs or complete main windows using on-screen forms and a simple drag-and-drop interface. It has the ability to preview your designs to ensure they work as you intended, and to allow you to prototype them with your users, before you have to write any code.

Qt Designer uses XML ``.ui`` files to store designs and does not generate any code itself. Qt includes the ``uic`` utility that generates the C++ code that creates the user interface. Qt also includes the ``QUiLoader`` class that allows an application to load a ``.ui`` file and to create the corresponding user interface dynamically.

PyQt4 does not wrap the ``QUiLoader`` class but instead includes the :mod:`~PyQt4.uic` Python module. Like ``QUiLoader`` this module can load ``.ui`` files to create a user interface dynamically. Like the :program:`uic` utility it can also generate the Python code that will create the user interface. PyQt4's :program:`pyuic4` utility is a command line interface to the :mod:`~PyQt4.uic` module. Both are described in detail in the following sections.

Using the Generated Code

-----

The code that is generated has an identical structure to that generated by Qt's ``uic`` and can be used in the same way.

The code is structured as a single class that is derived from the Python ``object`` type. The name of the class is the name of the toplevel object set in Designer with ``Ui\_`` prepended. (In the C++ version the class is defined in the ``Ui`` namespace.) We refer to this class as the *\*form class\**.

The class contains a method called ``setupUi()``. This takes a single argument which is the widget in which the user interface is created. The type of this argument (typically ``QDialog``, ``QWidget`` or ``QMainWindow``) is set in Designer. We refer to this type as the *\*Qt base class\**.

In the following examples we assume that a ``.ui`` file has been created containing a dialog and the name of the ``QDialog`` object is ``ImageDialog``. We also assume that the name of the file containing the generated Python code is :file:`ui\_imagedialog.py`. The generated code can then be used in a number of ways.

The first example shows the direct approach where we simply create a simple application to create the dialog::

```
import sys
from PyQt4.QtGui import QApplication, QDialog
from ui_imagedialog import Ui_ImageDialog

app = QApplication(sys.argv)
window = QDialog()
ui = Ui_ImageDialog()
ui.setupUi(window)

window.show()
sys.exit(app.exec_())
```

The second example shows the single inheritance approach where we sub-class ``QDialog`` and set up the user interface in the ``\_\_init\_\_()`` method::

```
from PyQt4.QtGui import QDialog
from ui_imagedialog import Ui_ImageDialog

class ImageDialog(QDialog):
    def __init__(self):
        QDialog.__init__(self)

        # Set up the user interface from Designer.
        self.ui = Ui_ImageDialog()
        self.ui.setupUi(self)

        # Make some local modifications.
        self.ui.colorDepthCombo.addItem("2 colors (1 bit per pixel)")

        # Connect up the buttons.
        self.ui.okButton.clicked.connect(self.accept)
        self.ui.cancelButton.clicked.connect(self.reject)
```

The third example shows the multiple inheritance approach::

```
from PyQt4.QtGui import QDialog
from ui_imagedialog import Ui_ImageDialog
```

```

class ImageDialog(QDialog, Ui_ImageDialog):
    def __init__(self):
        QDialog.__init__(self)

        # Set up the user interface from Designer.
        self.setupUi(self)

        # Make some local modifications.
        self.colorDepthCombo.addItem("2 colors (1 bit per pixel)")

        # Connect up the buttons.
        self.okButton.clicked.connect(self.accept)
        self.cancelButton.clicked.connect(self.reject)

```

It is also possible to use the same approach used in PyQt v3. This is shown in the final example::

```

from ui_imagedialog import ImageDialog

class MyImageDialog(ImageDialog):
    def __init__(self):
        ImageDialog.__init__(self)

        # Make some local modifications.
        self.colorDepthCombo.addItem("2 colors (1 bit per pixel)")

        # Connect up the buttons.
        self.okButton.clicked.connect(self.accept)
        self.cancelButton.clicked.connect(self.reject)

```

For a full description see the Qt Designer Manual in the Qt Documentation.

The :mod:`~PyQt4.uic` Module

-----

The :mod:`~PyQt4.uic` module contains the following functions and objects.

.. module:: PyQt4.uic

.. data:: widgetPluginPath

The list of the directories that are searched for widget plugins. Initially it contains the name of the directory that contains the widget plugins included with PyQt4.

.. function:: compileUi(uifile, pyfile[, execute=False[, indent=4[, pyqt3\_wrapper=False[, from\_imports=False[, resource\_suffix='\_rc']]]]])

Generate a Python module that will create a user interface from a Qt Designer ``.ui`` file.

:param uifile:

the file name or file-like object containing the ``.ui`` file.

:param pyfile:

the file-like object to which the generated Python code will be written to.

:param execute:

is optionally set if a small amount of additional code is to be generated that will display the user interface if the code is run as a standalone application.

:param indent:

the optional number of spaces used for indentation in the generated code. If it is zero then a tab character is used instead.

:param pyqt3\_wrapper:

is optionally set if a small wrapper is to be generated that allows the generated code to be used as it is by PyQt v3 applications.

:param from\_imports:

is optionally set to generate import statements that are relative to ``'``. At the moment this only applies to the import of resource modules.

:resource\_suffix:

is the suffix appended to the basename of any resource file specified in the ``.ui`` file to create the name of the Python module generated from the resource file by ``pyrcc4``. The default is ``'\_rc'``, i.e. if the ``.ui`` file specified a resource file called ``foo.qrc`` then the corresponding Python module is ``foo\_rc``.

```
.. function:: compileUiDir(dir[, recurse=False[, map=None[, \**compileUi_args]])
```

Create Python modules from Qt Designer ``.ui`` files in a directory or directory tree.

:param dir:

the name of the directory to scan for files whose name ends with ``.ui``. By default the generated Python module is created in the same directory ending with ``.py``.

:param recurse:

is optionally set if any sub-directories should be scanned.

:param map:

an optional callable that is passed the name of the directory containing the ``.ui`` file and the name of the Python module that will be created. The callable should return a tuple of the name of the directory in which the Python module will be created and the (possibly modified) name of the module.

:param compileUi\_args:

are any additional keyword arguments that are passed to `:func:~PyQt4.uic.compileUi`` that is called to create each Python module.

```
.. function:: loadUiType(uifile[, from_imports=False[, resource_suffix='_rc']])
```

Load a Qt Designer ``.ui`` file and return a tuple of the generated `*form class*` and the `*Qt base class*`. These can then be used to create any number of instances of the user interface without having to parse the ``.ui`` file more than once.

`:param uifile:`

the file name or file-like object containing the ``.ui`` file.

`:param from_imports:`

is optionally set to use import statements that are relative to ``.``. At the moment this only applies to the import of resource modules.

`:resource_suffix:`

is the suffix appended to the basename of any resource file specified in the ``.ui`` file to create the name of the Python module generated from the resource file by `pyrcc4``. The default is ``.rc``, i.e. if the ``.ui`` file specified a resource file called `foo.qrc`` then the corresponding Python module is `foo_rc``.

`:rtype:`

the `*form class*` and the `*Qt base class*`.

```
.. function:: loadUi(uifile[, baseinstance=None[, package="[, resource_suffix='_rc']]])
```

Load a Qt Designer ``.ui`` file and returns an instance of the user interface.

`:param uifile:`

the file name or file-like object containing the ``.ui`` file.

`:param baseinstance:`

the optional instance of the `*Qt base class*`. If specified then the user interface is created in it. Otherwise a new instance of the base class is automatically created.

`:param package:`

the optional package that is the base package for any relative imports of custom widgets.

`:resource_suffix:`

is the suffix appended to the basename of any resource file specified in the ``.ui`` file to create the name of the Python module generated from the resource file by `pyrcc4``. The default is ``.rc``, i.e. if the ``.ui`` file specified a resource file called `foo.qrc`` then the corresponding Python module is `foo_rc``.

`:rtype:`

the `QWidget`` sub-class that implements the user interface.

:program:`pyuic4`

-----

The :program:`pyuic4` utility is a command line interface to the :mod:`~PyQt4.uic` module. The command has the following syntax:

```
pyuic4 [options] .ui-file
```

The full set of command line options is:

```
.. program:: pyuic4
```

```
.. cmdoption:: -h, --help
```

A help message is written to ``stdout``.

```
.. cmdoption:: --version
```

The version number is written to ``stdout``.

```
.. cmdoption:: -i <N>, --indent <N>
```

The Python code is generated using an indentation of ``<N>`` spaces. If ``<N>`` is 0 then a tab is used. The default is 4.

```
.. cmdoption:: -o <FILE>, --output <FILE>
```

The Python code generated is written to the file ``<FILE>``.

```
.. cmdoption:: -p, --preview
```

The GUI is created dynamically and displayed. No Python code is generated.

```
.. cmdoption:: -w, --pyqt3-wrapper
```

The generated Python code includes a small wrapper that allows the GUI to be used in the same way as it is used in PyQt v3.

```
.. cmdoption:: -x, --execute
```

The generated Python code includes a small amount of additional code that creates and displays the GUI when it is executed as a standalone application.

```
.. cmdoption:: --from-imports
```



Resource modules are imported using `from . import` rather than a simple `import`.

.. cmdoption:: --resource-suffix <SUFFIX>

The suffix `<SUFFIX>` is appended to the basename of any resource file specified in the `.ui` file to create the name of the Python module generated from the resource file by `:program:`pyrcc4``. The default is `_rc`. For example if the `.ui` file specified a resource file called `foo.qrc` then the corresponding Python module is `foo_rc`.

Note that code generated by `:program:`pyuic4`` is not guaranteed to be compatible with earlier versions of PyQt4. However, it is guaranteed to be compatible with later versions. If you have no control over the version of PyQt4 the users of your application are using then you should run `:program:`pyuic4``, or call `:func:`~PyQt4.uic.compileUi()``, as part of your installation process. Another alternative would be to distribute the `.ui` files (perhaps as part of a resource file) and have your application load them dynamically.

.. \_ref-designer-plugins:

## Writing Qt Designer Plugins

-----

Qt Designer can be extended by writing plugins. Normally this is done using C++ but PyQt4 also allows you to write plugins in Python. Most of the time a plugin is used to expose a custom widget to Designer so that it appears in Designer's widget box just like any other widget. It is possible to change the widget's properties and to connect its signals and slots.

It is also possible to add new functionality to Designer. See the Qt documentation for the full details. Here we will concentrate on describing how to write custom widgets in Python.

The process of integrating Python custom widgets with Designer is very similar to that used with widget written using C++. However, there are particular issues that have to be addressed.

- Designer needs to have a C++ plugin that conforms to the interface defined by the `QDesignerCustomWidgetInterface` class. (If the plugin exposes more than one custom widget then it must conform to the interface defined by the `QDesignerCustomWidgetCollectionInterface` class.) In addition the plugin class must sub-class `QObject` as well as the interface class. PyQt4 does not allow Python classes to be sub-classed from more than one Qt class.

- Designer can only connect Qt signals and slots. It has no understanding of

Python signals or callables.

- Designer can only edit Qt properties that represent C++ types. It has no understanding of Python attributes or Python types.

PyQt4 provides the following components and features to resolve these issues as simply as possible.

- PyQt4's QtDesigner module includes additional classes (all of which have a `QPy` prefix) that are already sub-classed from the necessary Qt classes. This avoids the need to sub-class from more than one Qt class in Python. For example, where a C++ custom widget plugin would sub-class from `QObject` and `QDesignerCustomWidgetInterface`, a Python custom widget plugin would instead sub-class from `QPyDesignerCustomWidgetPlugin`.
- PyQt4 installs a C++ plugin in Designer's plugin directory. It conforms to the interface defined by the `QDesignerCustomWidgetCollectionInterface` class. It searches a configurable set of directories looking for Python plugins that implement a class sub-classed from `QPyDesignerCustomWidgetPlugin`. Each class that is found is instantiated and the instance created is added to the custom widget collection.

The `envvar:PYQTDESIGNERPATH` environment variable specifies the set of directories to search for plugins. Directory names are separated by a path separator (a semi-colon on Windows and a colon on other platforms). If a directory name is empty (ie. there are consecutive path separators or a leading or trailing path separator) then a set of default directories is automatically inserted at that point. The default directories are the `python` subdirectory of each directory that Designer searches for its own plugins. If the environment variable is not set then only the default directories are searched. If a file's basename does not end with `plugin` then it is ignored.

- A Python custom widget may define new Qt signals using `func:~PyQt4.QtCore.pyqtSignal`.
- A Python method may be defined as a new Qt slot by using the `func:~PyQt4.QtCore.pyqtSlot` decorator.
- A new Qt property may be defined using the `func:~PyQt4.QtCore.pyqtProperty` function.

Note that the ability to define new Qt signals, slots and properties from Python is potentially useful to plugins conforming to any plugin interface and not just that used by Designer.

For a simple but complete and fully documented example of a custom widget that defines new Qt signals, slots and properties, and its plugin, look in the

:file:`examples/designer/plugins` directory of the PyQt4 source package. The :file:`widgets` subdirectory contains the :file:`pydemo.py` custom widget and the :file:`python` subdirectory contains its :file:`pydemoplugin.py` plugin.

Python Objects and QVariant

=====

Qt uses the `QVariant` class as a wrapper for any C++ data type. PyQt4 allows any Python object to be wrapped as a `QVariant` and passed around Qt's meta-object system like any other type.

PyQt4 will try to convert the Python object to a C++ equivalent if it can so that the `QVariant` can be passed to other C++ code that doesn't know what a Python object is.

Version 2 of PyQt4's `QVariant` API will automatically convert a `QVariant` back to a Python object of the correct type.

Version 1 of the `QVariant` API provides the `QVariant.toObject()` method to convert the `QVariant` back to a Python object of the correct type.

Both versions will raise a Python exception if the conversion cannot be done.

Support for Qt Properties

=====

PyQt4 does not support the setting and getting of Qt properties as if they were normal instance attributes. This is because the name of a property often conflicts with the name of the property's getter method.

However, PyQt4 does support the initial setting of properties using keyword arguments passed when an instance is created. For example::

```
act = QtGui.QAction("&Save", self, shortcut=QtGui.QKeySequence.Save,
                  statusTip="Save the document to disk", triggered=self.save)
```

The example also demonstrates the use of a keyword argument to connect a signal to a slot.

PyQt4 also supports setting the values of properties (and connecting a signal to a slot) using the `pyqtConfigure()` method of `QObject`. For example, the following gives the same results as above::

```
act = QtGui.QAction("&Save", self)
act.pyqtConfigure(shortcut=QtGui.QKeySequence.Save,
                 statusTip="Save the document to disk", triggered=self.save)
```

Defining New Qt Properties

-----

A new Qt property may be defined using the `~PyQt4.QtCore.pyqtProperty`` function. It is used in the same way as the standard Python `property()` function. In fact, Qt properties defined in this way also behave as Python properties.

```
.. function:: PyQt4.QtCore.pyqtProperty(type[, fget=None[, fset=None[, freset=None[, fdel=None[, doc=None[,
designable=True[, scriptable=True[, stored=True[, user=False[, constant=False[, final=False[,
notify=None]]]]]]]]]]))
```

Create a property that behaves as both a Python property and a Qt property.

```
:param type:
    the type of the property. It is either a Python type object or a
    string that is the name of a C++ type.
:param fget:
    the optional callable used to get the value of the property.
:param fset:
    the optional callable used to set the value of the property.
:param freset:
    the optional callable used to reset the value of the property to its
    default value. It is ignored by Python
:param fdel:
    the optional callable used to delete the property. It is ignored by
    Qt.
:param doc:
    the optional docstring of the property. It is ignored by Qt.
:param designable:
    optionally sets the Qt DESIGNABLE` flag. It is ignored by Python
:param scriptable:
    optionally sets the Qt SCRIPTABLE` flag. It is ignored by Python
:param stored:
    optionally sets the Qt STORED` flag. It is ignored by Python
:param user:
    optionally sets the Qt USER` flag. It is ignored by Python
:param constant:
    optionally sets the Qt CONSTANT` flag. It is ignored by Python
:param final:
    optionally sets the Qt FINAL` flag. It is ignored by Python
:param notify:
    the optional unbound notify signal. It is ignored by Python
:rtype:
    the property object.
```

It is also possible to use `~PyQt4.QtCore.pyqtProperty`` as a decorator in the same way as the standard Python `property()` function. The following example shows how to define an `int`` property with a getter and setter::

```
from PyQt4.QtCore import QObject, pyqtProperty
```

```
class Foo(QObject):  
  
    def __init__(self):  
        QObject.__init__(self)  
  
        self._total = 0  
  
    @pyqtProperty(int)  
    def total(self):  
        return self._total  
  
    @total.setter  
    def total(self, value):  
        self._total = value
```

If you prefer the Qt terminology you may also use ``write`` instead of ``setter`` (and ``read`` instead of ``getter``).

#### Old-style Signal and Slot Support

=====

This section describes the older style for connecting signals and slots. It uses the same API that a C++ application would use. This has a number of advantages.

- It is well understood and documented.
- Any future changes to the C++ API should be easily included.

It also has a number of disadvantages.

- It requires knowledge of the C++ types of signal arguments.
- It is error prone in that if you mis-type the signal name or signature then no exception is raised, either when the signal is connected or emitted.
- It is verbose.
- It is not Pythonic.

This older style of connecting signals and slots will continue to be supported throughout the life of PyQt4.

PyQt4 Signals and Qt Signals

-----

Qt signals are statically defined as part of a C++ class. They are referenced using the `QtCore.SIGNAL()` function. This method takes a single string argument that is the name of the signal and its C++ signature. For example::

```
QtCore.SIGNAL('finished(int)')
```

The returned value is normally passed to the `QtCore.QObject.connect()` method.

PyQt4 allows new signals to be defined dynamically. The act of emitting a PyQt4 signal implicitly defines it. PyQt4 signals are also referenced using the `QtCore.SIGNAL()` function.

#### The `PyQt_PyObject` Signal Argument Type

It is possible to pass any Python object as a signal argument by specifying `PyQt_PyObject` as the type of the argument in the signature. For example::

```
QtCore.SIGNAL('finished(PyQt_PyObject)')
```

While this would normally be used for passing objects like lists and dictionaries as signal arguments, it can be used for any Python type. Its advantage when passing, for example, an integer is that the normal conversions from a Python object to a C++ integer and back again are not required.

The reference count of the object being passed is maintained automatically. There is no need for the emitter of a signal to keep a reference to the object after the call to `QtCore.QObject.emit()`, even if a connection is queued.

#### Short-circuit Signals

There is also a special form of a PyQt4 signal known as a short-circuit signal. Short-circuit signals implicitly declare each argument as being of type `PyQt_PyObject`.

Short-circuit signals do not have a list of arguments or the surrounding parentheses.

Short-circuit signals may only be connected to slots that have been implemented in Python. They cannot be connected to Qt slots or the Python callables that wrap Qt slots.

#### PyQt4 Slots and Qt Slots

-----

Qt slots are statically defined as part of a C++ class. They are referenced using the `QtCore.SLOT()` function. This method takes a single string argument that is the name of the slot and its C++ signature. For example::

```
QtCore.SLOT('done(int)')
```

The returned value is normally passed to the `QtCore.QObject.connect()` method.

PyQt4 allows any Python callable to be used as a slot, not just Qt slots. This is done by simply referencing the callable. Because Qt slots are implemented as class methods they are also available as Python callables. Therefore it is not usually necessary to use `QtCore.SLOT()` for Qt slots. However, doing so is more efficient as it avoids a conversion to Python and back to C++.

Qt allows a signal to be connected to a slot that requires fewer arguments than the signal passes. The extra arguments are quietly discarded. PyQt4 slots can be used in the same way.

Note that when a slot is a Python callable its reference count is not increased. This means that a class instance can be deleted without having to explicitly disconnect any signals connected to its methods. However, if a slot is a lambda function or a partial function then its reference count is automatically incremented to prevent it from being immediately garbage collected.

## Connecting Signals and Slots

-----

Connections between signals and slots (and other signals) are made using the `QtCore.QObject.connect()` method. For example::

```
QtCore.QObject.connect(a, QtCore.SIGNAL('QtSig()'), pyFunction)
QtCore.QObject.connect(a, QtCore.SIGNAL('QtSig()'), pyClass.pyMethod)
QtCore.QObject.connect(a, QtCore.SIGNAL('QtSig()'), b, QtCore.SLOT('QtSlot()'))
QtCore.QObject.connect(a, QtCore.SIGNAL('PySig()'), b, QtCore.SLOT('QtSlot()'))
QtCore.QObject.connect(a, QtCore.SIGNAL('PySig'), pyFunction)
```

Disconnecting signals works in exactly the same way using the `QtCore.QObject.disconnect()` method. However, not all the variations of that method are supported by PyQt4. Signals must be disconnected one at a time.

## Emitting Signals

-----

Any instance of a class that is derived from the `QtCore.QObject` class can emit a signal using its `emit()` method. This takes a minimum of one argument which is the signal. Any other arguments are passed to the connected slots as the signal arguments. For example::

```
a.emit(QtCore.SIGNAL('clicked()'))
a.emit(QtCore.SIGNAL('pySig'), "Hello", "World")
```

The `QtCore.pyqtSignature()` Decorator

-----

The `QtCore.pyqtSignature()` serves the same purpose as the `PyQt4.QtCore.pyqtSlot` decorator but has a less Pythonic API.

.. \_ref-build-system:

The PyQt4 Build System

=====

.. versionadded:: 4.10

SIP v5 will not include an extensible build system, i.e it will not provide an equivalent of SIP v4's `sipconfig` module. Consequently a version of PyQt built with SIP v5 will not provide an equivalent of the `PyQt4.pyqtconfig` module. However there is still a need for certain information to be shared between PyQt and other modules (such as QScintilla's `PyQt4.Qsci` module) that are built on top of it. Specifically it is important that the same `-t` and `-x` command line flags are passed to the `sip` executable to create, for example, the QScintilla bindings as were passed to create the PyQt bindings.

Starting with v4.10, `PyQt4.QtCore.PYQT_CONFIGURATION` is a dict that describes how PyQt was configured. At the moment it contains a single value called `sip_flags` which is a string containing the appropriate `-t` and `-x` flags.

The Old Build System

-----

.. deprecated:: 4.10

The old PyQt4 build system is an extension of the SIP v4 build system and is implemented by the `PyQt4.pyqtconfig` module. It can be used by configuration scripts of other bindings that build on top of PyQt4 and takes care of the details of the Qt installation.



Note that the `PyQt4.pyqtconfig` module is only created if you use `configure.py` and not if you use `configure-ng.py`.

.. module:: PyQt4.pyqtconfig

.. class:: Configuration(sub\_cfg=None)

This class encapsulates configuration values that can be accessed as instance objects. It is derived from `sipconfig.Configuration`.

:param sub\_cfg:

an optional list of sub-class configurations. It should only be used by the `__init__()` method of a sub-class to append its own dictionary of configuration values before passing the list to its super-class.

.. attribute:: pyqt\_bin\_dir

The name of the directory where the PyQt4 utilities are installed.

.. attribute:: pyqt\_config\_args

The command line passed to `configure.py` when PyQt4 was configured.

.. attribute:: pyqt\_mod\_dir

The name of the directory where the `PyQt4` Python package is installed.

.. attribute:: pyqt\_modules

A space separated string of installed PyQt4 modules. The `Qt` module is not included.

.. attribute:: pyqt\_sip\_dir

The name of the base directory where PyQt4's `.sip` files are installed. Each module's `.sip` files are installed in a sub-directory with the same name as the module.

.. attribute:: pyqt\_sip\_flags

A space separated string of the `sip` command line options used to build the PyQt4 modules. These should also be used when building bindings that `%Import` any PyQt4 modules.

.. attribute:: pyqt\_version

The PyQt4 version as a 3 part hexadecimal number (e.g. v4.0.1 is represented as ``0x040001``).

.. attribute:: pyqt\_version\_str

The PyQt4 version as a string. For development snapshots it will start with ``snapshot``.

.. attribute:: qt\_data\_dir

The value of ``QLibraryInfo::location(DataPath)`` for the Qt installation.

.. attribute:: qt\_archdata\_dir

When building against Qt v5 this is the value of ``QLibraryInfo::location(ArchDataPath)``. When building against Qt v4 it is the value of ``QLibraryInfo::location(DataPath)``.

.. attribute:: qt\_dir

The root directory of the Qt installation (normally the directory that contains the :file:`bin` directory).

.. attribute:: qt\_edition

The Qt edition.

.. attribute:: qt\_framework

Set if Qt is built as a MacOS/X framework.

.. attribute:: qt\_inc\_dir

The value of ``QLibraryInfo::location(HeadersPath)`` for the Qt installation.

.. attribute:: qt\_lib\_dir

The value of ``QLibraryInfo::location(LibrariesPath)`` for the Qt installation.

.. attribute:: qt\_threaded

Set if Qt is built with thread support (always set for PyQt4).

.. attribute:: qt\_version

The Qt version as a 3 part hexadecimal number (e.g. v4.1.2 is represented as ``0x040102``).

.. attribute:: qt\_winconfig

Additional Windows specific configuration.

.. class:: QtAssistantModuleMakefile

This class encapsulates a Makefile to build a SIP generated Python extension module that is built on the PyQt4 :mod:`~PyQt4.QtAssistant` module.

.. class:: QAxContainerModuleMakefile

This class encapsulates a Makefile to build a SIP generated Python extension module that is built on the PyQt4 :mod:`~PyQt4.QAxContainer` module.

.. class:: QtCoreModuleMakefile

This class encapsulates a Makefile to build a SIP generated Python extension module that is built on the PyQt4 :mod:`~PyQt4.QtCore` module.

.. class:: QtDBusModuleMakefile

This class encapsulates a Makefile to build a SIP generated Python extension module that is built on the PyQt4 :mod:`~PyQt4.QtDBus` module.

.. class:: QtDeclarativeModuleMakefile

This class encapsulates a Makefile to build a SIP generated Python extension module that is built on the PyQt4 :mod:`~PyQt4.QtDeclarative` module.

.. class:: QtDesignerModuleMakefile

This class encapsulates a Makefile to build a SIP generated Python extension module that is built on the PyQt4 :mod:`~PyQt4.QtDesigner` module.

.. class:: QtGuiModuleMakefile

This class encapsulates a Makefile to build a SIP generated Python extension module that is built on the PyQt4 :mod:`~PyQt4.QtGui` module.

.. class:: QtHelpModuleMakefile

This class encapsulates a Makefile to build a SIP generated Python extension module that is built on the PyQt4 :mod:`~PyQt4.QtHelp` module.

.. class:: QtMultimediaModuleMakefile

This class encapsulates a Makefile to build a SIP generated Python extension module that is built on the PyQt4 :mod:`~PyQt4.QtMultimedia` module.

.. class:: QtNetworkModuleMakefile

This class encapsulates a Makefile to build a SIP generated Python extension module that is built on the PyQt4 :mod:`~PyQt4.QtNetwork` module.

.. class:: QtOpenGLModuleMakefile

This class encapsulates a Makefile to build a SIP generated Python extension module that is built on the PyQt4 :mod:`~PyQt4.QtOpenGL` module.

.. class:: QtScriptModuleMakefile

This class encapsulates a Makefile to build a SIP generated Python extension module that is built on the PyQt4 :mod:`~PyQt4.QtScript` module.

.. class:: QtScriptToolsModuleMakefile

This class encapsulates a Makefile to build a SIP generated Python extension module that is built on the PyQt4 :mod:`~PyQt4.QtScriptTools` module.

.. class:: QSqlModuleMakefile

This class encapsulates a Makefile to build a SIP generated Python extension module that is built on the PyQt4 :mod:`~PyQt4.QtSql` module.

```
.. class:: QtSvgModuleMakefile
```

This class encapsulates a Makefile to build a SIP generated Python extension module that is built on the PyQt4 :mod:`~PyQt4.QtSvg` module.

```
.. class:: QtTestModuleMakefile
```

This class encapsulates a Makefile to build a SIP generated Python extension module that is built on the PyQt4 :mod:`~PyQt4.QtTest` module.

```
.. class:: QtWebKitModuleMakefile
```

This class encapsulates a Makefile to build a SIP generated Python extension module that is built on the PyQt4 :mod:`~PyQt4.QtWebKit` module.

```
.. class:: QtXmlModuleMakefile
```

This class encapsulates a Makefile to build a SIP generated Python extension module that is built on the PyQt4 :mod:`~PyQt4.QtXml` module.

```
.. class:: QtXmlPatternsModuleMakefile
```

This class encapsulates a Makefile to build a SIP generated Python extension module that is built on the PyQt4 :mod:`~PyQt4.QtXmlPatterns` module.

```
.. class:: phononModuleMakefile
```

This class encapsulates a Makefile to build a SIP generated Python extension module that is built on the PyQt4 :mod:`~PyQt4.phonon` module.

PyQt4 Reference Guide

=====

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   :maxdepth: 2
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#### Support for Python's Buffer Interface

=====

If SIP v4.7.5 or later is used then any Python object that supports the buffer interface can be used whenever a ``char`` or ``char \*`` is expected. If the buffer has multiple segments then all but the first will be ignored.

#### Support for Pickling

=====

The following PyQt4 classes may be pickled.

- QByteArray
- QChar
- QColor
- QDate
- QDateTime
- QKeySequence
- QLatin1Char
- QLatin1String
- QLine
- QLineF
- QMatrix
- QPoint
- QPointF
- QPolygon
- QRect
- QRectF

- QSize
- QSizeF
- QString
- QTime

Also all named enums (`QtCore.Qt.Key` for example) may be pickled.

```
<d!`B[%N*i=
Tekst
Titel[%TaalN/>
MainWindow
```

#### Potential Incompatibilities with Earlier Versions

=====

#### PyQt4 v4.9.2

-----

##### QPyNullVariant

\*\*\*\*\*

In previous versions a `QPyNullVariant` would always evaluate to `True` when converted to a bool.

In this version a `QPyNullVariant` will always evaluate to `False` when converted to a bool. This makes it behave like `None` in these circumstances.

#### PyQt4 v4.8.3

-----

##### SQL Models

\*\*\*\*\*

In previous versions, when using v2 of the `QVariant` API (the default for Python v3), there was no way to represent a null `QVariant`. Therefore when reading values of certain types from an SQL model it was impossible to distinguish between, for example, a null integer and an integer with the value zero.

In this version the `QPyNullVariant` class is used to represent a null `QVariant`. Therefore the object read from an SQL model may now be a `QPyNullVariant` instance.

A null `QVariant` is only converted to a `QPyNullVariant` if the underlying C++ type of the `QVariant` cannot be tested for null, i.e. it does not implement an `isNull()` method. This ensures that existing code that uses non-SQL models will continue to work unchanged.

## PyQt4 v4.8

-----

### QVariantList

\*\*\*\*\*

In previous versions PyQt4 would always try and convert a Python list to a `QVariantList`. In this version PyQt4 will first try to convert it to a `QVariant` containing a `QList<QObject*>`, but only if `QList<QObject*>` has been registered with Qt as a meta-type.

Normally it is only the `PyQt4.QtDeclarative` module that registers this meta-type and so the behaviour of existing applications should be unchanged. It is possible however that you might observe different conversion behaviour after importing the `PyQt4.QtDeclarative` module.

## PyQt4 v4.7.4

-----

`PyQt4.QtCore.pyqtSignal` with dict and list

\*\*\*\*\*

In previous versions a Qt signal defined using `PyQt4.QtCore.pyqtSignal` that had an argument specified as a dict then, when emitting a value, PyQt4 would try and convert the value to a `QVariantMap` if possible. If it wasn't possible, normally because the dict had non-string keys, then the value would be left as a dict object.

In this version PyQt4 will not attempt to convert the value to a `QVariantMap` and will always leave it as a dict object. If you want the value to be converted to a `QVariantMap` then define the signal argument as `QVariantMap`.

The same applies to conversions between lists and `QVariantList`.

## PyQt4 v4.7.1

-----

### QVariant

\*\*\*\*\*

This version introduces a slight incompatibility in the conversion between sub-classes of standard Python types and `QVariant`.

Take, for example, the following code::



```
from PyQt4.QtCore import QVariant
```

```
class MyFloat(float):  
    pass
```

```
myfloat = MyFloat(5.0)  
variant = QVariant(myfloat)
```

With this version of PyQt4 ``myfloat`` will be converted in such a way as to preserve any additional attributes (including methods) and will not be converted to a C++ ``double``. In other words, the following assertions are true::

```
assert(variant.type() != QVariant.Double)  
assert(variant.toPyObject() is myfloat)
```

Prior to this version ``myfloat`` would be converted to a C++ ``double``. In other words, the following assertions would be true::

```
assert(variant.type() == QVariant.Double)  
assert(variant.toPyObject() == myfloat)  
assert(type(variant.toPyObject()) is float)
```

The same change also affects objects that implement the sequence protocol. Prior to this version such an object would be converted to a ``QVariantList`` which would mean that it was converted back to a Python ``list`` rather than to the original type.

PyQt4 v4.5

-----

QVariant  
\*\*\*\*\*

This version introduces a slight incompatibility in the conversion between Python sub-classes of certain Qt classes and ``QVariant``. The Qt classes affected are those that ``QVariant`` has explicit support for, e.g. ``QSize``, ``QBitmap``.

Take, for example, the following code::

```
from PyQt4.QtCore import QSize, QVariant  
  
class MySize(QSize):  
    pass  
  
mysize = MySize(5, 5)
```

```
variant = QVariant(mysize)
```

With this version of PyQt4 `mysize` will be converted in such a way as to preserve any additional attributes (including methods) and will not be converted to a C++ `QSize` instance. In other words, the following assertions are true::

```
assert(variant.type() != QVariant.Size)
assert(variant.toPyObject() is mysize)
```

Prior to this version `mysize` would be converted to a C++ `QSize` instance. In other words, the following assertions would be true::

```
assert(variant.type() == QVariant.Size)
assert(variant.toPyObject() == mysize)
assert(type(variant.toPyObject()) is QSize)
```

It is hoped that this change of behaviour will not have a significant impact. However if you need the old behaviour then simply create a copy of your sub-class instance using the base class constructor as shown below::

```
variant = QVariant(QSize(mysize))
```

A similar issue also affects the conversion of the Python `datetime`, `date` and `time` types to `QVariant`. These are no longer converted to the corresponding `QDateTime`, `QDate` and `QTime` classes. The values can be retrieved using `QVariant.toPyObject()`. Again, the old behaviour can be achieved using an explicit conversion to the Qt class before converting to `QVariant`.

A further incompatible change is the handling of Python sub-classes of `QObject`. In previous versions `QVariant.userType()` would return an internal type and an extra reference would be kept to the Python object. In the current version `QVariant.userType()` will correctly return `QMetaType.QObjectStar` (or `QMetaType.QWidgetStar`) but an extra reference to the Python object is not kept. To avoid a potential crash you should ensure that you keep a separate reference to the Python object, either explicitly or implicitly by giving it a parent.

```
:program:`pyrcc4` Support for Python v3
*****
```

```
:program:`pyrcc4` will now generate code for Python v3 when the new
:option:`-py3 <pyrcc4 -py3>` command line option is used. The generated code
will also work with Python v2.6 and later.
```

By default `:program:`pyrcc4`` will generate code for all Python v2 versions but

you should use the new `:option:`-py2 <pyrcc4 -py2>`` command line option to enforce this in case the default is changed in the future.

#### Installing PyQt4

=====

#### Downloading SIP

-----

SIP must be installed before building and using PyQt4. You can get the latest release of the SIP source code from

<http://www.riverbankcomputing.com/software/sip/download>.

The SIP documentation can be found at <http://pyqt.sourceforge.net/Docs/sip4/>.

#### Downloading PyQt4

-----

You can get the latest release of the GPL version of the PyQt4 source code from

<http://www.riverbankcomputing.com/software/pyqt/download>.

If you are using the commercial version of PyQt4 then you should use the download instructions which were sent to you when you made your purchase. You must also download your license file.

#### Configuring PyQt4

-----

After unpacking the source package (either a ```.tar.gz``` or a ```.zip``` file depending on your platform) you should then check for any `:file:`README`` files that relate to your platform.

If you are using the commercial version of PyQt4 then you must copy your license file to the `:file:`sip`` directory.

You need to make sure your environment variables are set properly for your development environment.

In order to configure the build of PyQt4 you need to run either the `:program:`configure-ng.py`` or the `:program:`configure.py`` script.

`:program:`configure.py`` is the original configuration script that uses the build system of SIP v4 (i.e. the `:mod:`sip.sipconfig`` module). It will be supported for the life of PyQt4.

`:program:`configure-ng.py`` is the new configuration script that uses Qt's `:program:`qmake`` program to do all the heavy lifting. It has the following

advantages:

- a future version will support cross-compilation
- it is the basis of PyQt5's configuration script
- generated Makefiles have an uninstall target
- it will work with SIP v5 (which will have no build system).

Users are encouraged to switch to using `:program:`configure-ng.py`` in order to ease the future transition to SIP v5 and/or PyQt5.

Using `:program:`configure-ng.py``

.....

.. versionadded:: 4.10.1

The `:program:`configure-ng.py`` script is used to configure PyQt4 as follows::

```
python configure-ng.py
```

This assumes that the Python interpreter is on your path. Something like the following may be appropriate on Windows::

```
c:\python33\python configure-ng.py
```

If you have multiple versions of Python installed then make sure you use the interpreter for which you wish to build PyQt4 for.

The full set of command line options is:

.. program:: configure-ng.py

.. cmdoption:: --assume-shared

Normally Qt is checked to see if it has been built as shared libraries. Some Linux distributions configure their Qt builds to make this check unreliable. This option ignores the result of the check and assumes that Qt has been built as shared libraries.

.. cmdoption:: --bindir <DIR>, -b <DIR>

The `:program:`pyuic4``, `:program:`pyrcc4`` and `:program:`pylupdate4`` utilities will be installed in the directory ``<DIR>``.

.. cmdoption:: --concatenate, -c

The C++ source files for a Python module will be concatenated. This results in significantly reduced compilation times. Most, but not all, C++ compilers can handle the large files that result. See also the :option:`--concatenate-split` option.

.. cmdoption:: --concatenate-split <N>, -j <N>

If the :option:`--concatenate` option is used to concatenate the C++ source files then this option determines how many files are created. The default is 1.

.. cmdoption:: --configuration <FILE>

``<FILE>`` contains the configuration of the PyQt4 build to be used instead of dynamically introspecting the system and is used when cross-compiling. The format of ``<FILE>`` will be documented in a later version when cross-compilation is fully supported.

.. cmdoption:: --confirm-license

Using this confirms that you accept the terms of the PyQt4 license.

.. cmdoption:: --consolidate, -g

Normally each PyQt4 module (except for the :mod:`~PyQt4.Qt` module) is linked against the corresponding Qt library. This option creates a module called :mod:`~PyQt4.\_qt` which is linked against all the required Qt libraries and the other modules are stub modules that populate their module dictionaries from this one. This is useful when linking against static Qt libraries to eliminate the need to distribute the Qt libraries while minimising the memory footprint of the PyQt4 modules.

.. cmdoption:: --dbus <DIR>, -s <DIR>

The :file:`dbus-python.h` header file of the dbus-python package can be found in the directory ``<DIR>/dbus``.

.. cmdoption:: --debug, -u

The PyQt4 modules will be built with debugging symbols. On Windows this requires that a debug version of Python is installed.

.. cmdoption:: --designer-pluginindir <DIR>

The Python plugin for Qt Designer will be installed in the directory ``<DIR>``.

.. cmdoption:: --destdir <DIR>, -d <DIR>

The PyQt4 Python package will be installed in the directory ``<DIR>``. The default is the Python installation's `site-packages` directory. If you use this option then the `PYTHONPATH` environment variable must include ``<DIR>``.

.. cmdoption:: --enable <MODULE>, -e <MODULE>

Normally all PyQt4 modules are enabled and are built if the corresponding Qt library can be found. Using this option only those modules specifically enabled will be checked for and built. The option may be specified any number of times.

.. cmdoption:: --help, -h

Display a help message.

.. cmdoption:: --no-deprecated

All Qt v4 features that have been deprecated in Qt v5 will be disabled. This is useful when porting PyQt4 applications to PyQt5.

.. cmdoption:: --no-designer-plugin

The Qt Designer plugin will not be built.

.. cmdoption:: --no-docstrings

The PyQt4 modules will not contain automatically generated docstrings.

.. cmdoption:: --no-qsci-api

The `PyQt4.api` QScintilla API file is not installed even if QScintilla does appear to be installed.

.. cmdoption:: --no-sip-files

The `.sip` files for the PyQt4 modules will not be installed.

.. cmdoption:: --no-timestamp, -T

Normally the header comments of each generated C/C++ source file includes a timestamp corresponding to when the file was generated. This option suppresses the inclusion of the timestamp.

.. cmdoption:: --plugin <PLUGIN>, -t <PLUGIN>

If Qt has been built as static libraries then the static plugin `<PLUGIN>` will be linked with the appropriate PyQt4 module. The option may be specified any number of times.

.. cmdoption:: --protected-is-public

On certain platforms the size of PyQt4 modules can be significantly reduced by redefining the C++ `protected` keyword as `public` during compilation. This option enables this behaviour and is the default on Linux and MacOS/X.

.. cmdoption:: --protected-not-public

The default redefinition of `protected` to `public` during compilation on Linux and MacOS/X is disabled.

.. cmdoption:: --pyuic4-interpreter <FILE>

`<FILE>` is the name of the Python interpreter used in the pyuic4 wrapper. The default is platform dependent.

.. cmdoption:: --qmake <FILE>, -q <FILE>

Qt's `qmake` program is used to determine how your Qt installation is laid out. Normally `qmake` is found on your `PATH`. This option can be used to specify a particular instance of `qmake` to use. This option is not available on Windows where `qmake` must be on `PATH`.

.. cmdoption:: --qsci-api, -a

The `PyQt4.api` QScintilla API file is installed even if QScintilla does not appear to be installed. This option is implied if the `--qsci-api-destdir` option is specified.

.. cmdoption:: --qsci-api-destdir <DIR>, -n <DIR>

The QScintilla API file will be installed in the `python` subdirectory of the `api` subdirectory of the directory `<DIR>`.

.. cmdoption:: --sip <FILE>

The `sip` program is used to generate PyQt4's C++ source code. Normally `sip` is found on your `PATH`. This option can be used to specify a particular instance of `sip` to use.

.. cmdoption:: --sip-incdir <DIR>

The ```sip.h``` header file can be found in the directory ```<DIR>```.

.. cmdoption:: `--sipdir <DIR>, -v <DIR>`

The ```.sip``` files for the PyQt4 modules will be installed in the directory ```<DIR>```.

.. cmdoption:: `--spec <SPEC>`

The argument ```-spec SPEC``` will be passed to `:program:`qmake``. The default behaviour is platform specific. On Windows `:program:`configure-ng.py`` will choose the value that is correct for the version of Python that is being used. (However if you have built Python yourself then you may need to explicitly specify ```<SPEC>```.) On MacOS `:program:`configure-ng.py`` will try and avoid ```macx-xcode``` if possible.)

.. cmdoption:: `--static, -k`

The PyQt4 modules will be built as static libraries. This is useful when building a custom interpreter with the PyQt4 modules built in to the interpreter.

.. cmdoption:: `--trace, -r`

The generated PyQt4 modules contain additional tracing code that is enabled using SIP's `:func:`sip.settracemask`` function.

.. cmdoption:: `--vendorid, -i`

The checking of signed Python interpreters using the ```VendorID <http://www.riverbankcomputing.com/software/vendorid/>``` package is enabled. See also the `:option:`--vendorid-incdir`` and `:option:`--vendorid-libdir`` options and `:ref:`ref-deploy-commercial``.

.. cmdoption:: `--vendorid-incdir <DIR>, -l <DIR>`

The header file of the VendorID package can be found in the directory ```<DIR>```.

.. cmdoption:: `--vendorid-libdir <DIR>, -m <DIR>`

The library of the VendorID package can be found in the directory ```<DIR>```.

.. cmdoption:: `--verbose, -w`

Compiler commands and any output issued during configuration is displayed instead of being suppressed. Use this if `:program:`configure-ng.py`` is



having problems to see what exactly is going wrong.

```
.. cmdoption:: --version
```

Display the PyQt4 version number.

Any remaining command line arguments are expected to be in the form ``name=value`` or ``name+=value``. Such arguments are added to any :program:`qmake` ``.pro`` file created by :program:`configure-ng.py`.

Using :program:`configure.py`

.....

The :program:`configure.py` script is used to configure PyQt4 as follows::

```
python configure.py
```

This assumes that the Python interpreter is on your path. Something like the following may be appropriate on Windows::

```
c:\python33\python configure.py
```

If you have multiple versions of Python installed then make sure you use the interpreter for which you wish to build PyQt4 for.

The full set of command line options is:

```
.. program:: configure.py
```

```
.. cmdoption:: --assume-shared
```

Normally Qt is checked to see if it has been built as shared libraries. Some Linux distributions configure their Qt builds to make this check unreliable. This option ignores the result of the check and assumes that Qt has been built as shared libraries.

```
.. cmdoption:: --bindir <DIR>, -b <DIR>
```

The :program:`pyuic4`, :program:`pyrcc4` and :program:`pylupdate4` utilities will be installed in the directory ``<DIR>``.

```
.. cmdoption:: --concatenate, -c
```

The C++ source files for a Python module will be concatenated. This results in significantly reduced compilation times. Most, but not all, C++ compilers can handle the large files that result. See also the :option:`--concatenate-split` option.

.. cmdoption:: --concatenate-split <N>, -j <N>

If the :option:`--concatenate` option is used to concatenate the C++ source files then this option determines how many files are created. The default is 1.

.. cmdoption:: --confirm-license

Using this confirms that you accept the terms of the PyQt4 license.

.. cmdoption:: --consolidate, -g

Normally each PyQt4 module (except for the :mod:`~PyQt4.Qt` module) is linked against the corresponding Qt library. This option creates a module called :mod:`~PyQt4.\_qt` which is linked against all the required Qt libraries and the other modules are stub modules that populate their module dictionaries from this one. This is useful when linking against static Qt libraries to eliminate the need to distribute the Qt libraries while minimising the memory footprint of the PyQt4 modules.

.. cmdoption:: --dbus <DIR>, -s <DIR>

The :file:`dbus-python.h` header file of the dbus-python package can be found in the directory ``<DIR>/dbus``.

.. cmdoption:: --debug, -u

The PyQt4 modules will be built with debugging symbols. On Windows this requires that a debug version of Python is installed.

.. cmdoption:: --destdir <DIR>, -d <DIR>

The PyQt4 Python package will be installed in the directory ``<DIR>``. The default is the Python installation's :file:`site-packages` directory. If you use this option then the :envvar:`PYTHONPATH` environment variable must include ``<DIR>``.

.. cmdoption:: --enable <MODULE>, -e <MODULE>

Normally all PyQt4 modules are enabled and are built if the corresponding Qt library can be found. Using this option only those modules specifically enabled will be checked for and built. The option may be specified any number of times.

.. cmdoption:: --help, -h

Display a help message.

`.. cmdoption:: --no-deprecated`

All Qt v4 features that have been deprecated in Qt v5 will be disabled. This is useful when porting PyQt4 applications to PyQt5.

`.. cmdoption:: --no-designer-plugin`

The Qt Designer plugin will not be built.

`.. cmdoption:: --no-docstrings`

The PyQt4 modules will not contain automatically generated docstrings.

`.. cmdoption:: --no-qsci-api`

The `:file:`PyQt4.api`` QScintilla API file is not installed even if QScintilla does appear to be installed.

`.. cmdoption:: --no-sip-files`

The ``.sip`` files for the PyQt4 modules will not be installed.

`.. cmdoption:: --no-timestamp, -T`

Normally the header comments of each generated C/C++ source file includes a timestamp corresponding to when the file was generated. This option suppresses the inclusion of the timestamp.

`.. cmdoption:: --plugin <PLUGIN>, -t <PLUGIN>`

If Qt has been built as static libraries then the static plugin ```<PLUGIN>``` will be linked with the appropriate PyQt4 module. The option may be specified any number of times.

`.. cmdoption:: --plugin-destdir <DIR>, -p <DIR>`

The Qt Designer plugin that manages plugins implemented in Python will be installed in the `:file:`designer`` subdirectory of the directory ```<DIR>```.

`.. cmdoption:: --protected-is-public`

On certain platforms the size of PyQt4 modules can be significantly reduced by redefining the C++ ```protected``` keyword as ```public``` during compilation. This option enables this behaviour and is the default on Linux and MacOS/X.

`.. cmdoption:: --protected-not-public`

The default redefinition of ``protected`` to ``public`` during compilation on Linux and MacOS/X is disabled.

.. cmdoption:: --qmake <FILE>, -q <FILE>

Qt's :program:`qmake` program is used to determine how your Qt installation is laid out. Normally :program:`qmake` is found on your :envvar:`PATH`. This option can be used to specify a particular instance of :program:`qmake` to use. This option is not available on Windows.

.. cmdoption:: --qsci-api, -a

The :file:`PyQt4.api` QScintilla API file is installed even if QScintilla does not appear to be installed. This option is implied if the :option:`--qsci-api-destdir` option is specified.

.. cmdoption:: --qsci-api-destdir <DIR>, -n <DIR>

The QScintilla API file will be installed in the :file:`python` subdirectory of the :file:`api` subdirectory of the directory ``<DIR>``.

.. cmdoption:: --sipdir <DIR>, -v <DIR>

The ``.sip`` files for the PyQt4 modules will be installed in the directory ``<DIR>``.

.. cmdoption:: --static, -k

The PyQt4 modules will be built as static libraries. This is useful when building a custom interpreter with the PyQt4 modules built in to the interpreter.

.. cmdoption:: --trace, -r

The generated PyQt4 modules contain additional tracing code that is enabled using SIP's :func:`sip.settracemask` function.

.. cmdoption:: --use-arch <ARCH>

When :program:`pyuic4` calls the Python interpreter on MacOS it will be run using the architecture ``<ARCH>``. See the section :ref:`ref-macos`.

.. cmdoption:: --vendorid, -i

The checking of signed Python interpreters using the `VendorID <<http://www.riverbankcomputing.com/software/vendorid/>>` \_\_ package is enabled. See also the :option:`--vendorid-incdir` and

:option: `--vendorid-libdir` options and :ref:`ref-deploy-commercial`.

.. cmdoption:: --vendorid-incdir <DIR>, -I <DIR>

The header file of the VendorID package can be found in the directory ``<DIR>`.`.

.. cmdoption:: --vendorid-libdir <DIR>, -m <DIR>

The library of the VendorID package can be found in the directory ``<DIR>`.`.

.. cmdoption:: --verbose, -w

Compiler commands and any output issued during configuration is displayed instead of being suppressed. Use this if :program:`configure.py` is having problems to see what exactly is going wrong.

.. cmdoption:: --version

Display the PyQt4 version number.

.. \_ref-macos:

## Configuring SIP and PyQt4 for MacOS

.....

Note that this section only applies if you are using the :program:`configure.py` script to configure PyQt4. The :program:`configure-ng.py` script leaves it to Qt's :program:`qmake` program to handle the details. :program:`configure-ng.py` does not support the creation of universal binaries.

Building applications for MacOS can be a complex process. Typically the following need to be taken into account:

- the architectures (i.e. i386, x86\_64, ppc) that you want to support
- the earliest version of MacOS you want to support (i.e. the deployment target)
- the version of the SDK you want to use.

If you are using a binary installer for Python and/or Qt then you also need to consider how they have been built regarding the above, and what bugs they have.

SIP's and PyQt4's :program:`configure.py` scripts provide the necessary command

line options to allow the correct configurations to be specified - the trick is to work out which options to use depending on the versions of Python and Qt you have installed.

SIP provides the following command line options to its `configure.py` script.

`--arch <ARCH>` specifies the target architecture and may be specified a number of times.

`--universal` is a shortcut for `--arch i386 --arch ppc`.

`--deployment-target <VERSION>` specifies the earliest version of MacOS you want to support. This sets the `MACOSX_DEPLOYMENT_TARGET` environment variable and should be used rather than setting the environment variable in the shell (to work around bugs in some versions of Python).

`--sdk <SDK>` specifies the SDK to use.

PyQt4 provides the `--use-arch <configure.py --use-arch>` option that specifies which architecture certain PyQt4 tools (actually only `pyuic4` at the moment) will use when running Python. For example, if your Qt installation is 32 bits, and your Python installation is 32 bits and 64 bits then you will need to specify `--use-arch i386` to ensure that `pyuic4` runs the 32 bit version of Python.

## Building PyQt4

-----

The next step is to build PyQt4 by running your platform's `make` command. For example::

```
make
```

The final step is to install PyQt4 by running the following command::

```
make install
```

(Depending on your system you may require root or administrator privileges.)

This will install the various PyQt4 components.

## Introduction

=====

This is the reference guide for PyQt4 4.10.1. PyQt4 is a set of Python <http://www.python.org> bindings for v4 and v5 of the Qt application framework from Nokia <http://qt.nokia.com>.

There is a separate `PyQt4 Class Reference <classes.html>` \_\_.

Qt is a set of C++ libraries and development tools that includes platform independent abstractions for graphical user interfaces, networking, threads, Unicode, regular expressions, SQL databases, SVG, OpenGL, XML, and user and application settings. PyQt4 implements 440 of these classes as a set of Python modules.

PyQt4 supports the Windows, Linux, UNIX and MacOS/X platforms.

PyQt4 does not include Qt itself - you must obtain it separately.

The homepage for PyQt4 is <http://www.riverbankcomputing.com/software/pyqt/>. Here you will always find the latest stable version, current development snapshots, and the latest version of this documentation.

PyQt4 is built using the `SIP bindings generator <http://www.riverbankcomputing.com/software/sip/>` \_\_. SIP must be installed in order to build and use PyQt4.

Earlier versions of Qt are supported by PyQt v3.

#### License

-----

PyQt4 is licensed on all platforms under a commercial license, the GPL v2 and the GPL v3. Your PyQt4 license must be compatible with your Qt license. If you use the GPL versions then your own code must also use a compatible license.

PyQt4, unlike Qt, is not available under the LGPL.

You can purchase a commercial PyQt4 license `here <http://www.riverbankcomputing.com/commercial/buy>` \_\_.

#### PyQt4 Components

-----

PyQt4 comprises a number of different components. First of all there are a number of Python extension modules. These are all installed in the `:mod:`PyQt4`` Python package.

- The `:mod:`~PyQt4.QtCore`` module. This contains the core non-GUI classes, including the event loop and Qt's signal and slot mechanism. It also includes platform independent abstractions for Unicode, threads, mapped

files, shared memory, regular expressions, and user and application settings.

- The `:mod:`~PyQt4.QtGui`` module. This contains the majority of the GUI classes.
- The `:mod:`~PyQt4.QtHelp`` module. This contains classes for creating and viewing searchable documentation.
- The `:mod:`~PyQt4.QtNetwork`` module. This module contains classes for writing UDP and TCP clients and servers. It includes classes that implement FTP and HTTP clients and support DNS lookups.
- The `:mod:`~PyQt4.QtOpenGL`` module. This module contains classes that enable the use of OpenGL in rendering 3D graphics in PyQt4 applications.
- The `:mod:`~PyQt4.QtScript`` module. This module contains classes that enable PyQt4 applications to be scripted using Qt's JavaScript interpreter.
- The `:mod:`~PyQt4.QtScriptTools`` module. This module contains classes that contain additional components (e.g. a debugger) that are used with Qt's JavaScript interpreter.
- The `:mod:`~PyQt4.QtSql`` module. This module contains classes that integrate with SQL databases. It includes editable data models for database tables that can be used with GUI classes. It also includes an implementation of `SQLite` <<http://www.sqlite.org>>`\_\_.
- The `:mod:`~PyQt4.QtSvg`` module. This module contains classes for displaying the contents of SVG files.
- The `:mod:`~PyQt4.QtTest`` module. This module contains functions that enable unit testing of PyQt4 applications. (PyQt4 does not implement the complete Qt unit test framework. Instead it assumes that the standard Python unit test framework will be used and implements those functions that simulate a user interacting with a GUI.)
- The `:mod:`~PyQt4.QtWebKit`` module. This module implements a web browser engine based on the WebKit open source browser engine.
- The `:mod:`~PyQt4.QtXml`` module. This module contains classes that implement SAX and DOM interfaces to Qt's XML parser.
- The `:mod:`~PyQt4.QtXmlPatterns`` module. This module contains classes that implement XQuery and XPath support for XML and custom data models.
- The `:mod:`~PyQt4.phonon`` module. This module contains classes that implement a cross-platform multimedia framework that enables the use of audio and video content in PyQt4 applications.



- The `~PyQt4.QtDBus` module. This Unix-only module provides classes that support Inter-Process Communication using the D-Bus protocol.
- The `~PyQt4.QtDeclarative` module. This module provides a declarative framework for building highly dynamic, custom user interfaces using QML.
- The `~PyQt4.QtMultimedia` module. This module provides low-level multimedia functionality. Application developers would normally use the `~PyQt4.phonon` module.
- The `~PyQt4.QtAssistant` module. This module contains classes that allow Qt Assistant to be integrated with a PyQt4 application to provide online help. This module is not available with Qt v4.7 and later - use the `~PyQt4.QtHelp` module instead.
- The `~PyQt4.QtDesigner` module. This module contains classes that allow Qt Designer to be extended using PyQt4. See [ref-designer-plugins](#) for a full description of how to do this.
- The `~PyQt4.QAxContainer` module. This Windows-only module contains classes that allow access to ActiveX controls and COM objects.
- The `~PyQt4.Qt` module. This module consolidates the classes contained in all of the modules described above into a single module. This has the advantage that you don't have to worry about which underlying module contains a particular class. It has the disadvantage that it loads the whole of the Qt framework, thereby increasing the memory footprint of an application. Whether you use this consolidated module, or the individual component modules is down to personal taste.
- The `DBus` <http://www.freedesktop.org/wiki/Software/DBusBindings> support module is installed as `dbus.mainloop.qt`. This module provides support for the Qt event loop in the same way that the `dbus.mainloop.glib` included with the standard `dbus-python` bindings package provides support for the GLib event loop. The API is described in [ref-dbus](#). It is only available if the `dbus-python` v0.80 (or later) bindings package is installed. The `~PyQt4.QtDBus` module provides a more Qt-like interface to DBus.
- The `~PyQt4.uic` module. This module contains classes for handling the `.ui` files created by Qt Designer that describe the whole or part of a graphical user interface. It includes classes that load a `.ui` file and render it directly, and classes that generate Python code from a `.ui` file for later execution.
- The `~PyQt4.pyqtconfig` module is an extension of the SIP build system and is created when PyQt4 is configured. It encapsulates all the necessary

information about your Qt installation and makes it easier to write installation scripts for bindings built on top of PyQt4. It is covered in detail in :ref:`ref-build-system`.

PyQt4 also contains a number of utility programs.

- :program:`pyuic4` corresponds to the Qt :program:`uic` utility. It converts GUIs created using Qt Designer to Python code.

- :program:`pyrcc4` corresponds to the Qt :program:`rcc` utility. It embeds arbitrary resources (eg. icons, images, translation files) described by a resource collection file in a Python module.

.. note::

It will only be included if your copy of Qt includes the XML module.

- :program:`pylupdate4` corresponds to the Qt :program:`lupdate` utility. It extracts all of the translatable strings from Python code and creates or updates ``.ts`` translation files. These are then used by Qt Linguist to manage the translation of those strings.

.. note::

It will only be included if your copy of Qt includes the XML module.

When PyQt4 is configured a file called :file:`PyQt4.api` is generated. This can be used by the QScintilla editor component (at <http://www.riverbankcomputing.com/software/qscintilla/>) to enable the use of auto-completion and call tips when editing PyQt4 code. The API file is installed automatically if QScintilla is already installed.

PyQt4 includes a large number of examples. These are ports to Python of many of the C++ examples provided with Qt. They can be found in the :file:`examples` directory.

Finally, PyQt4 contains the ``.sip`` files used by SIP to generate PyQt4 itself. These can be used by developers of bindings of other Qt based class libraries - for example `PyQwt` and `PyQwt3D` <<http://pyqwt.sourceforge.net/>>` \_\_\_\_\_.  
.. \_ref-incompat-apis:

### Selecting Incompatible APIs

=====

PyQt4 provides limited support for multiple incompatible APIs and the ability for an application to select between them at run-time. For example, an application can choose whether ``QString`` is implemented as a Python type, or is automatically converted to and from a Python v2 unicode object or a Python v3 string object.

This ability allows developers to decide how to manage the transition from an older deprecated, API to a newer incompatible API.

Each API that can be selected in this way has a name and a range of version numbers. An application calls `:func:`sip.setapi`` to set the version number of a particular API. This call must be made before any module that implements the API is imported. Once set the version number cannot be changed. If not set then an API will use its default version.

For example the following code will disable the use of `QString`::`:

```
import sip
sip.setapi('QString', 2)

from PyQt4 import QtCore

# This will raise an attribute exception because QString is only wrapped
# in version 1 of the API.
s = QtCore.QString()
```

The following APIs are currently implemented:

- QDate v1, v2
- QDateTime v1, v2
- QString v1, v2
- QTextStream v1, v2
- QTime v1, v2
- QUrl v1, v2
- QVariant v1, v2

PyQt4 and Qt v5

=====

Building Against Qt v5

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PyQt4 can be built against Qt v5 in exactly the same way that it is built against Qt v4. However only a Qt v4 compatible subset of Qt v5 is supported, specifically:

- any classes added in Qt v5 *are not* supported
- any new features added in Qt v5 to classes that exist in Qt v4 *are* supported
- any features that are marked as deprecated in Qt v5 *are* supported.

The `:option:`--no-deprecated <configure.py --no-deprecated>`` option to PyQt4's `:program:`configure.py`` can be used to disable the support for the deprecated features. This can be useful in the porting of PyQt4 applications to PyQt5.

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d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

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```
<one line to give the program's name and a brief idea of what it does.>  
Copyright (C) <year> <name of author>
```

```
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the Free Software Foundation, either version 3 of the License, or  
(at your option) any later version.
```

```
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Also add information on how to contact you by electronic and paper mail.

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```
<program> Copyright (C) <year> <name of author>
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
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under certain conditions; type `show c' for details.
```

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```
-----
# This is the build file for pyrcc for Qt v4.
#
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#
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```

#
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# WARRANTY OF DESIGN, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

target = pyrcc4
sources = main.cpp rcc.cpp
headers = rcc.h
<d!`B[%N,iC
TextoTitulo[%LnguaN/>
MainWindow
<d!`B[%N*iA
Texte
Titre[%LangueN/>
MainWindow
<d!`B[%N,iC
TestoTitulo[%LinguaN/>
MainWindow
# This is the build file for pylupdate for Qt v4.
#
# Copyright (c) 2008
# Riverbank Computing Limited <info@riverbankcomputing.com>
#
# This file is part of PyQt.
#
# This copy of PyQt is free software; you can redistribute it and/or modify it
# under the terms of the GNU General Public License as published by the Free
# Software Foundation; either version 2, or (at your option) any later
# version.
#
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# WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS
# FOR A PARTICULAR PURPOSE. See the GNU General Public License for more
# details.
#
# You should have received a copy of the GNU General Public License along with
# PyQt; see the file LICENSE. If not, write to the Free Software Foundation,
# Inc., 59 Temple Place - Suite 330, Boston, MA 02111-1307, USA.

target = pylupdate4
sources = fetchtr.cpp merge.cpp numberh.cpp sametexth.cpp main.cpp metatranslator.cpp proparser.cpp
translator.cpp simtexth.cpp
headers = metatranslator.h proparser.h simtexth.h
moc_headers = translator.h
<d!`B[%N*i;
Metin
nvan[%DilN/>
MainWindow

```

```

<d!`B[%N,iC
TextoTitulo[%LenguaN/>
MainWindow
<d!`B[%N i9
Titel[%SpracheN/>
MainWindow
<d!`B[%N0iETekstiOtsikko[%
KieliN/>
MainWindow
<d!`B[%N,i?
TekstTiitel[%KeelN/>
MainWindow
<d!`B[%N*i?
Tekst
Tytul[%
JezykN/>
MainWindow
<d!`B[%N,iA
TekstTittel[%
SprkN/>
MainWindow
<d!`B[%N*i?
Tekst
Titel[%
SprogN/>
MainWindow
#!/usr/bin/env python

```

```

from __future__ import division
from __future__ import with_statement

```

```

import base64
import os
import re
import sys

```

```

from PyQt4.QtCore import (PYQT_VERSION_STR, QByteArray, QDir, QEvent,
    QFile, QFileInfo, QIODevice, QPoint, QProcess, QRegExp,
    QSettings, QString, QT_VERSION_STR, QTextStream, QThread,
    QTimer, QUrl, QVariant, Qt, SIGNAL)
from PyQt4.QtGui import (QAction, QApplication, QButtonGroup, QCheckBox,
    QColor, QColorDialog, QComboBox, QCursor, QDesktopServices,
    QDialog, QDialogButtonBox, QFileDialog, QFont, QFontComboBox,
    QFontMetrics, QGridLayout, QHBoxLayout, QIcon, QInputDialog,
    QKeySequence, QLabel, QLineEdit, QListWidget, QMainWindow,
    QMessageBox, QPixmap, QPushButton, QRadioButton,
    QRegExpValidator, QShortcut, QSpinBox, QSplitter,
    QSyntaxHighlighter, QTabWidget, QTextBrowser, QTextCharFormat,

```

QTextCursor, QTextDocument, QTextEdit, QToolTip, QVBoxLayout,  
QWidget)

```
__version__ = "0.9.9"  
__license__ = ""<font color=green>\  
Copyright (c) 2007-9 Mark Summerfield. All rights reserved.</font>
```

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```
MAC = "qt_mac_set_native_menu" in dir()
```

```
KEYWORDS = ["and", "as", "assert", "break", "class", "continue", "def",  
            "del", "elif", "else", "except", "exec", "finally", "for", "from",  
            "global", "if", "import", "in", "is", "lambda", "not", "or",  
            "pass", "print", "raise", "return", "try", "while", "with",  
            "yield"]
```

```
BUILTINS = ["abs", "all", "any", "basestring", "bool", "callable", "chr",  
            "classmethod", "cmp", "compile", "complex", "delattr", "dict",  
            "dir", "divmod", "enumerate", "eval", "execfile", "exit", "file",  
            "filter", "float", "frozenset", "getattr", "globals", "hasattr",  
            "hex", "id", "int", "isinstance", "issubclass", "iter", "len",  
            "list", "locals", "long", "map", "max", "min", "object", "oct",  
            "open", "ord", "pow", "property", "range", "reduce", "repr",  
            "reversed", "round", "set", "setattr", "slice", "sorted",  
            "staticmethod", "str", "sum", "super", "tuple", "type", "unicchr",  
            "unicode", "vars", "xrange", "zip"]
```

```
CONSTANTS = ["False", "True", "None", "NotImplemented", "Ellipsis"]
```

```
MODULES = dict([(key, False) for key in ("array", "bisect", "bsddb",  
            "bz2", "codecs", "collections", "copy", "datetime", "decimal",  
            "functools", "getopt", "gzip", "heapq", "itertools", "math",  
            "optparse", "os", "os.path", "pickle", "cPickle", "random",  
            "re", "string", "StringIO", "cStringIO", "struct", "subprocess",  
            "sys", "tarfile", "time", "unicodedata", "weakref", "zipfile",  
            "QAxContainer", "QtAssistant", "QtCore", "QtDesigner", "QtGui",  
            "QtNetwork", "QtOpenGL", "QtSql", "QtSvg", "QtTest", "QtXml")])
```

```

TIMEOUT = 5000
ICONS = {}
PIXMAPS = {}
Config = {}
CAT = {} # Completions And Tooltips
MIN_COMPLETION_LEN = 3
MAX_TOOLTIP_LEN = 1000
FROM_IMPORT_RE = re.compile(r"from\s+(\[w.\]+\)\s+import\s+(.*)")
WORDS = set()
WORD_RE = re.compile(r"[W+.]")
MIN_WORD_LEN = 3
MAX_WORD_LEN = 64
CATABLE_LINE_RE = QRegExp(r"\b(?:import|def|class)\s+")
CLASS_OR_DEF_RE = re.compile(r"(class|def) ([^W(:)+][:(!")

```

```

def trimQString(qstr, trimText):
    while qstr.startsWith(trimText):
        qstr = qstr.mid(len(trimText))
    while qstr.endsWith(trimText):
        qstr.chop(len(trimText))
    return qstr

```

```

def loadConfig():
    def setDefaultString(name, default):
        value = settings.value(name).toString()
        if value.isEmpty():
            value = default
        Config[name] = value

```

```

settings = QSettings()
for name in ("window", "shell"):
    Config["%swidth" % name] = settings.value("%swidth" % name,
        QVariant(QApplication.desktop()
            .availableGeometry().width() / 2)).toInt()[0]
    Config["%sheight" % name] = settings.value("%sheight" % name,
        QVariant(QApplication.desktop()
            .availableGeometry().height() / 2)).toInt()[0]
    Config["%sy" % name] = settings.value("%sy" % name,
        QVariant(0)).toInt()[0]
    Config["toolbars"] = settings.value("toolbars").toByteArray()
    Config["splitter"] = settings.value("splitter").toByteArray()
    Config["shellx"] = settings.value("shellx",
        QVariant(0)).toInt()[0]
    Config["windowx"] = settings.value("windowx",
        QVariant(QApplication.desktop()

```

```

        .availableGeometry().width() / 2)).toInt()[0]
Config["remembergeometry"] = settings.value("remembergeometry",
    QVariant(True)).toBool()
Config["startwithshell"] = settings.value("startwithshell",
    QVariant(True)).toBool()
Config["showwindowinfo"] = settings.value("showwindowinfo",
    QVariant(True)).toBool()
setDefaultString("shellstartup", """\
from __future__ import division
import codecs
import sys
sys.stdin = codecs.getreader("UTF8")(sys.stdin)
sys.stdout = codecs.getwriter("UTF8")(sys.stdout)""")
setDefaultString("newfile", """\
#!/usr/bin/env python

from __future__ import division

import sys
""")
Config["backupsuffix"] = settings.value("backupsuffix",
    QVariant(".bak")).toString()
setDefaultString("beforeinput", "#>>>")
setDefaultString("beforeoutput", "#---")
Config["cwd"] = settings.value("cwd", QVariant(".")).toString()
Config["tooltipsize"] = settings.value("tooltipsize",
    QVariant(150)).toInt()[0]
Config["maxlinestoscans"] = settings.value("maxlinestoscans",
    QVariant(5000)).toInt()[0]
Config["pythondocpath"] = settings.value("pythondocpath",
    QVariant("http://docs.python.org")).toString()
Config["autohidefinddialog"] = settings.value("autohidefinddialog",
    QVariant(True)).toBool()
Config["findcasesensitive"] = settings.value("findcasesensitive",
    QVariant(False)).toBool()
Config["findwholewords"] = settings.value("findwholewords",
    QVariant(False)).toBool()
Config["tabwidth"] = settings.value("tabwidth",
    QVariant(4)).toInt()[0]
Config["fontfamily"] = settings.value("fontfamily",
    QVariant("Bitstream Vera Sans Mono")).toString()
Config["fontsize"] = settings.value("fontsize",
    QVariant(10)).toInt()[0]
for name, color, bold, italic in (
    ("normal", "#000000", False, False),
    ("keyword", "#000080", True, False),
    ("builtin", "#0000A0", False, False),
    ("constant", "#0000C0", False, False),

```

```

("decorator", "#0000E0", False, False),
("comment", "#007F00", False, True),
("string", "#808000", False, False),
("number", "#924900", False, False),
("error", "#FF0000", False, False),
("pyqt", "#50621A", False, False)):
Config["%sfontcolor" % name] = settings.value(
    "%sfontcolor" % name, QVariant(color)).toString()
Config["%sfontbold" % name] = settings.value(
    "%sfontbold" % name, QVariant(bold)).toBool()
Config["%sfontitalic" % name] = settings.value(
    "%sfontitalic" % name, QVariant(italic)).toBool()

def saveConfig():
    settings = QSettings()
    for key, value in Config.items():
        settings.setValue(key, QVariant(value))

def checkForCAT(line):
    # We can't use CAT to keep track of which modules we have processed.
    # This is because if the user does "import os", one of the names we
    # will get is "os.path", which then goes into CAT; so if later the
    # user did "import os.path", the name "os.path" will already be in
    # CAT (from the "import os") and wouldn't be looked for. So we keep
    # a separate dictionary of modules that we've done in MODULES.
    line = line.strip()
    if line.startswith("import "):
        line = line[len("import "):]
        for mname in [mname.strip() for mname in line.split(",")]:
            if not MODULES.get(mname, False):
                # We have not done this one
                _updateCAT(mname)
    else:
        match = FROM_IMPORT_RE.match(line)
        if match:
            if match.group(1) == "__future__" or not match.group(2):
                return
            for name in [x for x in
                match.group(2).replace(", ", " ").split()]:
                mname = "%s.%s" % (match.group(1), name)
                if not MODULES.get(mname, False):
                    # We have not done this one
                    _updateCAT(mname)
            i = mname.rfind(".")
            while i > -1:
                mname = mname[:i]

```

```

        if not MODULES.get(mname, False):
            # We have not done this one
            _updateCAT(mname)
            i = mname.rfind(".")
    else:
        for word in WORD_RE.split(line):
            if (not word or
                len(word) < MIN_WORD_LEN or
                len(word) > MAX_WORD_LEN or
                word in CAT or word in WORDS):
                continue
            WORDS.add(word)

def _updateCAT(mname):
    try:
        MODULES[mname] = True
        CAT.setdefault(mname, {})
        WORDS.discard(mname)
        module = __import__(mname)
        components = []
        if "." in mname:
            for component in mname.split(".")[1:]:
                module = getattr(module, component)
                components.append(component)
        for aname in dir(module):
            if aname.startswith("_"):
                continue
            fullname = "%s.%s" % (mname, aname)
            CAT.setdefault(fullname, "")
            WORDS.discard(fullname)
            CAT.setdefault(aname, "")
            WORDS.discard(aname)
            for component in components:
                CAT.setdefault("%s.%s" % (component, aname), "")
                WORDS.discard("%s.%s" % (component, aname))
        # PyQt4 classes don't have docstrings
        if not mname.startswith(("Qt", "PyQt4")):
            try:
                tip = eval("sys.modules['%s'].%s.__doc__" % (
                    mname, aname))
            if tip is not None:
                tip = (tip[:MAX_TOOLTIP_LEN].strip()
                    .replace("\n\n", "<p>"))
                CAT[fullname] = tip
                if CAT[aname] == "": # First one (i.e., builtin)
                    CAT[aname] = tip # wins
                for component in components: # Last one wins

```



```

        CAT["%s.%s" % (component, aname)] = tip
    except:
        pass
    try:
        for bname in eval("dir(sys.modules['%s'].%s)" % (
            mname, aname)):
            if bname.startswith("_"):
                continue
            cname = "%s.%s" % (fullname, bname)
            CAT.setdefault(cname, "")
            WORDS.discard(cname)
            # PyQt4 classes don't have docstrings
            if not mname.startswith(("Qt", "PyQt4")):
                tip = None
                try:
                    tip = eval(
                        "sys.modules['%s'].%s.%s.__doc__" % (
                            mname, aname, bname))
                except:
                    pass
            if tip is None:
                try:
                    tip = eval(
                        "sys.modules['%s'].%s.__doc__" % (
                            mname, aname))
                except:
                    pass
            if tip is not None:
                tip = (tip[:MAX_TOOLTIP_LEN].strip()
                    .replace("\n\n", "<p>"))
                CAT[cname] = tip
        except:
            pass
    except:
        pass

class HelpForm(QDialog):

    def __init__(self, parent=None):
        super(HelpForm, self).__init__(parent)
        self.setAttribute(Qt.WA_GroupLeader)
        self.setAttribute(Qt.WA_DeleteOnClose)
        browser = QTextBrowser()
        browser.setOpenExternalLinks(True)
        browser.setHtml( # TODO Improve
            u"""
            <p>This online help provides a brief introduction to Sandbox's completion

```

and Find and Replace dialog, followed by some useful online links, and finishing with a summary of its key bindings. It is well worth pulling down the menus and seeing what options are available since they are almost all self-explanatory.

<p>

Word completion is achieved using <b>Ctrl+P</b> or by pressing <b>Tab</b>.

A tooltip will appear when you enter <b></b>, if one is available.

Completion and tooltips are available for Python's built-ins, and also for any module that gets imported, whether as part of the start-up (see the File\N{RIGHTWARDS ARROW}Configure dialog's At Startup tab), or that are imported in the Shell, or that are mentioned in import statements in any files that are opened. (This makes loading a file with lots of imports, or writing an import command in the shell, take a tiny bit longer than it would otherwise do.) The completion also tries to include your own identifiers. Also, classes, methods, and functions are added to the Goto menu. The number of lines that are scanned for completions, tooltips, and for the Goto menu is specified in the File\N{RIGHTWARDS ARROW}Configure dialog's General tab's Max Lines to Scan spinbox.

<p>

When you click <b>Find</b> or <b>Replace</b> in the Find and Replace dialog, the action will take place and the dialog will close. You can then do further finds and replaces using <b>Edit\N{RIGHTWARDS ARROW}Find Again</b> or <b>Edit\N{RIGHTWARDS ARROW}Replace Again</b> (or using the keyboard shortcuts shown in the menu). If you prefer to have the Find and Replace dialog visible and use its buttons instead, go to the File\N{RIGHTWARDS ARROW}Configure dialog's General tab, and uncheck Automatically Hide the Find and Replace dialog.

<p>

Some useful online documentation links:

<ul>

<li><a href="http://docs.python.org/">Python Documentation</a>

<li><a href="http://www.riverbankcomputing.com/Docs/PyQt4/pyqt4ref.html">PyQt4 Documentation</a>

<li><a

href="http://www.riverbankcomputing.com/Docs/PyQt4/html/classes.html">

PyQt4 Classes' Documentation</a>

<li><a href="http://aspn.activestate.com/ASPN/Python/Cookbook/">Python Cookbook</a>

</ul>

<p>

Key bindings:

<ul>

<li><b>\N{UPWARDS ARROW}</b> Move the cursor up one line

<li><b>Ctrl+\N{UPWARDS ARROW}</b> In the shell, copy the previous command from the command history to the input window. In editor windows, move to the previous line in the line history.

<li><b>\N{DOWNWARDS ARROW}</b> Move the cursor down one line

- <li><b>Ctrl+N{DOWNWARDS ARROW}</b> In the shell, copy the next command from the command history to the input window. In editor windows, move to the next line in the line history.
- <li><b>N{LEFTWARDS ARROW}</b> Move the cursor left one character
- <li><b>Ctrl+N{LEFTWARDS ARROW}</b> Move the cursor left one word
- <li><b>N{RIGHTWARDS ARROW}</b> Move the cursor right one character
- <li><b>Ctrl+N{RIGHTWARDS ARROW}</b> Move the cursor right one word
- <li><b>Ctrl+)</b> Indent the selected text (or the current line) by %d spaces
- <li><b>Ctrl+[</b> Unindent the selected text (or the current line) by %d spaces
- <li><b>Ctrl+A</b> Select all the text
- <li><b>Backspace</b> Delete the character to the left of the cursor
- <li><b>Ctrl+C</b> Copy the selected text to the clipboard
- <li><b>Delete</b> Delete the character to the right of the cursor
- <li><b>End</b> Move the cursor to the end of the line
- <li><b>Ctrl+End</b> Move the cursor to the end of the file
- <li><b>Ctrl+Enter</b> Execute the input window's code, or execute the current file. If executing a file and it is a console application, the output is shown in a separate window which can be closed by pressing <b>Esc</b>. (This is the same as pressing <b>F5</b>.)
- <li><b>Ctrl+F</b> Pop up the Find and Replace dialog
- <li><b>F3</b> Find the next occurrence of the find text; if there is none, pop up the Find and Replace dialog.
- <li><b>Shift+F3</b> Find the next occurrence of word at the cursor; the search is case sensitive and whole words only.
- <li><b>F5</b> Execute the input window's code, or execute the current file. If executing a file and it is a console application, the output is shown in a separate window which can be closed by pressing <b>Esc</b>. (This is the same as pressing <b>Ctrl+Enter</b>.)
- <li><b>Ctrl+H</b> Launch Python's documentation in a web browser
- <li><b>Home</b> Move the cursor to the beginning of the line
- <li><b>Ctrl+Home</b> Move the cursor to the beginning of the file
- <li><b>Ctrl+K</b> Delete to the end of the line
- <li><b>Ctrl+L</b> Pop up the Goto Line dialog
- <li><b>Ctrl+M</b> Go to the matching ([{< or >}]). The matcher looks at the character preceding the cursor, and if it is a match character the cursor moves so that the matched character precedes the cursor. If no suitable character is preceding the cursor, but there is a suitable character following the cursor, the cursor will advance one character (so that the match character now precedes it), and works as just described. (In other words the matching is afterN{LEFT RIGHT ARROW}after.)
- <li><b>Ctrl+N</b> Open a new editor window
- <li><b>Ctrl+O</b> Open a file open dialog to open a Python file
- <li><b>Ctrl+Shift+O</b> Open the file at the cursor. This works for <tt>import</tt> statements since Sandbox is smart enough to look for foo.py if the cursor is on foo. It also works for standard modules, because if foo.py is not found in the current file's directory, <tt>sys.path</tt>

is searched.

- <li><b>Ctrl+P</b> and <b>Tab</b> Pop up a list of possible completions for the current word. Use the up and down arrow keys and the page up and page up keys (or the mouse) to navigate; click <b>Enter</b> to accept a completion or <b>Esc</b> to cancel.
- <li><b>PageUp</b> Move up one screen
- <li><b>PageDown</b> Move down one screen
- <li><b>Ctrl+Q</b> Terminate Sandbox; prompting to save any unsaved changes for every editor window for which this is necessary. If the user cancels any save unsaved changes message box, Sandbox will not terminate.
- <li><b>Ctrl+R</b> Replace the next occurrence of the find text; if there is none, pop up the Find and Replace dialog.
- <li><b>Ctrl+S</b> Save the current file
- <li><b>Ctrl+V</b> Paste the clipboard's text
- <li><b>Ctrl+W</b> Close the current file; prompting to save any unsaved changes if necessary
- <li><b>Ctrl+X</b> Cut the selected text to the clipboard
- <li><b>Ctrl+Z</b> Undo the last editing action
- <li><b>Ctrl+Shift+Z</b> Redo the last editing action

Hold down <b>Shift</b> when pressing movement keys to select the text moved over.

<br>

Press <b>Esc</b> to close this window.

```
"" % (Config["tabwidth"], Config["tabwidth"]))
    layout = QVBoxLayout()
    layout.setMargin(0)
    layout.addWidget(browser)
    self.setLayout(layout)
    self.resize(500, 500)
    QShortcut(QKeySequence("Escape"), self, self.close)
    self.setWindowTitle("Sandbox - Help")
```

```
class FindForm(QDialog):
```

```
    def __init__(self, parent=None):
        super(FindForm, self).__init__(parent)

        self.findEdit = QComboBox()
        self.findEdit.setDuplicatesEnabled(False)
        self.findEdit.setEditable(True)
        findLabel = QLabel("Find wha&t:")
        findLabel.setBuddy(self.findEdit)
        self.replaceEdit = QComboBox()
        self.replaceEdit.setDuplicatesEnabled(False)
        self.replaceEdit.setEditable(True)
        replaceLabel = QLabel("Replace w&ith:")
```

```

replaceLabel.setBuddy(self.replaceEdit)
self.caseSensitiveCheckBox = QCheckBox("&Case sensitive")
self.caseSensitiveCheckBox.setChecked(Config["findcasesensitive"])
self.wholeWordsCheckBox = QCheckBox("&Whole words only")
self.wholeWordsCheckBox.setChecked(Config["findwholewords"])
buttonBox = QDialogButtonBox()
self.findButton = buttonBox.addButton("&Find",
    QDialogButtonBox.ActionRole)
self.replaceButton = buttonBox.addButton("&Replace",
    QDialogButtonBox.ActionRole)
buttonBox.addButton(QDialogButtonBox.Close)
if not MAC:
    self.caseSensitiveCheckBox.setFocusPolicy(Qt.NoFocus)
    self.wholeWordsCheckBox.setFocusPolicy(Qt.NoFocus)
    buttonBox.setFocusPolicy(Qt.NoFocus)

grid = QGridLayout()
grid.addWidget(findLabel, 0, 0)
grid.addWidget(self.findEdit, 0, 1)
grid.addWidget(replaceLabel, 1, 0)
grid.addWidget(self.replaceEdit, 1, 1)
layout = QVBoxLayout()
layout.addLayout(grid)
hbox = QHBoxLayout()
hbox.addWidget(self.caseSensitiveCheckBox)
hbox.addWidget(self.wholeWordsCheckBox)
hbox.addStretch()
layout.addLayout(hbox)
layout.addWidget(buttonBox)
self.setLayout(layout)

self.connect(self.findEdit,
    SIGNAL("editTextChanged(QString)"), self.updateUi)
self.connect(self.findButton, SIGNAL("clicked()"),
    self.findClicked)
self.connect(self.replaceButton, SIGNAL("clicked()"),
    self.replaceClicked)
self.connect(buttonBox, SIGNAL("rejected()"), self.reject)

self.updateUi()
self.setWindowTitle("Sandbox - Find and Replace")

def findClicked(self):
    self.emit(SIGNAL("find"), self.findEdit.currentText(),
        self.caseSensitiveCheckBox.isChecked(),
        self.wholeWordsCheckBox.isChecked())
    if Config["autohidefinddialog"]:

```

```

self.hide()

def replaceClicked(self):
    self.emit(SIGNAL("replace"), self.findEdit.currentText(),
              self.replaceEdit.currentText(),
              self.caseSensitiveCheckBox.isChecked(),
              self.wholeWordsCheckBox.isChecked())
    if Config["autohidefinddialog"]:
        self.hide()

def updateUi(self):
    enable = not self.findEdit.currentText().isEmpty()
    self.findButton.setEnabled(enable)
    self.replaceButton.setEnabled(enable)

class PythonHighlighter(QSyntaxHighlighter):

    Rules = []
    Formats = { }

    def __init__(self, parent=None):
        super(PythonHighlighter, self).__init__(parent)

        self.initializeFormats()

        PythonHighlighter.Rules.append((QRegExp(
            "|".join([r"\b%s\b" % keyword for keyword in KEYWORDS]),
            "keyword"))
        PythonHighlighter.Rules.append((QRegExp(
            "|".join([r"\b%s\b" % builtin for builtin in BUILTINS]),
            "builtin"))
        PythonHighlighter.Rules.append((QRegExp(
            "|".join([r"\b%s\b" % constant
                    for constant in CONSTANTS]), "constant"))
        PythonHighlighter.Rules.append((QRegExp(
            r"\b[+-]?[0-9]+[IL]?b"
            r"\b[+-]?0[xX][0-9A-Fa-f]+[IL]?b"
            r"\b[+-]?[0-9]+(?:\.[0-9]+)?(?:[eE][+-]?[0-9]+)?b"),
            "number"))
        PythonHighlighter.Rules.append((QRegExp(
            r"\bPyQt4\b\bQt?[A-Z][a-z]\w+b"), "pyqt"))
        PythonHighlighter.Rules.append((QRegExp(r"\b@\w+\b"),
            "decorator"))
        stringRe = QRegExp(r"^(?:'[\^']*'|\"[^\"]*\")")
        stringRe.setMinimal(True)

```

```

PythonHighlighter.Rules.append((stringRe, "string"))
self.stringRe = QRegExp(r""":?["'"].*["'"]?.*""")
self.stringRe.setMinimal(True)
PythonHighlighter.Rules.append((self.stringRe, "string"))
self.tripleSingleRe = QRegExp(r""""(?!)""")
self.tripleDoubleRe = QRegExp(r""""(?!)""")

```

```
@staticmethod
```

```
def initializeFormats():
```

```

    baseFormat = QTextCharFormat()
    baseFormat.setFontFamily(Config["fontfamily"])
    baseFormat.setFontPointSize(Config["fontsize"])
    for name in ("normal", "keyword", "builtin", "constant",
                "decorator", "comment", "string", "number", "error",
                "pyqt"):
        format = QTextCharFormat(baseFormat)
        format.setForeground(
            QColor(Config["%sfontcolor" % name]))
        if Config["%sfontbold" % name]:
            format.setFontWeight(QFont.Bold)
        format.setFontItalic(Config["%sfontitalic" % name])
        PythonHighlighter.Formats[name] = format

```

```
def highlightBlock(self, text):
```

```

    NORMAL, TRIPLESINGLE, TRIPLEDOUBLE, ERROR = range(4)

```

```

    textLength = text.length()

```

```

    prevState = self.previousBlockState()

```

```

    self.setFormat(0, textLength,
                  PythonHighlighter.Formats["normal"])

```

```

    if text.startsWith("Traceback") or text.startsWith("Error: "):

```

```

        self.setCurrentBlockState(ERROR)

```

```

        self.setFormat(0, textLength,
                      PythonHighlighter.Formats["error"])

```

```

        return

```

```

    if (prevState == ERROR and

```

```

        not (text.startsWith(sys.ps1) or text.startsWith("#"))):

```

```

        self.setCurrentBlockState(ERROR)

```

```

        self.setFormat(0, textLength,
                      PythonHighlighter.Formats["error"])

```

```

        return

```

```

    for regex, format in PythonHighlighter.Rules:

```

```

        i = regex.indexIn(text)

```

```

while i >= 0:
    length = regex.matchedLength()
    self.setFormat(i, length,
                   PythonHighlighter.Formats[format])
    i = regex.indexIn(text, i + length)

# Slow but good quality highlighting for comments. For more
# speed, comment this out and add the following to __init__:
# PythonHighlighter.Rules.append((QRegExp(r"#.*"), "comment"))
if text.isEmpty():
    pass
elif text[0] == "#":
    self.setFormat(0, text.length(),
                   PythonHighlighter.Formats["comment"])
else:
    stack = []
    for i, c in enumerate(text):
        if c in ("'", '"'):
            if stack and stack[-1] == c:
                stack.pop()
            else:
                stack.append(c)
        elif c == "#" and len(stack) == 0:
            self.setFormat(i, text.length(),
                           PythonHighlighter.Formats["comment"])
            break

self.setCurrentBlockState(NORMAL)

if self.stringRe.indexIn(text) != -1:
    return
# This is fooled by triple quotes inside single quoted strings
for i, state in ((self.tripleSingleRe.indexIn(text),
                  TRIPLESINGLE),
                 (self.tripleDoubleRe.indexIn(text),
                  TRIPLEDDOUBLE)):
    if self.previousBlockState() == state:
        if i == -1:
            i = text.length()
            self.setCurrentBlockState(state)
        self.setFormat(0, i + 3,
                       PythonHighlighter.Formats["string"])
    elif i > -1:
        self.setCurrentBlockState(state)
        self.setFormat(i, text.length(),
                       PythonHighlighter.Formats["string"])

```



```

def rehighlight(self):
    QApplication.setOverrideCursor(QCursor(
        Qt.WaitCursor))
    QSyntaxHighlighter.rehighlight(self)
    QApplication.restoreOverrideCursor()

class TextView(QTextEdit):

    def __init__(self, parent=None):
        super(QTextEdit, self).__init__(parent)
        self.setAcceptRichText(False)
        font = QFont(Config["fontfamily"], Config["fontsize"])
        self.setFont(font)
        self.textcharformat = QTextCharFormat()
        self.textcharformat.setFont(font)

    def currentWord(self, cursor=None):
        if cursor is None:
            cursor = self.textCursor()
        cursor.movePosition(QTextCursor.StartOfWord)
        cursor.movePosition(QTextCursor.EndOfWord,
            QTextCursor.KeepAnchor)
        return cursor.selectedText()

    def currentLine(self):
        cursor = self.textCursor()
        cursor.movePosition(QTextCursor.StartOfLine)
        cursor.movePosition(QTextCursor.EndOfLine,
            QTextCursor.KeepAnchor)
        return cursor.selectedText()

    def lastNonEmptyLine(self):
        cursor = self.textCursor()
        cursor.movePosition(QTextCursor.End)
        cursor.movePosition(QTextCursor.StartOfLine,
            QTextCursor.KeepAnchor)
        if cursor.selectedText().isEmpty():
            cursor.movePosition(QTextCursor.PreviousCharacter,
                QTextCursor.KeepAnchor)
            cursor.movePosition(QTextCursor.StartOfLine,
                QTextCursor.KeepAnchor)
        text = cursor.selectedText()
        if not text.isEmpty():
            while text.endsWith("\n"):

```

```

        text.chop(1)
    while text.endsWith(u"\u2029"):
        text.chop(1)
    return text

```

```

def lastLine(self):
    cursor = self.textCursor()
    cursor.movePosition(QTextCursor.End)
    cursor.movePosition(QTextCursor.StartOfLine,
                        QTextCursor.KeepAnchor)
    return cursor.selectedText()

```

```

class TextEdit(TextView):

```

```

    COMPLETION_X_OFFSET = None

```

```

def __init__(self, parent=None):
    super(TextEdit, self).__init__(parent)
    self.setLineWrapMode(QTextEdit.NoWrap)
    self.indent = 0
    self.completionListWidget = None
    self.prefix = ""
    self.classes = set()
    self.defs = set()
    if TextEdit.COMPLETION_X_OFFSET is None:
        TextEdit.COMPLETION_X_OFFSET = QFontMetrics(
            self.font()).width("x")

```

```

def checkForClassOrDef(self, line):
    match = CLASS_OR_DEF_RE.search(line)
    if match:
        if not match.group(2).startswith("__"):
            if match.group(1) == "class":
                self.classes.add(match.group(2))
            else:
                self.defs.add(match.group(2))

```

```

def event(self, event):
    tabwidth = Config["tabwidth"]
    tooltipsize = Config["tooltipsize"]
    indent = " " * tabwidth
    if event.type() == QEvent.KeyPress:
        if event.key() == Qt.Key_Backspace:
            line = self.currentLine()

```

```

if len(line) >= tabwidth and line.endsWith(indent):
    userCursor = self.textCursor()
    for _ in range(tabwidth):
        userCursor.deletePreviousChar()
    self.indent = max(0, self.indent - 1)
    return True
elif event.key() == Qt.Key_Tab:
    if not self.tabChangesFocus():
        cursor = self.textCursor()
        cursor.movePosition(
            QTextCursor.PreviousCharacter,
            QTextCursor.KeepAnchor)
        if cursor.selectedText().trimmed().isEmpty():
            cursor = self.textCursor()
            cursor.insertText(indent)
        else:
            self.complete()
        return True
    # else leave for base class to handle
elif event.key() == Qt.Key_ParenLeft:
    cursor = self.textCursor()
    cursor.movePosition(QTextCursor.StartOfLine,
                       QTextCursor.KeepAnchor)
    name = unicode(cursor.selectedText().section(" ", -1))
    tip = CAT.get(name)
    if tip is not None:
        rect = self.cursorRect()
        point = self.mapToGlobal(QPoint(rect.x(),
                                       rect.y()))
        if len(tip) > tooltipsize:
            tip = tip[:tooltipsize] + " ..."
        QToolTip.showText(point, tip)
elif event.key() in (Qt.Key_Enter,
                    Qt.Key_Return):
    userCursor = self.textCursor()
    cursor = QTextCursor(userCursor)
    cursor.movePosition(QTextCursor.End)
    insert = "\n"
    cursor = QTextCursor(userCursor)
    cursor.movePosition(QTextCursor.StartOfLine)
    cursor.movePosition(QTextCursor.EndOfLine,
                       QTextCursor.KeepAnchor)
    line = cursor.selectedText()
    uline = unicode(line)
    checkForCAT(uline)
    self.checkForClassOrDef(uline)
    if line.endsWith(":") or line.endsWith("\\"):
        for c in line:

```

```

        if c == " ":
            insert += " "
        else:
            break
    insert += indent
    self.indent += 1
elif line.startsWith(indent):
    for c in line:
        if c == " ":
            insert += " "
        else:
            break
    userCursor.insertText(insert)
    return True
elif event.key() in (Qt.Key_Up, Qt.Key_Down,
                    Qt.Key_PageUp, Qt.Key_PageDown):
    cursor = self.textCursor()
    cursor.movePosition(QTextCursor.StartOfLine)
    cursor.movePosition(QTextCursor.EndOfLine,
                       QTextCursor.KeepAnchor)
    line = cursor.selectedText()
    checkForCAT(unicode(line))
    # Fall through to let the base class handle the movement
return QTextEdit.event(self, event)

```

```

def complete(self):
    def getWords(prefix):
        return [word for word in list(CAT.keys() + list(WORDS))
                if len(word) >= MIN_COMPLETION_LEN and
                word.startswith(prefix)]

    cursor = self.textCursor()
    cursor.movePosition(QTextCursor.StartOfLine,
                       QTextCursor.KeepAnchor)
    self.prefix = cursor.selectedText().section(" ", -1)
    if self.prefix.isEmpty():
        return
    pos = self.prefix.length() - 1
    while (self.prefix.at(pos).isLetterOrNumber() or
           self.prefix[pos] == ".") and pos >= 0:
        pos -= 1
    if pos > 0:
        self.prefix = self.prefix.mid(pos + 1)
    if self.prefix.isEmpty():
        return
    words = getWords(self.prefix)
    while not words and self.prefix.contains("."):

```

```

self.prefix = self.prefix.mid(self.prefix.indexIn(".") + 1)
words = getWords(self.prefix)
if not words:
    return
if len(words) > 15:
    length = len(self.prefix)
    words = [word for word in words if "." not in word[length:]]
firsttime = False
if self.completionListWidget is None:
    self.completionListWidget = QListWidget(self)
    self.completionListWidget.setWindowFlags(Qt.Popup)
    QShortcut(QKeySequence("Escape"),
              self.completionListWidget,
              self.completionListWidget.close)
    self.connect(self.completionListWidget,
                 SIGNAL("itemActivated(QListWidgetItem*)"),
                 self.userCompleted)
    firsttime = True
self.completionListWidget.clear()
self.completionListWidget.addItem(sorted(words))
self.completionListWidget.setCurrentItem(
    self.completionListWidget.item(len(words) // 2))
self.completionListWidget.scrollTo(
    self.completionListWidget.currentIndex(),
    QListWidget.PositionAtCenter)

rect = self.cursorRect()
point = self.mapToGlobal(QPoint(rect.x(), rect.y()))
if not firsttime:
    screenRect = (QApplication.desktop()
                  .availableGeometry(self))
    xDiff = screenRect.width() - (point.x() +
                                   self.completionListWidget.width())
    if xDiff < 0:
        point.setX(point.x() + xDiff)
    yDiff = screenRect.height() - (point.y() +
                                    self.completionListWidget.height())
    if yDiff < 0:
        point.setY(point.y() + yDiff)
point.setX(point.x() + TextEdit.COMPLETION_X_OFFSET)
self.completionListWidget.move(point)
self.completionListWidget.show()

def userCompleted(self):
    extra = (self.completionListWidget.currentItem().text()
            .mid(len(self.prefix)))
    if not extra.isEmpty():

```

```

        cursor = self.textCursor()
        cursor.insertText(extra)
        self.completionListWidget.close()

```

```

def gotoLine(self):
    cursor = self.textCursor()
    lino, ok = QDialog.getInteger(self,
        "Sandbox - Goto Line",
        "Goto line:", cursor.blockNumber() + 1,
        1, self.document().blockCount())
    if ok:
        cursor.movePosition(QTextCursor.Start)
        cursor.movePosition(QTextCursor.Down,
            QTextCursor.MoveAnchor, lino - 1)
        self.setTextCursor(cursor)
        self.ensureCursorVisible()

```

```

def gotoMatching(self):
    # move the cursor to the matching ()[]<>{} or do nothing
    OPEN = "([<{"
    CLOSE = ")]>}"
    cursor = self.textCursor()
    cursor.movePosition(QTextCursor.PreviousCharacter,
        QTextCursor.KeepAnchor)
    c = unicode(cursor.selectedText())
    if c not in OPEN + CLOSE:
        cursor = self.textCursor()
        cursor.movePosition(QTextCursor.NextCharacter,
            QTextCursor.KeepAnchor)
        c = unicode(cursor.selectedText())
    if c in OPEN + CLOSE:
        self.setTextCursor(cursor)
    else:
        return
    i = OPEN.find(c)
    if i > -1:
        movement = QTextCursor.NextCharacter
        stack = 0
        target = CLOSE[i]
    else:
        i = CLOSE.find(c)
        if i == -1:
            return
        movement = QTextCursor.PreviousCharacter
        stack = -1
        target = OPEN[i]

```

```

cursor = self.textCursor()
while (not (movement == QTextCursor.NextCharacter and
           cursor.atEnd()) and
       not (movement == QTextCursor.PreviousCharacter and
           cursor.atStart())):
    cursor.clearSelection()
    cursor.movePosition(movement, QTextCursor.KeepAnchor)
    x = unicode(cursor.selectedText())
    if not x:
        break
    if x == c:
        stack += 1
    elif x == target:
        if stack == 0:
            cursor.clearSelection()
            if movement == QTextCursor.PreviousCharacter:
                cursor.movePosition(
                    QTextCursor.NextCharacter)
            self.setTextCursor(cursor)
            break
        else:
            stack -= 1

def indentRegion(self):
    self._walkTheLines(True, " " * Config["tabwidth"])

def unindentRegion(self):
    self._walkTheLines(False, " " * Config["tabwidth"])

def commentRegion(self):
    self._walkTheLines(True, "# ")

def uncommentRegion(self):
    self._walkTheLines(False, "# ")

def _walkTheLines(self, insert, text):
    userCursor = self.textCursor()
    userCursor.beginEditBlock()
    start = userCursor.position()
    end = userCursor.anchor()
    if start > end:
        start, end = end, start
    block = self.document().findBlock(start)

```

```

while block.isValid():
    cursor = QTextCursor(block)
    cursor.movePosition(QTextCursor.StartOfBlock)
    if insert:
        cursor.insertText(text)
    else:
        cursor.movePosition(QTextCursor.NextCharacter,
                            QTextCursor.KeepAnchor, len(text))
        if cursor.selectedText() == text:
            cursor.removeSelectedText()
    block = block.next()
    if block.position() > end:
        break
userCursor.endEditBlock()

```

```

class ShellWidget(QSplitter):
    # Cannot offer a stop command since sending ^C or Del to the
    # interpreter does nothing. Alternative would be to use
    # code.InteractiveInterpreter but I prefer the real thing.

    def __init__(self, parent=None):
        super(ShellWidget, self).__init__(Qt.Vertical, parent)
        self.history = []
        self.historyIndex = -1
        self.output = TextView()
        self.output.setUndoRedoEnabled(False)
        self.output.setReadOnly(True)
        self.output.setTextInteractionFlags(
            Qt.TextSelectableByMouse |
            Qt.TextSelectableByKeyboard)
        self.connect(self.output, SIGNAL("textChanged()"),
                    self.keepOutputVisible)
        self.outputHighlighter = PythonHighlighter(self.output.document())
        self.input = TextEdit()
        self.inputHighlighter = PythonHighlighter(self.input.document())
        self.addWidget(self.output)
        self.addWidget(self.input)
        QWidget.setTabOrder(self.input, self.output)
        self.process = None
        self.restartProcess()
        QShortcut(QKeySequence("F6"), self, self.changeFocus)
        self.setWindowTitle("Sandbox - Shell")

```

```

def restartProcess(self):
    firsttime = False
    if self.process is not None:

```



```

self.endProcess()
self.output.append("%s RESTARTED %s\n" % ("#" * 20, "#" * 20))
else:
    firsttime = True
self.useSeparators = False
self.starting = True
self.inTraceback = False
self.inError = False
self.process = QProcess(self)
cwd = Config["cwd"]
if not cwd.isEmpty() and cwd != ".":
    self.process.setWorkingDirectory(cwd)
self.process.setProcessChannelMode(QProcess.MergedChannels)
self.connect(self.process, SIGNAL("readyRead()"),
              self.readFromPython)
self.process.start(sys.executable, ["-i"])
self.process.waitForStarted()
startup = Config.get("shellstartup")[:]
if startup is not None:
    for line in startup.split("\n"):
        QTimer.singleShot(0,
                          lambda line=line:
                              self.writeToPython(QString(line + "\n")))
        QTimer.singleShot(0,
                          lambda line=line: checkForCAT(unicode(line)))
QTimer.singleShot(0, lambda firsttime=firsttime:
                  self.setUseSeparators(firsttime=firsttime))

def setUseSeparators(self, on=True, firsttime=False):
    self.useSeparators = on
    if firsttime and Config["showwindowinfo"]:
        self.output.append("# This is the Python output window.")
        self.output.append("# Enter Python expressions and "
                            "definitions in the input window below, ")
        self.output.append("# then press F5 (or Ctrl+Enter) to "
                            "execute.")
        self.output.append(u"""\n
# Use Tab or Ctrl+P for completion (which also works in editor windows),
# and Ctrl+\u2191 and Ctrl+\u2193 for the command history.\n
""")
    self.outputHighlighter.rehighlight()

def endProcess(self):
    if self.process is not None and self.process.state():
        self.process.write(QByteArray("\x04"))
        self.process.close()

```

```

        self.process.terminate()
        QThread.msleep(100)
    if self.process.state():
        self.process.kill()
    self.process = None

def changeFocus(self):
    if self.input.hasFocus():
        self.output.setFocus()
    else:
        self.input.setFocus()

def keepOutputVisible(self):
    self.output.moveCursor(QTextCursor.End)
    self.output.ensureCursorVisible()

def writeSeparator(self, cursor, separator):
    if not self.useSeparators:
        return
    cursor.movePosition(QTextCursor.End)
    while True:
        cursor.movePosition(QTextCursor.PreviousCharacter,
                            QTextCursor.KeepAnchor)
        if cursor.selectedText() == "\n":
            cursor.deleteChar()
        else:
            break
    cursor.insertText("\n%s\n" % separator,
                     self.output.textcharformat)

def readFromPython(self):
    beforeoutput = Config["beforeoutput"]
    beforeinput = Config["beforeinput"]
    cursor = self.output.textCursor()
    doneSeparator = False
    bytes = QByteArray()
    while self.process.bytesAvailable():
        bytes += self.process.readAll()
    lines = QString.fromUtf8(bytes.data()).split("\n")
    for line in lines:
        if line.endsWith(sys.ps1):
            self.inTraceback = False
            self.inError = False
        line = trimQString(line, sys.ps1)

```

```

line = trimQString(line, sys.ps2)
if line.isEmpty():
    continue
if line.startsWith("Traceback"):
    self.inTraceback = True
if line.startsWith(' File "'):
    self.inError = True
if self.inError:
    line.replace("<stdin>", "<Shell>").prepend("Error: ")
if not line.endsWith("\n"):
    line.append("\n")
if (not doneSeparator and
    not self.starting and
    not self.inTraceback):
    self.writeSeparator(cursor, beforeoutput)
    doneSeparator = True
cursor = self.output.textCursor()
cursor.movePosition(QTextCursor.End)
cursor.insertText(line, self.output.textcharformat)
if (not self.inTraceback and
    self.output.lastNonEmptyLine() != beforeinput):
    # Gives cleaner output, but it is slow!
    self.output.setPlainText(self.output.toPlainText().replace(
        "%s\n%s\n" % (beforeinput, beforeoutput), ""))
    self.writeSeparator(cursor, beforeinput)

```

```

def writeToPython(self, text):
    cursor = self.output.textCursor()
    cursor.movePosition(QTextCursor.End)
    cursor.insertText(text, self.output.textcharformat)
    text.append("\n\n")
    self.process.write(text.toUtf8())
    self.process.waitForBytesWritten(-1)
    self.input.clear()

```

```

def execute(self):
    self.starting = False
    text = self.input.toPlainText().trimmed()
    if text.isEmpty():
        text = QString("")
    elif not text.contains("\n"):
        checkForCAT(unicode(text))
    # TODO special case help()
    if text == "license()":
        text.prepend("license.MAXLINES = 9999;")
    else:

```

```
        self.history.append(text)
        self.historyIndex = len(self.history)
    text.append("\n")
    self.writeToPython(text)
```

```
def undo(self):
    self.input.undo()
```

```
def redo(self):
    self.input.redo()
```

```
def copy(self):
    if self.input.hasFocus():
        self.input.copy()
    else:
        self.output.copy()
```

```
def cut(self):
    if self.input.hasFocus():
        self.input.cut()
    else:
        self.output.cut()
```

```
def paste(self):
    if self.input.hasFocus():
        self.input.paste()
    else:
        self.output.paste()
```

```
def selectAll(self):
    if self.input.hasFocus():
        self.input.selectAll()
    else:
        self.output.selectAll()
```

```
def complete(self):
    self.input.complete()
```

```
def gotoMatching(self):
    self.input.gotoMatching()
```

```

def clearOutput(self):
    self.output.clear()

def showPrevious(self):
    if -1 < self.historyIndex - 1 < len(self.history):
        self.historyIndex = max(0, self.historyIndex - 1)
        self.input.setText(self.history[self.historyIndex])
        self.input.setFocus()

def showNext(self):
    if -1 < self.historyIndex + 1 < len(self.history):
        self.historyIndex = min(len(self.history),
                                self.historyIndex + 1)
        self.input.setText(self.history[self.historyIndex])
    elif self.historyIndex+1 == len(self.history):
        self.historyIndex = len(self.history)
        self.input.clear()
        self.input.setFocus()

class EditWidget(TextEdit):

    def __init__(self, parent=None):
        super(EditWidget, self).__init__(parent)
        self.highlighter = PythonHighlighter(self.document())
        self.findForm = None
        self.process = None
        self.results = None
        self.args = ""
        self.history = [0]
        self.historyIndex = 0
        self.movingInHistory = False
        self.connect(self, SIGNAL("cursorPositionChanged()"),
                    self._updateHistory)

    def _updateHistory(self):
        if not self.movingInHistory:
            lino = self.textCursor().blockNumber()
            if lino != self.history[-1]:
                self.historyIndex = len(self.history)
                self.history.append(lino)

```

```

def gotoPrevious(self):
    self.movingInHistory = True
    self.historyIndex = max(0, self.historyIndex - 1)
    self._gotoHistory()
    self.movingInHistory = False

def gotoNext(self):
    self.movingInHistory = True
    self.historyIndex = min(len(self.history) - 1,
                            self.historyIndex + 1)
    self._gotoHistory()
    self.movingInHistory = False

def _gotoHistory(self):
    cursor = self.textCursor()
    cursor.movePosition(QTextCursor.Start)
    cursor.movePosition(QTextCursor.Down,
                        QTextCursor.MoveAnchor,
                        self.history[self.historyIndex])
    self.setTextCursor(cursor)
    self.ensureCursorVisible()

def findText(self):
    if self.findForm is None:
        self.findForm = FindForm(self)
        self.connect(self.findForm, SIGNAL("find"),
                    self.findClicked)
        self.connect(self.findForm, SIGNAL("replace"),
                    self.replaceClicked)
    self.findForm.show()
    self.findForm.activateWindow()
    self.findForm.raise_()

def findClicked(self, findText, caseSensitive, wholeWords):
    flags = QTextDocument.FindFlags()
    if caseSensitive:
        flags |= QTextDocument.FindCaseSensitively
    if wholeWords:
        flags |= QTextDocument.FindWholeWords
    cursor = self.document().find(findText, self.textCursor(), flags)
    if not cursor.isNull():
        self.setTextCursor(cursor)
    else:
        self.parent().statusBar().showMessage(

```

```

        "%s' not found" % findText, TIMEOUT)
    return cursor

def findNext(self):
    if (self.findForm is None or
        self.findForm.findEdit.currentText().isEmpty()):
        self.findText()
    else:
        self.findClicked(self.findForm.findEdit.currentText(),
            self.findForm.caseSensitiveCheckBox.isChecked(),
            self.findForm.wholeWordsCheckBox.isChecked())

def findWordAt(self):
    word = self.currentWord()
    if not word.isEmpty():
        self.findClicked(word, True, True)

def replaceClicked(self, findText, replaceText, caseSensitive,
    wholeWords):
    cursor = self.findClicked(self.findForm.findEdit.currentText(),
        self.findForm.caseSensitiveCheckBox.isChecked(),
        self.findForm.wholeWordsCheckBox.isChecked())
    if cursor.isNull():
        return
    cursor.beginEditBlock()
    start = min(cursor.anchor(), cursor.position())
    cursor.removeSelectedText()
    cursor.insertText(replaceText)
    cursor.setPosition(start)
    cursor.setPosition(start + replaceText.length(),
        QTextCursor.KeepAnchor)
    cursor.endEditBlock()
    self.setTextCursor(cursor)

def replaceNext(self):
    if (self.findForm is None or
        self.findForm.findEdit.currentText().isEmpty()):
        self.findText()
    else:
        self.replaceClicked(self.findForm.findEdit.currentText(),
            self.findForm.replaceEdit.currentText(),
            self.findForm.caseSensitiveCheckBox.isChecked(),
            self.findForm.wholeWordsCheckBox.isChecked())

```

```

def setArgs(self):
    args, ok = QDialogBox.getText(self,
        "Sandbox - Set Arguments",
        "Command line arguments:",
        QLineEdit.Normal, self.args)
    self.args = ""
    if ok:
        self.args = unicode(args)

def execute(self):
    filename = self.parent().filename
    if (self.document().isModified() and
        (QMessageBox.question(self,
            "Sandbox - Unsaved Changes",
            "Save unsaved changes in %s before executing?" %
            filename,
            QMessageBox.Yes|QMessageBox.No) ==
            QMessageBox.Yes)):
        self.parent().fileSave()
    if self.results is None:
        self.results = TextView()
        self.results.setUndoRedoEnabled(False)
        self.results.setReadOnly(True)
        self.results.setTextInteractionFlags(
            Qt.TextSelectableByMouse|
            Qt.TextSelectableByKeyboard)
        fm = QFontMetrics(self.font())
        # TODO Make the default width & height configurable
        self.results.resize(fm.width("X") * 80, fm.height() * 25)
        self.connect(self.results, SIGNAL("textChanged()"),
            self.keepResultsVisible)
        QShortcut(QKeySequence("Escape"), self.results,
            self.results.close)
    else:
        self.results.clear()
    self.results.setWindowTitle("Sandbox - %s %s [Running]" % (
        QFileInfo(filename).fileName(),
        " ".join(self.args.split())))
    self.process = QProcess(self)
    cwd = Config["cwd"]
    if not cwd.isEmpty() and cwd != ".":
        self.process.setWorkingDirectory(cwd)
    self.process.setProcessChannelMode(QProcess.MergedChannels)
    self.connect(self.process, SIGNAL("readyRead()"),
        self.readResults)
    self.process.start(sys.executable, [filename] + self.args.split())

```



```

self.process.waitForStarted()

def readResults(self):
    self.results.show()
    self.results.activateWindow()
    self.results.raise_()
    bytes = QByteArray()
    while self.process.bytesAvailable():
        bytes += self.process.readAll()
    self.results.append(QString.fromUtf8(bytes.data()))

def keepResultsVisible(self):
    self.results.moveCursor(QTextCursor.End)
    self.results.ensureCursorVisible()

def closeEvent(self, event):
    self.stop()
    event.accept()

def stop(self):
    if self.process is not None and self.process.state():
        self.process.terminate()
        QThread.msleep(100)
    if self.process.state():
        self.process.kill()
    self.results.setWindowTitle(self.results.windowTitle().replace(
        "[Running]", "[Stopped]"))

def raiseResultsWindow(self):
    if self.results is not None:
        self.results.activateWindow()
        self.results.raise_()

class ConfigForm(QDialog):

    def __init__(self, parent=None):
        super(ConfigForm, self).__init__(parent)

        self.highlightingChanged = False
        fm = QFontMetrics(self.font())
        monofont = QFont(Config["fontfamily"], Config["fontsize"])
        pixmap = QPixmap(16, 16)

```

```

self.colors = {}
self.boldCheckBoxes = {}
self.italicCheckBoxes = {}
self.completionCheckBoxes = {}
self.editors = {}

generalWidget = QWidget()
self.rememberGeometryCheckBox = QCheckBox(
    "&Remember Geometry")
self.rememberGeometryCheckBox.setToolTip("<p>Check this to make "
    "Sandbox remember the size and position of the Shell "
    "window and one Editor window")
self.rememberGeometryCheckBox.setChecked(
    Config["remembergeometry"])
self.editorWindowRadioButton = QRadioButton(
    "Start With Editor &Window")
self.shellWindowRadioButton = QRadioButton(
    "Start With &Shell Window")
startWithButtonGroup = QButtonGroup(self)
startWithButtonGroup.setExclusive(True)
startWithButtonGroup.addButton(self.editorWindowRadioButton)
startWithButtonGroup.addButton(self.shellWindowRadioButton)
startwithshell = Config["startwithshell"]
self.shellWindowRadioButton.setChecked(startwithshell)
self.editorWindowRadioButton.setChecked(not startwithshell)
self.autoHideFindDlgCheckBox = QCheckBox(
    "Automati&cally Hide the Find and Replace dialog")
self.autoHideFindDlgCheckBox.setToolTip("<p>If checked, when you "
    "press Find or Replace the dialog will be hidden; "
    "further finds and replaces can be done through the Edit "
    "menu (which lists the keyboard shortcuts). Uncheck this "
    "if you prefer the dialog to stay visible and to click "
    "its buttons")
self.autoHideFindDlgCheckBox.setChecked(
    Config["autohidefinddialog"])
self.backupLineEdit = QLineEdit(Config["backupsuffix"])
self.backupLineEdit.setToolTip("<p>If nonempty, a backup will be "
    "kept with the given suffix. If empty, no backup will be "
    "made.")
regex = QRegExp(r"[~.].*")
self.backupLineEdit.setValidator(QRegExpValidator(regex,
    self))
self.backupLineEdit.setFont(monofont)
backupLabel = QLabel("&Backup suffix:")
backupLabel.setBuddy(self.backupLineEdit)
regex = QRegExp(r"#.*")
self.inputLineEdit = QLineEdit(Config["beforeinput"])
self.inputLineEdit.setValidator(QRegExpValidator(regex,

```

```

        self))
self.inputLineEdit.setInputMask("#" + "x" * 40)
self.inputLineEdit.setFont(monofont)
inputPromptLabel = QLabel("&Input Prompt:")
inputPromptLabel.setBuddy(self.inputLineEdit)
self.outputLineEdit = QLineEdit(Config["beforeoutput"])
self.outputLineEdit.setValidator(QRegExpValidator(regex,
        self))
self.outputLineEdit.setInputMask("#" + "x" * 40)
self.outputLineEdit.setFont(monofont)
outputPromptLabel = QLabel("&Output Prompt:")
outputPromptLabel.setBuddy(self.outputLineEdit)
self.cwdLineEdit = QLineEdit(Config["cwd"])
cwdLabel = QLabel("Working &Directory:")
cwdLabel.setBuddy(self.cwdLineEdit)
self.showWindowInfoCheckBox = QCheckBox(
    "Show Window Information at Start&up")
self.showWindowInfoCheckBox.setToolTip("<p>Uncheck this to stop "
    "the `This window shows Python's output' messages")
self.showWindowInfoCheckBox.setChecked(Config["showwindowinfo"])
self.toolTipSizeSpinBox = QSpinBox()
self.toolTipSizeSpinBox.setAlignment(Qt.AlignVCenter|
        Qt.AlignRight)
self.toolTipSizeSpinBox.setRange(20, MAX_TOOLTIP_LEN)
self.toolTipSizeSpinBox.setSuffix(" chars")
self.toolTipSizeSpinBox.setValue(Config["tooltipsize"])
tooltipSizeLabel = QLabel("Max. Tooltip &Length:")
tooltipSizeLabel.setBuddy(self.toolTipSizeSpinBox)
self.maxLinesSizeSpinBox = QSpinBox()
self.maxLinesSizeSpinBox.setAlignment(Qt.AlignVCenter|
        Qt.AlignRight)
self.maxLinesSizeSpinBox.setRange(0, 10000)
self.maxLinesSizeSpinBox.setSuffix(" lines")
self.maxLinesSizeSpinBox.setValue(Config["maxlinestoscan"])
self.maxLinesSizeSpinBox.setToolTip("<p>The maximum lines to "
    "scan for function, method, and class names, and for "
    "imports when a file is loaded. This is used for "
    "setting up completions and tooltips and for the Goto "
    "class and Goto def submenus. It can be slow for large "
    "files.")
maxLinesSizeLabel = QLabel("&Max. Lines to Scan:")
maxLinesSizeLabel.setBuddy(self.maxLinesSizeSpinBox)
self.docPathLineEdit = QLineEdit(Config["pythondocpath"])
self.docPathLineEdit.setToolTip('<p>Enter your preferred location '
    '(web address or path on local hard drive) of Python '
    'documentation to be shown when selecting "Python '
    'Documentation" from the Help menu.')
docPathButton = QPushButton("...")

```

```

docPathButton.setToolTip("Open file dialog to choose path")
self.connect(docPathButton, SIGNAL("clicked()"),
             self.setDocPath)
docPathLabel = QLabel("P&ython Documentation:")
docPathLabel.setBuddy(self.docPathLineEdit)
minWidth = 0
for label in (backupLabel, inputPromptLabel, outputPromptLabel,
             cwdLabel, tooltipSizeLabel, maxLinesSizeLabel,
             docPathLabel):
    minWidth = max(minWidth, fm.width(label.text()))
for label in (backupLabel, inputPromptLabel, outputPromptLabel,
             cwdLabel, tooltipSizeLabel, maxLinesSizeLabel,
             docPathLabel):
    label.setMinimumWidth(minWidth)
vbox = QVBoxLayout()
vbox.addWidget(self.rememberGeometryCheckBox)
hbox = QHBoxLayout()
hbox.addWidget(self.editorWindowRadioButton)
hbox.addWidget(self.shellWindowRadioButton)
hbox.addStretch()
vbox.addLayout(hbox)
vbox.addWidget(self.autoHideFindDlgCheckBox)
hbox = QHBoxLayout()
hbox.addWidget(backupLabel)
hbox.addWidget(self.backupLineEdit)
hbox.addStretch()
vbox.addLayout(hbox)
hbox = QHBoxLayout()
hbox.addWidget(inputPromptLabel)
hbox.addWidget(self.inputLineEdit)
hbox.addStretch()
vbox.addLayout(hbox)
hbox = QHBoxLayout()
hbox.addWidget(outputPromptLabel)
hbox.addWidget(self.outputLineEdit)
hbox.addStretch()
vbox.addLayout(hbox)
hbox = QHBoxLayout()
hbox.addWidget(cwdLabel)
hbox.addWidget(self.cwdLineEdit)
vbox.addLayout(hbox)
vbox.addWidget(self.showWindowInfoCheckBox)
hbox = QHBoxLayout()
hbox.addWidget(tooltipSizeLabel)
hbox.addWidget(self.toolTipSizeSpinBox)
hbox.addStretch()
vbox.addLayout(hbox)
hbox = QHBoxLayout()

```

```

hbox.addWidget(maxLinesSizeLabel)
hbox.addWidget(self.maxLinesSizeSpinBox)
hbox.addStretch()
vbox.addLayout(hbox)
hbox = QHBoxLayout()
hbox.addWidget(docPathLabel)
hbox.addWidget(self.docPathLineEdit)
hbox.addWidget(docPathButton)
vbox.addLayout(hbox)
vbox.addStretch()
generalWidget.setLayout(vbox)

highlightingWidget = QWidget()
self.tabWidthSpinBox = QSpinBox()
self.tabWidthSpinBox.setAlignment(Qt.AlignVCenter|
                                Qt.AlignRight)
self.tabWidthSpinBox.setRange(2, 20)
self.tabWidthSpinBox.setSuffix(" spaces")
self.tabWidthSpinBox.setValue(Config["tabwidth"])
tabWidthLabel = QLabel("&Tab width:")
tabWidthLabel.setBuddy(self.tabWidthSpinBox)
self.fontComboBox = QFontComboBox()
self.fontComboBox.setCurrentFont(monofont)
fontLabel = QLabel("&Font:")
fontLabel.setBuddy(self.fontComboBox)
self.fontSpinBox = QSpinBox()
self.fontSpinBox.setAlignment(Qt.AlignVCenter|
                              Qt.AlignRight)
self.fontSpinBox.setRange(6, 20)
self.fontSpinBox.setSuffix(" pt")
self.fontSpinBox.setValue(Config["fontsize"])

vbox = QVBoxLayout()
hbox = QHBoxLayout()
hbox.addWidget(tabWidthLabel)
hbox.addWidget(self.tabWidthSpinBox)
hbox.addStretch()
vbox.addLayout(hbox)
hbox = QHBoxLayout()
hbox.addWidget(fontLabel)
hbox.addWidget(self.fontComboBox)
hbox.addWidget(self.fontSpinBox)
hbox.addStretch()
vbox.addLayout(hbox)

minWidth = 0
minButtonWidth = 0
count = 1

```

```

labels = []
buttons = []
for name, labelText in (("normal", "Normal:"),
    ("keyword", "Keywords:"), ("builtin", "Builtins:"),
    ("constant", "Constants:"), ("decorator", "Decorators:"),
    ("comment", "Comments:"), ("string", "Strings:"),
    ("number", "Numbers:"), ("error", "Errors:"),
    ("pyqt", "PyQt:")):
    label = QLabel(labelText)
    minWidth = max(minWidth, fm.width(label.text()))
    labels.append(label)
    boldCheckBox = QCheckBox("Bold")
    boldCheckBox.setChecked(Config["%sfontbold" % name])
    self.boldCheckBoxes[name] = boldCheckBox
    italicCheckBox = QCheckBox("Italic")
    italicCheckBox.setChecked(Config["%sfontitalic" % name])
    self.italicCheckBoxes[name] = italicCheckBox
    self.colors[name] = [Config["%sfontcolor" % name], None]
    pixmap.fill(QColor(self.colors[name][0]))
    if count <= 9:
        colorButton = QPushButton("&%d Color..." % count)
        count += 1
    elif name == "pyqt":
        colorButton = QPushButton("&Q Color...")
    else:
        colorButton = QPushButton("Color...")
    minButtonWidth = max(minButtonWidth,
        10 + pixmap.width() + fm.width(colorButton.text()))
    buttons.append(colorButton)
    colorButton.setIcon(QIcon(pixmap))
    self.colors[name][1] = colorButton
    hbox = QHBoxLayout()
    hbox.addWidget(label)
    hbox.addWidget(boldCheckBox)
    hbox.addWidget(italicCheckBox)
    hbox.addWidget(colorButton)
    hbox.addStretch()
    vbox.addLayout(hbox)
    self.connect(colorButton, SIGNAL("clicked()"),
        lambda name=name: self.setColor(name))
for label in labels:
    label.setMinimumWidth(minWidth)
for button in buttons:
    button.setMinimumWidth(minButtonWidth)
vbox.addStretch()
highlightingWidget.setLayout(vbox)

tabWidget = QTabWidget()

```

```

tabWidget.addTab(generalWidget, "&General")
tabWidget.addTab(highlightingWidget, "&Highlighting")

```

```

for name, label, msg in (
    ("newfile", "On &New File",
     "<font color=green><i>The text here is automatically "
     "inserted into new files.<br>It may be convenient to add "
     "your standard imports and copyright notice here."),
    ("shellstartup", "&At Startup",
     "<font color=green><i>Sandbox executes the lines above "
     "whenever the Python interpreter is started.<br>"
     "Use them to add convenience, e.g. "
     "</i><b>from math import *; import re;</b> "
     "<font color=green><i>etc.<br>"
     "Changes made here only take "
     "effect when Sandbox is next run."
     "<hr><font color=red>The codecs and sys imports, "
     "and the other codecs lines should<br>not be changed "
     "unless you are an expert.</font>")):

```

```

    editor = TextEdit()
    editor.setPlainText(Config[name])
    editor.setTabChangesFocus(True)
    PythonHighlighter(editor.document())
    vbox = QVBoxLayout()
    vbox.addWidget(editor, 1)
    vbox.addWidget(QLabel(msg))
    widget = QWidget()
    widget.setLayout(vbox)
    tabWidget.addTab(widget, label)
    self.editors[name] = editor

```

```

buttonBox = QDialogButtonBox(QDialogButtonBox.Ok|
                             QDialogButtonBox.Cancel)

```

```

layout = QVBoxLayout()
layout.addWidget(tabWidget)
layout.addWidget(buttonBox)
self.setLayout(layout)

```

```

self.connect(buttonBox, SIGNAL("accepted()"), self.accept)
self.connect(buttonBox, SIGNAL("rejected()"), self.reject)

```

```

self.setWindowTitle("Sandbox - Configure")

```

```

def updateUi(self):
    pass # TODO validation, e.g., valid shellstartup, etc.

```

```

def setDocPath(self):
    path = QFileDialog.getOpenFileName(self,
        "Sandbox - Open File", self.docPathLineEdit.text())
    if not path.isEmpty():
        self.docPathLineEdit.setText(path)

def setColor(self, which):
    color = QColorDialog.getColor(
        QColor(self.colors[which][0]), self)
    if color is not None:
        self.colors[which][0] = color.name()
        pixmap = QPixmap(16, 16)
        pixmap.fill(QColor(color.name()))
        self.colors[which][1].setIcon(QIcon(pixmap))

def accept(self):
    Config["remembergeometry"] = (self.rememberGeometryCheckBox
        .isChecked())
    Config["showwindowinfo"] = self.showWindowInfoCheckBox.isChecked()
    Config["startwithshell"] = self.shellWindowRadioButton.isChecked()
    Config["autohidefinddialog"] = (self.autoHideFindDlgCheckBox
        .isChecked())
    Config["backupsuffix"] = self.backupLineEdit.text()
    Config["beforeinput"] = self.inputLineEdit.text()
    Config["beforeoutput"] = self.outputLineEdit.text()
    Config["cwd"] = self.cwdLineEdit.text()
    for name in ("shellstartup", "newfile"):
        Config[name] = unicode(self.editors[name].toPlainText())
    Config["tabwidth"] = self.tabWidthSpinBox.value()
    Config["tooltipszize"] = self.toolTipSizeSpinBox.value()
    Config["maxlinestocan"] = self.maxLinesSizeSpinBox.value()
    Config["pythondocpath"] = self.docPathLineEdit.text()
    family = self.fontComboBox.currentFont().family()
    if Config["fontfamily"] != family:
        self.highlightingChanged = True
        Config["fontfamily"] = family
    size = self.fontSpinBox.value()
    if Config["fontsize"] != size:
        self.highlightingChanged = True
        Config["fontsize"] = size
    for name in ("normal", "keyword", "builtin", "constant",
        "decorator", "comment", "string", "number", "error",
        "pyqt"):
        bold = self.boldCheckBoxes[name].isChecked()
        if Config["%sfontbold" % name] != bold:
            self.highlightingChanged = True

```



```

        Config["%sfontbold" % name] = bold
        italic = self.italicCheckBoxes[name].isChecked()
        if Config["%sfontitalic" % name] != italic:
            self.highlightingChanged = True
            Config["%sfontitalic" % name] = italic
        color = self.colors[name][0]
        if Config["%sfontcolor" % name] != color:
            self.highlightingChanged = True
            Config["%sfontcolor" % name] = color
        QDialog.accept(self)

```

```
class MainWindow(QMainWindow):
```

```
    NextId = 1
```

```
    Instances = set()
```

```
    Shell = None
```

```
    Toolbars = { }
```

```
    def __init__(self, filename=QString(), isShell=False,
                 parent=None):
```

```
        super(MainWindow, self).__init__(parent)
```

```
        self.setAttribute(Qt.WA_DeleteOnClose)
```

```
        MainWindow.Instances.add(self)
```

```
        self.setWindowTitle("Sandbox[*]")
```

```
        if isShell:
```

```
            self.editor = ShellWidget()
```

```
            MainWindow.Shell = self
```

```
        else:
```

```
            self.editor = EditWidget()
```

```
        self.setCentralWidget(self.editor)
```

```
        fileNewAction = self.createAction("&New File", self.fileNew,
                                          QKeySequence.New, "filenew", "Create a Python file")
```

```
        if not isShell:
```

```
            fileNewShellAction = self.createAction("Sh&ell",
```

```
                                                  self.fileNewShell, icon="filenew",
```

```
                                                  tip="Create a new (or go to the existing) Shell")
```

```
        fileOpenAction = self.createAction("&Open...", self.fileOpen,
```

```
                                          QKeySequence.Open, "fileopen",
```

```
                                          "Open an existing Python file")
```

```
    # TODO
```

```
    # fileOpenRecentAction = self.createAction("&Open Recent",
```

```
    # self.fileOpenRecent, icon="fileopen",
```

```
    # tip="Open an existing Python file")
```

```
    if not isShell:
```

```
        fileOpenAtAction = self.createAction(
```

```
        "Open &File at Cursor", self.fileOpenAt,
```

```

        "Ctrl+Shift+O", "fileopen",
        "Open the file whose name is at the cursor position")
fileSaveAction = self.createAction("&Save", self.fileSave,
    QKeySequence.Save, "filesave", "Save the file")
fileSaveAsAction = self.createAction("Save &As...",
    self.fileSaveAs, icon="filesaveas",
    tip="Save the file using a new filename")
fileSaveAllAction = self.createAction("Save A&ll",
    self.fileSaveAll, icon="filesaveall",
    tip="Save all the files")
fileConfigureAction = self.createAction("Config&ure...",
    self.fileConfigure, icon="fileconfigure",
    tip="Configure Sandbox")
fileCloseAction = self.createAction("&Close", self.close,
    QKeySequence.Close, "fileclose",
    "Close this Python editor")
fileQuitAction = self.createAction("&Quit", self.fileQuit,
    "Ctrl+Q", "filequit", "Close the application")
editUndoAction = self.createAction("&Undo", self.editor.undo,
    QKeySequence.Undo, "editundo",
    "Undo the last editing action")
editRedoAction = self.createAction("&Redo", self.editor.redo,
    QKeySequence.Redo, "editredo",
    "Redo the last editing action")
editCopyAction = self.createAction("&Copy", self.editor.copy,
    QKeySequence.Copy, "editcopy",
    "Copy text to the clipboard")
editCutAction = self.createAction("Cu&t", self.editor.cut,
    QKeySequence.Cut, "editcut",
    "Cut text to the clipboard")
editPasteAction = self.createAction("&Paste",
    self.editor.paste, QKeySequence.Paste, "editpaste",
    "Paste in the clipboard's text")
editSelectAllAction = self.createAction("Select &All",
    self.editor.selectAll, QKeySequence.SelectAll,
    "editselectall", "Select all the editor's text")
editCompleteAction = self.createAction("Com&plete",
    self.editor.complete, "Ctrl+P", "editcomplete",
    "Complete the word (can also use Tab)")
if isShell:
    editClearOutputAction = self.createAction("Clear &Output",
        self.editor.clearOutput, icon="editclear",
        tip="Clear the output text")
else:
    editFindAction = self.createAction("&Find...",
        self.editor.findText, QKeySequence.Find,
        "editfind", "Find the given text")
    editFindNextAction = self.createAction("Find &Next",

```

```

        self.editor.findNext, QKeySequence.FindNext,
        "editfindnext",
        "Find the next occurrence of the given text")
editFindWordAtAction = self.createAction(
    "Find &Word at Cursor", self.editor.findWordAt,
    "Shift+F3", "editfindnext",
    "Find the next occurrence of the word at the cursor")
editReplaceNextAction = self.createAction("R&eplace Next",
    self.editor.replaceNext, QKeySequence.Replace,
    "editreplace",
    "Replace the next occurrence of the given text")
editIndentRegionAction = self.createAction("&Indent Region",
    self.editor.indentRegion, "Ctrl+]", "editindent",
    "Indent the selected text or the current line")
editUnindentRegionAction = self.createAction(
    "Unin&dent Region", self.editor.unindentRegion,
    "Ctrl+[", "editunindent",
    "Unindent the selected text or the current line")
editCommentRegionAction = self.createAction("C&omment Region",
    self.editor.commentRegion, icon="editcomment",
    tip=("Comment out the selected text or the "
        "current line"))
editUncommentRegionAction = self.createAction(
    "Uncomment Re&gion", self.editor.uncommentRegion,
    icon="edituncomment",
    tip="Uncomment the selected text or the current line")
actionRunAction = self.createAction("E&xecute",
    self.editor.execute, None, "actionrun",
    "Execute the input window's code or run the current file")
actionRunAction.setShortcuts([QKeySequence("F5"),
    QKeySequence("Ctrl+Enter"),
    QKeySequence("Ctrl+Return")])
if not isShell:
    actionSetArgsAction = self.createAction("Set &arguments...",
        self.editor.setArgs, icon="actionsetargs",
        tip="Set the command line arguments")
    actionStopAction = self.createAction("&Stop",
        self.editor.stop, icon="actionstop",
        tip="Forcibly stop the application")
else:
    actionRestartAction = self.createAction("Restart &Python",
        self.editor.restartProcess, icon="actionrestart",
        tip="Stop the interpreter and start a new one")
    actionShowPrevAction = self.createAction(
        "Show Previous Command", self.editor.showPrevious,
        "Ctrl+Up", "previous",
        ("Show the previous command ready for editing "
        "and running"))

```

```

        actionShowNextAction = self.createAction(
            "Show Next Command", self.editor.showNext,
            "Ctrl+Down", "next",
            ("Show the next command ready for editing "
            "and running"))
    helpHelpAction = self.createAction("&Help", self.helpHelp,
        QKeySequence.HelpContents, icon="helphelp",
        tip="Online help")
    helpPydocAction = self.createAction("&Python Documentation",
        self.helpPydoc, "Ctrl+H", "docs",
        tip="Open Python Documentation in a Web Browser")
    helpAboutAction = self.createAction("&About", self.helpAbout,
        icon="icon", tip="About Sandbox")

    fileMenu = self.menuBar().addMenu("&File")
    self.addActions(fileMenu, (fileNewAction,))
    if not isShell:
        self.addActions(fileMenu, (fileNewShellAction,))
    self.addActions(fileMenu, (fileOpenAction,
        # fileOpenRecentAction # TODO
        ))
    if not isShell:
        self.addActions(fileMenu, (fileOpenAtAction, fileSaveAction,
            fileSaveAsAction))
    self.addActions(fileMenu, (fileSaveAllAction, None,
        fileConfigureAction, None, fileCloseAction,
        fileQuitAction))
    editMenu = self.menuBar().addMenu("&Edit")
    self.addActions(editMenu, (editUndoAction, editRedoAction, None,
        editCopyAction, editCutAction, editPasteAction,
        editSelectAllAction, None, editCompleteAction))
    if isShell:
        self.addActions(editMenu, (None, editClearOutputAction,))
    else:
        self.addActions(editMenu, (None, editFindAction,
            editFindNextAction, editFindWordAtAction,
            editReplaceNextAction, None, editIndentRegionAction,
            editUnindentRegionAction, editCommentRegionAction,
            editUncommentRegionAction))
    self.gotoMenu = self.menuBar().addMenu("&Goto")
    self.connect(self.gotoMenu, SIGNAL("aboutToShow()"),
        self.updateGotoMenu)
    actionMenu = self.menuBar().addMenu("&Action")
    self.addActions(actionMenu, (actionRunAction,))
    if not isShell:
        self.addActions(actionMenu, (actionSetArgsAction,
            actionStopAction))
    else:

```

```

        self.addAction(actionRestartAction, None,
            actionShowPrevAction, actionShowNextAction))
viewMenu = self.menuBar().addMenu("&View")
self.windowMenu = self.menuBar().addMenu("&Window")
self.connect(self.windowMenu, SIGNAL("aboutToShow()"),
    self.updateWindowMenu)
helpMenu = self.menuBar().addMenu("&Help")
self.addAction(helpMenu, (helpHelpAction, helpPydocAction,
    helpAboutAction))

self.fileToolBar = self.addToolBar("File Toolbar")
self.fileToolBar.setObjectName("FileToolBar")
MainWindow.Toolbars[self.fileToolBar] = None
self.addAction(self.fileToolBar, (fileNewAction, fileOpenAction))
if not isShell:
    self.addAction(self.fileToolBar, (fileSaveAction,))
self.editToolBar = self.addToolBar("Edit Toolbar")
self.editToolBar.setObjectName("EditToolBar")
MainWindow.Toolbars[self.editToolBar] = None
self.addAction(self.editToolBar, (editUndoAction, editRedoAction,
    None, editCopyAction, editCutAction, editPasteAction))
if not isShell:
    self.addAction(self.editToolBar, (None, editFindAction,
        editFindNextAction, editReplaceNextAction, None,
        editIndentRegionAction, editUnindentRegionAction,
        editCommentRegionAction, editUncommentRegionAction))
self.actionToolBar = self.addToolBar("Action Toolbar")
self.actionToolBar.setObjectName("ActionToolBar")
MainWindow.Toolbars[self.actionToolBar] = None
self.addAction(self.actionToolBar, (actionRunAction,))
if not isShell:
    self.addAction(self.actionToolBar, (actionStopAction,))
else:
    self.addAction(self.actionToolBar, (actionRestartAction, None,
        actionShowPrevAction, actionShowNextAction))
for toolbar in (self.fileToolBar, self.editToolBar,
    self.actionToolBar):
    action = viewMenu.addAction("&%s" % toolbar.windowTitle())
    self.connect(action, SIGNAL("toggled(bool)"),
        self.toggleToolbars)
    action.setCheckable(True)
    MainWindow.Toolbars[toolbar] = action

self.connect(self, SIGNAL("destroyed(QObject*)"),
    MainWindow.updateInstances)

if not isShell:
    status = self.statusBar()

```

```

status.setSizeGripEnabled(False)
status.showMessage("Ready", 5000)
self.columnCountLabel = QLabel("(empty)")
status.addPermanentWidget(self.columnCountLabel)
self.lineCountLabel = QLabel("(empty)")
status.addPermanentWidget(self.lineCountLabel)
self.connect(self.editor,
              SIGNAL("cursorPositionChanged()"),
              self.updateIndicators)
self.connect(self.editor.document(),
              SIGNAL("blockCountChanged(int)"),
              self.updateIndicators)

if Config["remembergeometry"]:
    if isShell:
        self.resize(Config["shellwidth"], Config["shellheight"])
        self.move(Config["shellx"], Config["shelly"])
    else:
        self.resize(Config["windowwidth"],
                    Config["windowheight"])
        if int(isShell) + len(MainWindow.Instances) <= 2:
            self.move(Config["windowx"], Config["windowy"])

self.restoreState(Config["toolbars"])
self.filename = QString(".")
if isShell:
    self.editor.restoreState(Config["splitter"])
    self.setWindowTitle("Sandbox - Shell")
else:
    self.filename = filename
    if self.filename.isEmpty():
        self.filename = QString("unnamed%d.py" %
                                MainWindow.NextId)
        MainWindow.NextId += 1
    self.editor.setText(Config["newfile"])
    self.editor.moveCursor(QTextCursor.End)
    self.editor.document().setModified(False)
    self.setWindowModified(False)
    self.setWindowTitle("Sandbox - %s[*]" % self.filename)
    else:
        self.loadFile()
    self.connect(self.editor, SIGNAL("textChanged()"),
                 self.updateDirty)
self.updateGotoMenu()
QTimer.singleShot(0, self.updateToolbars)

```

@staticmethod

```

def updateInstances(qobj):
    MainWindow.Instances = set([window for window
        in MainWindow.Instances if isAlive(window)])
    if MainWindow.Shell is not None and not isAlive(MainWindow.Shell):
        MainWindow.Shell = None

def createAction(self, text, slot=None, shortcut=None, icon=None,
    tip=None, checkable=False, signal="triggered()"):
    action = QAction(text, self)
    if icon is not None:
        action.setIcon(getIcon("%s.png" % icon))
    if shortcut is not None:
        action.setShortcut(shortcut)
    if tip is not None:
        action.setToolTip(tip)
        action.setStatusTip(tip)
    if slot is not None:
        self.connect(action, SIGNAL(signal), slot)
    if checkable:
        action.setCheckable(True)
    return action

def addAction(self, target, actions):
    for action in actions:
        if action is None:
            target.addSeparator()
        else:
            target.addAction(action)

def updateDirty(self):
    self.setWindowModified(self.editor.document().isModified())

def updateIndicators(self):
    lines = self.editor.document().blockCount()
    cursor = self.editor.textCursor()
    self.columnCountLabel.setText("Column %d" % (
        cursor.columnNumber() + 1))
    if lines == 0:
        text = "(empty)"
    else:
        text = "Line %d of %d" % (cursor.blockNumber() + 1, lines)
    self.lineCountLabel.setText(text)

```

```

def updateToolbars(self):
    for toolbar, action in MainWindow.Toolbars.items():
        action.setChecked(toolbar.isVisible())

def toggleToolbars(self, on):
    title = self.sender().text()
    for toolbar, action in MainWindow.Toolbars.items():
        if action.text() == title:
            toolbar.setVisible(on)
            action.setChecked(on)

def closeEvent(self, event):
    if self == MainWindow.Shell:
        self.editor.endProcess()
        if Config["remembergeometry"]:
            Config["shellwidth"] = self.width()
            Config["shellheight"] = self.height()
            Config["shellx"] = self.x()
            Config["shelly"] = self.y()
            Config["splitter"] = self.editor.saveState()
        else:
            if self.editor.document().isModified():
                reply = QMessageBox.question(self,
                    "Sandbox - Unsaved Changes",
                    "Save unsaved changes in %s" % self.filename,
                    QMessageBox.Save|QMessageBox.Discard|
                    QMessageBox.Cancel)
                if reply == QMessageBox.Save:
                    self.fileSave()
                elif reply == QMessageBox.Cancel:
                    event.ignore()
                    return
                # else accept and discard
            if Config["remembergeometry"]:
                Config["windowwidth"] = self.width()
                Config["windowheight"] = self.height()
                Config["windowx"] = self.x()
                Config["windowy"] = self.y()
            if self.editor.findForm is not None:
                Config["findcasesensitive"] = (self.editor.findForm
                    .caseSensitiveCheckBox.isChecked())
                Config["findwholewords"] = (self.editor.findForm
                    .wholeWordsCheckBox.isChecked())
            Config["toolbars"] = self.saveState()
    del MainWindow.Toolbars[self.fileToolbar]
    del MainWindow.Toolbars[self.editToolbar]

```



```

del MainWindow.Toolbars[self.actionToolbar]
event.accept()

def fileConfigure(self):
    form = ConfigForm(self)
    if form.exec_():
        # Should only do this if the highlighting was actually
        # changed since it is computationally expensive.
        if form.highlightingChanged:
            font = QFont(Config["fontfamily"],
                          Config["fontsize"])
            textcharformat = QTextCharFormat()
            textcharformat.setFont(font)
            PythonHighlighter.initializeFormats()
            for window in MainWindow.Instances:
                if isAlive(window):
                    if window == MainWindow.Shell:
                        window.editor.input.setFont(font)
                        window.editor.input.textcharformat = (
                            textcharformat)
                        window.editor.inputHighlighter.rehighlight()
                        window.editor.output.setFont(font)
                        window.editor.output.textcharformat = (
                            textcharformat)
                        window.editor.outputHighlighter.rehighlight()
                    else:
                        window.statusBar().showMessage(
                            "Rehighlighting...")
                        window.editor.setFont(font)
                        window.editor.textcharformat = textcharformat
                        window.editor.highlighter.rehighlight()
                        window.statusBar().clearMessage()
            saveConfig()

def fileQuit(self):
    QApplication.closeAllWindows()
    shell = MainWindow.Shell
    if shell is not None:
        shell.editor.endProcess()

def fileNew(self):
    MainWindow().show()

def fileNewShell(self):

```

```

if MainWindow.Shell is not None and isAlive(MainWindow.Shell):
    MainWindow.Shell.activateWindow()
    MainWindow.Shell.raise_()
else:
    MainWindow(isShell=True).show()

```

```

def fileOpen(self):
    if not self.filename.isEmpty():
        path = QFileInfo(self.filename).path()
    else:
        path = "."
    filename = QFileDialog.getOpenFileName(self,
        "Sandbox - Open File", path,
        "Python files (*.py *.pyw)\nAny file (*)")
    if not filename.isEmpty():
        # To prevent opening the same file twice
        for window in MainWindow.Instances:
            if isAlive(window) and window != MainWindow.Shell:
                if window.filename == filename:
                    window.activateWindow()
                    window.raise_()
                return
        if (MainWindow.Shell != self and
            not self.editor.document().isModified() and
            self.filename.startsWith("unnamed")):
            self.filename = filename
            self.loadFile()
    else:
        MainWindow(filename).show()

```

```

def loadFile(self):
    # File loading is slow due to reading CAT data and highlighting,
    # but mostly due to the former. If you load one PyQt4 app, it
    # will be slow, but subsequent ones will be quick because all the
    # CAT data will have been gathered already.
    QApplication.setOverrideCursor(QCursor(
        Qt.WaitCursor))

    fh = None
    try:
        try:
            fh = QFile(self.filename)
            if not fh.open(QIODevice.ReadOnly):
                raise IOError, unicode(fh.errorString())
            stream = QTextStream(fh)
            stream.setCodec("UTF-8")
            text = stream.readAll()

```

```

self.editor.setPlainText(text)
self.editor.document().setModified(False)
# Get function, method, and class names for completion;
# get imports for CAT.
for i, line in enumerate(text.split("\n")): # This is slow!
    if i >= Config["maxlinestoscanscan"]:
        break
    if CATABLE_LINE_RE.indexIn(line) > -1:
        uiline = unicode(line)
        checkForCAT(uiline)
        self.editor.checkForClassOrDef(uiline)
except (IOError, OSError), e:
    QMessageBox.warning(self, "Sandbox - Load Error",
        "Failed to load %s: %s" % (self.filename, e))
finally:
    if fh is not None:
        fh.close()
    QApplication.restoreOverrideCursor()
self.editor.document().setModified(False)
self.setWindowModified(False)
self.setWindowTitle("Sandbox - %s[*]" %
    QFileInfo(self.filename).fileName())

```

```

def fileOpenRecent(self):
    print "fileOpenRecent" # TODO

```

```

def fileOpenAt(self):
    filename = self.editor.currentWord()
    if filename in ("py", "pyw"):
        cursor = self.editor.textCursor()
        cursor.movePosition(QTextCursor.PreviousWord)
        filename = self.editor.currentWord(cursor) + "." + filename
    if filename.isEmpty():
        return
    filename = unicode(filename)
    dir = os.path.dirname(unicode(QDir(
        self.filename).absolutePath()))
    candidates = [filename, os.path.join(dir, filename)]
    if not filename.endswith(("py", ".pyw")):
        filename += ".py"
        candidates.append(filename)
        candidates.append(os.path.join(dir, filename))
    for path in sys.path:
        candidates.append(os.path.join(path, filename))
    for candidate in candidates:
        if QFile.exists(candidate):

```

```

        QApplication.setOverrideCursor(QCursor(
            Qt.WaitCursor))
        MainWindow(QString(candidate)).show()
        QApplication.restoreOverrideCursor()
        break
    else:
        self.statusBar().showMessage("%s' not found" % filename,
            TIMEOUT)

def fileSave(self):
    if self.filename.startsWith("unnamed"):
        return self.fileSaveAs()
    if (not Config["backupsuffix"].isEmpty() and
        QFile.exists(self.filename)):
        backup = self.filename + Config["backupsuffix"]
        ok = True
        if QFile.exists(backup):
            ok = QFile.remove(backup)
            if not ok:
                QMessageBox.information(self,
                    "Sandbox - Save Warning",
                    "Failed to remove the old backup %s")
        if ok:
            # Must use copy rather than rename to preserve file
            # permissions; could use rename on Windows though
            if not QFile.copy(self.filename, backup):
                QMessageBox.information(self,
                    "Sandbox - Save Warning",
                    "Failed to save a backup %s")
        fh = None
        try:
            try:
                fh = QFile(self.filename)
                if not fh.open(QIODevice.WriteOnly):
                    raise IOError, unicode(fh.errorString())
                stream = QTextStream(fh)
                stream.setCodec("UTF-8")
                stream << self.editor.toPlainText()
                self.editor.document().setModified(False)
                self.setWindowModified(False)
                self.setWindowTitle("Sandbox - %s[*]" %
                    QFileInfo(self.filename).fileName())
                self.statusBar().showMessage("Saved %s" % self.filename,
                    TIMEOUT)
            except (IOError, OSError), e:
                QMessageBox.warning(self, "Sandbox - Save Error",
                    "Failed to save %s: %s" % (self.filename, e))

```

```

finally:
    if fh is not None:
        fh.close()
return True

```

```

def fileSaveAs(self):
    filename = QFileDialog.getSaveFileName(self,
        "Sandbox - Save File As",
        self.filename, "Python files (*.py *.pyw)")
    if not filename.isEmpty():
        self.filename = filename
        return self.fileSave()
    return False

```

```

def fileSaveAll(self):
    count = 0
    for window in MainWindow.Instances:
        if (isAlive(window) and window != MainWindow.Shell and
            window.editor.document().isModified()):
            if window.fileSave():
                count += 1
    self.statusBar().showMessage("Saved %d of %d files" % (
        count, len(MainWindow.Instances) -
        int(MainWindow.Shell is not None)), 5000)

```

```

def updateGotoMenu(self):
    self.gotoMenu.clear()
    isShell = self == MainWindow.Shell
    self.gotoMenu.addAction(self.createAction("&Matching",
        self.editor.gotoMatching, "Ctrl+M", "gotomatching",
        "Move the cursor to the matching parenthesis"))
    if not isShell:
        self.gotoMenu.addAction(self.createAction("&Line...",
            self.editor.gotoLine, "Ctrl+L", "gotoline",
            "Move the cursor to the given line"))
        self.gotoMenu.addAction(self.createAction(
            "&Previous position", self.editor.gotoPrevious,
            "Ctrl+Up", "previous", "Move the cursor to the "
            "previous line in the line history"))
        self.gotoMenu.addAction(self.createAction(
            "&Next position", self.editor.gotoNext,
            "Ctrl+Down", "next", "Move the cursor to the "
            "next line in the line history"))
    if self.editor.classes or self.editor.defs:
        self.gotoMenu.addSeparator()

```

```

if self.editor.classes:
    i = 1
    classMenu = self.gotoMenu.addMenu(
        getIcon("forward.png"), "&class")
    for text in sorted(self.editor.classes,
        key=unicode.lower):
        action = classMenu.addAction(text,
            self.gotoClassOrDef)
        accel = ""
        if i < 10:
            accel = "&%d " % i
        elif i < 36:
            accel = "&%c " % chr(i + ord("@") - 9)
        action.setText("%s%s" % (accel, text))
        action.setToolTip(text) # Stash class name
        action.setData(QVariant(0))
        action.setIcon(getIcon("forward.png"))
        i += 1
if self.editor.defs:
    i = 1
    defMenu = self.gotoMenu.addMenu(getIcon("forward.png"),
        "&def")
    for text in sorted(self.editor.defs,
        key=unicode.lower):
        action = defMenu.addAction(text,
            self.gotoClassOrDef)
        accel = ""
        if i < 10:
            accel = "&%d " % i
        elif i < 36:
            accel = "&%c " % chr(i + ord("@") - 9)
        action.setText("%s%s" % (accel, text))
        action.setToolTip(text) # Stash def name
        action.setData(QVariant(1))
        action.setIcon(getIcon("forward.png"))
        i += 1

```

```

def gotoClassOrDef(self):
    action = self.sender()
    if not isinstance(action, QAction):
        return
    if action.data().toInt()[0] == 0:
        text = "class "
    else:
        text = "def "
    text += action.setToolTip() # Retrieve class or def name
    if not self.editor.find(text,

```

```

        QTextDocument.FindCaseSensitively):
if not self.editor.find(text,
    QTextDocument.FindCaseSensitively|
    QTextDocument.FindBackward):
self.statusBar().showMessage("%s' not found" % text,
    TIMEOUT)
if text.startsWith("def"):
    self.editor.defs.discard(unicode(action.toolTip()))
else:
    self.editor.classes.discard(unicode(action.toolTip()))

def updateWindowMenu(self):
self.windowMenu.clear()
shell = MainWindow.Shell
if shell is not None and isAlive(shell):
    action = self.windowMenu.addAction("&Shell", self.raiseWindow)
    action.setData(QVariant(long(id(shell))))
    action.setIcon(getIcon("icon.png"))
if (hasattr(self.editor, "results") and
self.editor.results is not None and
self.editor.results.isVisible()):
    action = self.windowMenu.addAction("&Results",
        self.editor.raiseResultsWindow)
    action.setIcon(getIcon("window.png"))
i = 1
menu = self.windowMenu
for window in MainWindow.Instances:
    if window != shell and isAlive(window):
        text = (window.windowTitle().replace("Sandbox - ", "")
            .replace("[*]", ""))
        if i == 10:
            self.windowMenu.addSeparator()
            menu = menu.addMenu("&More")
        accel = ""
        if i < 10:
            accel = "&%d " % i
        elif i < 36:
            accel = "&%c " % chr(i + ord("@") - 9)
        text = "%s%s" % (accel, text)
        i += 1
        action = menu.addAction(text, self.raiseWindow)
        action.setData(QVariant(long(id(window))))
        action.setIcon(getIcon("window.png"))

def raiseWindow(self):
    action = self.sender()

```

```

if not isinstance(action, QAction):
    return
windowId = action.data().toLongLong()[0]
for window in MainWindow.Instances:
    if isAlive(window) and id(window) == windowId:
        window.activateWindow()
        window.raise_()
        break

def helpHelp(self):
    HelpForm(self).show()

def helpPydoc(self):
    if not QDesktopServices.openUrl(
        QUrl(Config["pythondocpath"])):
        QMessageBox.warning(self, "Sandbox - Error",
            "Could not start web browser")

def helpAbout(self):
    iconLabel = QLabel()
    icon = QPixmap("icon.png")
    iconLabel.setPixmap(icon)
    nameLabel = QLabel("<font size=8 color=#A0A000>&nbsp;";
        "<b>Sandbox</b></font>")
    versionLabel = QLabel("<font color=#A0A000>"
        "Python %s on %s<br>PyQt %s - Qt %s<br>"
        "Sandbox %s</font>" % (
        sys.version[:sys.version.find(" ")] , sys.platform,
        PYQT_VERSION_STR, QT_VERSION_STR,
        __version__)
    aboutLabel = QTextBrowser()
    aboutLabel.setOpenExternalLinks(True)
    aboutLabel.setHtml("""\
Sandbox provides facilities for learning and experimenting with Python,
and for creating and editing Python files. It is designed to be easy to
learn and use, and to provide a PyQt-based alternative to IDLE.
(If you need a full-featured IDE, with support for debugging, we suggest
you use <a href="http://www.die-offenbachs.de/eric/index.html">eric4</a>.)
<p>
Sandbox's home is at <a href="http://www.qtrac.eu">www.qtrac.eu</a>.
<p>
If you want to learn more about Python GUI programming with PyQt (the
GUI library used by Sandbox), you might like to buy my book, <i>Rapid GUI
Programming with Python and Qt</i>, ISBN:&nbsp;0132354187.
<p>
I hope you find it useful!<p>---<br><i>Mark Summerfield,</i>
mark@qtrac.eu""")

```



```

    thanksLabel = QTextBrowser()
    thanksLabel.setOpenExternalLinks(True)
    thanksLabel.setHtml("""<ul>
<li>David Boddie
<li>Phil Thompson
<li>Shriramana Sharma
<li>Benno Dielmann
<li>Christophe Kib
<li>Gerald Senarclens de Grancy
<li><a href="http://www.kde.org">KDE</a>, from whom I got most of the icons
</ul>""")
    licenseLabel = QTextBrowser()
    licenseLabel.setOpenExternalLinks(True)
    licenseLabel.setHtml((__license__.replace("\n\n", "<p>")
        .replace("(c)", "&copy;")))
    changesLabel = QTextBrowser()
    changesLabel.setOpenExternalLinks(True)
    changesLabel.setHtml(u"""\
<ul>
<li><b>0.9.9</b> Updated with David Boddie's patch to account for a
change in PyQt's behavior
<li><b>0.9.8</b> Fixed a bug in the syntax highlighting.
<li><b>0.9.7</b> Changed the import style. Fixed a syntax highlighting
bug reported by Gerald Senarclens de Grancy.
<li><b>0.9.6</b> Minor code tidying up. Now GPL 2 or 3 or later.
<li><b>0.9.5</b> No changes; done due to a problem with PyPI.
<li><b>0.9.4</b> Added the ability to open the Python Documentation in
a web browser: all the relevant code was provided by Benno Dielmann.
Also optimized the comment highlighting slightly.
<li><b>0.9.3</b> Improved the syntax highlighting for comments at the
cost of a little speed.
<li><b>0.9.2</b> The input is no longer executed when Enter is pressed
on a blank line; this makes it possible to enter blank lines for the
sake of neatness. To execute, press F5 or Ctrl+Enter or Ctrl+Return. This
change was suggested by Benno Dielmann, who also provided bug fixes for
the command history and for the Find dialog's Close button.
<li><b>0.9.1</b> Changed to GPL 2 since GPL 3 isn't compatible with the
GPL 2 libraries that Sandbox depends on; now any file can be opened with
file open.
<li><b>0.9.0</b> You can now execute files (and set their command line
arguments), and stop them if necessary. The Find dialog now remembers
previous find and replace texts.
<li><b>0.8.1</b> Removed Todo tab; now keep todos as comments at the
end. Improved completion behaviour.
<li><b>0.8.0</b> Improved Goto submenus and Window menu and submenu.
Implemented Find Word at Cursor.
<li><b>0.7.2</b> Changed a couple of default values. Implemented Open File
at Cursor.

```

- <li><b>0.7.1</b> Fixed subtle bug in Goto class and def regex. If a class or def is not found (i.e., it has been deleted or renamed), it is now removed from the Goto menu.
- <li><b>0.7.0</b> Implemented Goto menu, including Goto class and Goto def submenus. Fixed subtle bug in Goto Matching.
- <li><b>0.6.3</b> Added key bindings to online help. Improved Goto Matching and completions. Implemented Ctrl+N{UPWARDS ARROW} and Ctrl+N{DOWNWARDS ARROW} to move to the previous and next lines in the line history. Switched off line wrapping for the input window and for editors.
- <li><b>0.6.2</b> Added Changes tab to the about box. The shell now uses the Python executable in <tt>sys.executable</tt>, i.e., the Python that was used to run Sandbox. (This is useful for those with multiple Pythons installed.)

</ul>

""")

```

tabWidget = QTabWidget()
tabWidget.addTab(aboutLabel, "&About")
tabWidget.addTab(thanksLabel, "&Thanks to")
tabWidget.addTab(licenseLabel, "&License")
tabWidget.addTab(changesLabel, "&Changes")
okButton = QPushButton("OK")

layout = QVBoxLayout()
hbox = QHBoxLayout()
hbox.addWidget(iconLabel)
hbox.addWidget(nameLabel)
hbox.addStretch()
hbox.addWidget(versionLabel)
layout.addLayout(hbox)
layout.addWidget(tabWidget)
hbox = QHBoxLayout()
hbox.addStretch()
hbox.addWidget(okButton)
hbox.addStretch()
layout.addLayout(hbox)

dialog = QDialog(self)
dialog.setLayout(layout)
dialog.setMinimumSize(
    min(self.width(),
        int(QApplication.desktop().availableGeometry()
            .width() / 2)),
        int(QApplication.desktop().availableGeometry()
            .height() / 2))
self.connect(okButton, SIGNAL("clicked()"), dialog.accept)
dialog.setWindowTitle("Sandbox - About")
dialog.exec_()

```

ICONS["actionrestart.png"] = """"\n  
iVBORw0KGgoAAAANSUUhEUgAAACAAAAAgEAYAAAaj6qa3AAAABmJLR0T/////8JWPfcAAAA\  
CXBIWXMAAABIAAAASABGyWs+AAAACXZwQWcAAAAGAAAAIACH+pydAAAHDEIEQVRo3s1ZS2zT\  
WBQ9z7HruILLaWgpLczQgfJRQAjoigISSAiBhIRYjBASLGYxC8QMgzazGLEyAXZsWCOEkJAq\  
kECVEKAuKIINUP7iUwqEFsin00/apnU+tvNm8fSw49hJ2gRmjhQl8bNf3jn33nfvuyH4RtC0\  
bFbXKZ2cnJ3NZoEvXyYnNQ2YmEilslkgmWTXOfx+SRIEoKFBUSQJaG1tbFQUoK2tqSkQAJYs\  
aWhQFEJqvc6aTcgJX7364MHICNDb++RJLAbE41NTmgYYhmGYZvFzJqmYfBP9hF2PRDw+0UR\  
6O4Oh3/4ATh5cv/+cLh2goi1EuDcuf7+SAS4fPn+/Y8fgbo6n48QoLIZVevqgHg8mUynAUoN\  
w255TtSCzyfaVjU3l8kYBtDX9/DhmzdAJPL5cyLBPCmToTQUUIW/f+FCCNUS55a/d29wCHTU\  
un7x4vHj3d3ApUsnTuzYAEzZs2HD0qWVzOgUxDtgn34EI2OjwO9vQMDw8PVrr4GAqTTuZxp\  
Mouk05bFly8PhYJBQurrZVmSCFm7tq2tsbEU0WlhCj2IEENDw8OxWPUC1CwEOGKx8fFUCvjz\  
z56eR48o5cTPn+/vHxyshLg7CMnnTRPI501T11lo6Pr/SIBczjQptb739T179umTFbuAzyfL\  
bk+6W5oT/taoWgBFqavz+YBfftm5c+VKQNd1fT4Wvvnv3xYvhYeD9+3g8mfS+j1v+uwnAN7fn\  
z0dGkklgYcASSSYBTctkMhnrvrNnb958/br4edPU9Vyu+LrPJwhsPJ8HgEyGCea0uDdhw2Dz\  
5vOGAVCayQwOUgrMzt6543a/JK1aBRCyANGePcXZokgATvyPP3p6nj4FHjx4925szBq38rb9\  
SiH1hWxuC09k2eznzwAwM3PrVqFQdgEpHRk5dYpSoL399GmAEEFUVUKKBPjrr6tXX7ywiJcn\  
XC1xZnlK+ctrHm75cigkDvACzDBevgQonZ6+ccMa/ZoG376NxaanKe3vf/UqkZiPBbwWzAkX\  
EueEKYfuDIEkhAXR/EDI1FRvr20e/mFg4P17d4tzcMsvLI05UX5TK23xZctCIVVlleXoKEAl\  
t7x7yc12JQDQtNFRgNK5ueFhSr8K8OpVND097Ua4Urhbev7ES0OSRFEQgL17u7o6OwFCZmev\  
Xy9F3Avp9NCQzQPGxpLJmZISxMu5emlwV/dGaYvLsiT5fMCJE4cOdXcDGze2tDx/DgBfvrx8\  
Wbie0gJnsyyL6XosZhMgkZietqe3hW5qoVAwKMvAzp2bNnV0AB0doZDfb43ruiAoCiCKhjE3\  
V2qZ+bwgsGOx3w9s3vzTT42NwJIIIN6+DRCSSFy8WF54i7As29cB6PrYmE0AdnYrRdzL0iwl\  
b9/OjqunTx8+vGEDEAxS+vgxC4VIBAByuUKBy0HXNc3+XdNYRalpzFO5y1caUlwlI48s2wRo\  
aAgEFAVIICYmUim3CXgpWYjE6tXt7c3NFnFVzeXOnGEEotHSC+JZwivtld7UyhF1Wtyal/0e\  
K8m+psF161pbA4FChQrTmNMDmOWPHdu1a+1aQFVN88qVUsQ5Yf7uBWce94LT8k4LO787UV+\  
Zo1NgHB4xYqmpvkozddV1dm5eDEA5HKFm5GTePH1dNpO2KuAcRL2Iu5lcV1n8/B3UWQNI2Aw\  
HLYJ0NXV2bl0KSBjHqWGM51Rqut2ZSVJEHilxYgaBnu+HHFZVhS38UpdvpzFOWEOzkNRtmwB\  
CPH729sJ+SoAb2Ds27d1648/FhMvFsIZu4LA0lJlmxITohzmWzd4EedYtuznn22rdj7+228H\  
DmzZwpqQK1YUTuO2EF3P530+94UzgThRL8JWrV64q/P3SmObb25OCAJbX1vb0aMAIU1NO3ZY\  
R6+iw1BDQ329LFs3vHsXjU5MUBqJxOOTk8XTNzYqCjvgpLlZq8054ZaWgwcBfmyllBBdBwjJ\  
5cSS3YpylSohjLiirFkDEBIrFxFzOasuk1MqWGkUpQCicSvwwJWnhZFSWJES29uktTezha8\  
aJHbL3BPcNq3vp6Vwh0dv/++8MN01R2hfD6f13VAEJwhUo44B0+bpsm6vOXSV21RdVfYTrCu\  
zo1wuXSmae6FFw+N9esvXAAAVd29mwlUWV/gOwkCILAXL0c5lu4tLQcOcj70TEGD58mPH\  
70OiWNhm/48E4K0lQI2bwa8Le6EV+HC8c8/166xnl80SikQj/f02MebmrZtq16Amv03aJq5\  
3OQkpYIQj//9NwDMzDx96nZnuRjn6Yy3TT14OmttZZ5R3eZXcwGcoHR8vK+PUmBqijUrp6aG\  
hthYqfa3JYAoNjcDgKoyz2prO3wYIERVw+Ha/Uv8zQRwwwKQbDYeB4Bslu3+PJ/7fMEgAMgy\  
K8BkORSyhi3wb9Lst+5aMY+2QAAAABJRu5ErkJggg==\  
""""

ICONS["actionrun.png"] = """"\n  
iVBORw0KGgoAAAANSUUhEUgAAACAAAAAgCAYAAABzenr0AAAABmJLR0QA/wD/AP+gvaeTAAAA\  
CXBIWXMAAAsNAAALDQHtB8AsAAAAB3RJTUUH0woJeyEM9I/X6wAABbpJREFUeNrF19tvHNud\  
xz9zsz7sru2sL3GT2E6aBAJKGIlcT8sDSSipuAgUiRDxyB0sGon0CeWFJ/oPUIk+AcTc0/JS\  
HlraBx4KKC2Iq/AG2wpEiEUJwVknvuzad2Z2Zk5pw87613bu76pEkf6aqRz+31/vndDvzE\  
w1jP5qGT07tBHWU1CAyiVcMdegytXID+OZuzWUCI02n9fyEwdHL0KeBJ4C7QgAJhgUhUNygX\  
QrfxyCe04C1bv3EG8NPptNoQgaGTowcXxMto9RuEBKsLrB6seJldqXl+vT0PQNGFDy7txHER\  
4E2BOWPaB7RD6L5g85c/A24zIsYqWp8BILkNq2MLz9wxwYGbOrh1exsJSyW7MzHt8dk3c3x0\  
""""

Eb68ZELpcnUhrPzD5sIngfl0Oh2sSmBBuIx6D1YePfgjDx3qpbsj1tJaesIVH40XeO2cybXJ\  
SQiKoPwxW5+5D5hqtIRsKTzWxo4dfbxwf5F7f9WDGRMEipYIIV6Egd44R/ZCvhhwacoAHW7N\  
6f2/6Gf0n7ZtB5IMRi8jMHTyq4NngvIs0GRgY4PQxza6tCfxAbwgxaXBgV5Lr84orMwD6lpy\  
+9N+8fWViARLbfomhJA6wNNHZki1tVH2lkfSf0bnuPv2zjWH7+NHU1y7YfLd90Wwu5CcR7w\  
AV/Wtc88Bfo5kv08dkeefTs78EPdFCcOb+bt/06zpdtsuacRGtjVq/gw2wX+ff9O7Sv0G2Pn\  
bduu1F1ZqydBsrV3E3t3tlnyVUsAnDrexXcXiyvua0Sq3eThwTkWtJCJE0AXYAqAod99uRu4\  
i8RmfrtnhiCEshe2RG2cOt7HhUvIFfeWvZC5UsD3uTlaCYnNYMjBEe/BfUCi5gNHAAb66E3N\  
U3LUmv/vqeN9vPJOji1d5rK1yVmXH2YNPp8YqE9aDjiTYHYeAs7XCAwCbOtUaFik5XpIdCQX\  
J6fZYsjnEzsXzVnxJBUAYe0FknUCMkF3skJxHdo3IwHg+oqL15KAiVerVVEwSUHVD0S4B1X\  
BSASpOIVS16dQHtrcJvEM3+a5dvZnsVZUoNh1EkQawfPMRacsJaSS77FDYcFLB2ur/jqx/iK\  
JN54vmd5xWtd8kTdAsol7ySliXrimSzWdy7VqtU48ocVan+NSFBamIstNBOhe7jgXQl084Kz\  
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```

```
def getIcon(name):  
    icon = ICONS.get(name)  
    if icon is None:  
        return QIcon()  
    if isinstance(icon, basestring):  
        pixmap = QPixmap()  
        pixmap.loadFromData(base64.b64decode(icon))  
        icon = QIcon(pixmap)  
        ICONS[name] = icon  
    return icon
```

```
def getPixmap(name):  
    image = PIXMAPS.get(name)  
    if image is None:  
        return QPixmap()  
    if isinstance(image, basestring):  
        pixmap = QPixmap()  
        pixmap.loadFromData(base64.b64decode(image))  
        PIXMAPS[name] = image = pixmap  
    return image
```

```
def isAlive(qobj):  
    import sip  
    try:  
        sip.unwrapinstance(qobj)  
    except RuntimeError:  
        return False  
    return True
```

```

def main():
    if not hasattr(sys, "ps1"):
        sys.ps1 = ">>> "
    if not hasattr(sys, "ps2"):
        sys.ps2 = "... "
    app = QApplication(sys.argv)
    if not sys.platform.startswith(("linux", "win")):
        app.setCursorFlashTime(0)
    app.setOrganizationName("Qtrac Ltd.")
    app.setOrganizationDomain("qtrac.eu")
    app.setApplicationName("Sandbox")
    app.setWindowIcon(getIcon("icon.png"))
    loadConfig()

    for name in KEYWORDS + BUILTINS + CONSTANTS:
        if len(name) >= MIN_COMPLETION_LEN and not name.startswith("_"):
            CAT[name] = ""
            try:
                tip = eval("%s.__doc__" % name)
                if tip is not None:
                    CAT[name] = (tip[:MAX_TOOLTIP_LEN]
                                .strip().replace("\n\n", "<p>"))
            except:
                pass
    for name in MODULES.keys():
        CAT[name] = None

    if len(sys.argv) > 1:
        args = sys.argv[1:]
        if args[0] in ("-h", "--help"):
            args.pop(0)
            print """usage: sandbox.pyw [-n|filenames]
-n or --new means start with new file
filenames means start with the given files (which must have .py or .pyw
suffixes); otherwise starts with new file or Python shell
depending on configuration
Sandbox requires Python 2.5 and PyQt 4.2 (or later versions)
For more information run the program and click
Help->About and Help->Help"""
            return
        if args and args[0] in ("-n", "--new"):
            args.pop(0)
            MainWindow().show()
    dir = QDir()
    for fname in args:
        if fname.endswith(("py", ".pyw")):

```

```

        MainWindow(dir.cleanPath(
            dir.absoluteFilePath((fname))))).show()
if not MainWindow.Instances:
    MainWindow(isShell=Config["startwithshell"]).show()

app.exec_()
saveConfig()

main()

### Ideas for improvements #####
#
# - Make Indent & Unindent smarter, i.e., Indent should insert _up to_
# tabwidth spaces to make the number of leading spaces an exact multiple
# of tabwidth. Similarly, Unindent should remove _up to_ tabwidth
# spaces on the same basis
# - Recent files handling
# - Add tooltips to all ConfigForm editing widgets & improve validation
# - Add tooltips to all main window actions that don't have any.
# - Goto menu. Use submenus to reflect the structure of the code, i.e.,
# classes
#   Class1
#   Method1
#   Method2
# functions
#   Func1
#   Func2
#   InnerFuncA
# This should be doable when reading, but trickier to maintain when
# users add or change classes and defs since the right "parent" must be
# found, and the name put in the right place in the tree
# - Robustness? catch exceptions better, etc.
# - Help? Handle help() in the shell?
# - Tools menu? (modeless delete on close dialogs); e.g.,
# Regular Expression Editor (similar to the one I wrote as an
# example for TT); support multiple syntaxes, e.g., re, glob,
# (fnmatch?), QRegExp, and QRegExp wildcard
# - i18n? use a custom dictionary-like function and keep all
# translations in this same file; or embed .qm files in base64?
# - Autosave? If not zero auto saves every N seconds to
# .sb$.self.filename. On close the .sb$. file is deleted after the
# save. On open, if a .sb$. file exists, rename it self.filename#1 (or
# 2 or whatever to make it unique) and then give a warning to the user
# that they may wish to diff against it. So we don't do recover as
# such.
# - Make keyboard shortcuts customisable? (apart from the standard ones)

```

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```
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```

```
<signature of Ty Coon>, 1 April 1989  
Ty Coon, President of Vice
```

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```
-----
# This is the qmake project file for the QPy support code for the QtCore
# module.
#
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#
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CONFIG += static warn_on
TARGET = qpycore
TEMPLATE = lib
DEFINES += QT_DISABLE_DEPRECATED_BEFORE=0x040900

# Python's type system relies on type punning.
!win32: QMAKE_CXXFLAGS += -fno-strict-aliasing

# This seems to be necessary for Qt v4.5.2.
win32: INCLUDEPATH += .

SOURCES = \
    qpycore_qabstracteventdispatcher.cpp \
    qpycore_chimera.cpp \
    qpycore_chimera_signature.cpp \
    qpycore_chimera_storage.cpp \
```

qpycore\_classinfo.cpp \  
qpycore\_init.cpp \  
qpycore\_misc.cpp \  
qpycore\_post\_init.cpp \  
qpycore\_pyqtboundssignal.cpp \  
qpycore\_pyqtconfigure.cpp \  
qpycore\_pyqtmethodproxy.cpp \  
qpycore\_pyqtproperty.cpp \  
qpycore\_pyqtproxy.cpp \  
qpycore\_pyqtptyobject.cpp \  
qpycore\_pyqtssignal.cpp \  
qpycore\_pyqtslot.cpp \  
qpycore\_qmetaobject.cpp \  
qpycore\_qmetaobject\_helpers.cpp \  
qpycore\_qobject\_getattr.cpp \  
qpycore\_qobject\_helpers.cpp \  
qpycore\_qpynullvariant.cpp \  
qpycore\_qstring.cpp \  
qpycore\_qstringlist.cpp \  
qpycore\_sip\_helpers.cpp \  
qpycore\_types.cpp \  
qpycore\_qvariant.cpp \  
qpycore\_qvariant\_value.cpp

HEADERS =\  
=====

qpycore\_api.h \  
qpycore\_chimera.h \  
qpycore\_classinfo.h \  
qpycore\_misc.h \  
qpycore\_namespace.h \  
qpycore\_pyqtboundssignal.h \  
qpycore\_pyqtproperty.h \  
qpycore\_pyqtproxy.h \  
qpycore\_pyqtptyobject.h \  
qpycore\_pyqtssignal.h \  
qpycore\_pyqtmethodproxy.h \  
qpycore\_qmetaobjectbuilder.h \  
qpycore\_qobject\_helpers.h \  
qpycore\_qpynullvariant.h \  
qpycore\_sip.h \  
qpycore\_sip\_helpers.h \  
qpycore\_types.h

Addendum to the Riverbank GPL Exception version 1.1  
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-----  
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For porting Qt v4 examples to PyQt.  
For the implementation of Python plugin support for Designer.

Torsten Marek  
For pyuic for PyQt v4.

Detlev Offenbach  
For pylupdate for PyQt v4.

Andreas Pakulat  
For porting Qt v4 examples to PyQt.

Douglas Soares de Andrade  
For porting Qt v4 examples to PyQt.

Baz Walter  
For porting Qt v4 examples to PyQt.

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**
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*****/
```

```
import QtQuick 1.0
```

```
Component {
```

```
    Item {
```

```
        property variant stickies
```

```
        id: page
```

```
        width: ListView.view.width+40; height: ListView.view.height
```

```
        Image {
```

```
            source: "cork.jpg"
```

```
            width: page.ListView.view.width
```

```
            height: page.ListView.view.height
```

```
            fillMode: Image.PreserveAspectCrop
```

```
            clip: true
```

```
        }
```

```
        MouseArea {
```

```
            anchors.fill: parent
```

```
            onClicked: page.focus = false;
```

```
        }
```

```
        Text {
```

```
            text: name; x: 15; y: 8; height: 40; width: 370
```

```
            font.pixelSize: 18; font.bold: true; color: "white"
```

```
            style: Text.Outline; styleColor: "black"
```

```
        }
```

```
        Repeater {
```

```
            model: notes
```

```
            Item {
```

```
                id: stickyPage
```

```
                property int randomX: Math.random() * (page.ListView.view.width-0.5*stickyImage.width) +100
```

```
                property int randomY: Math.random() * (page.ListView.view.height-0.5*stickyImage.height) +50
```

```
                x: randomX; y: randomY
```

```

rotation: -flickable.horizontalVelocity / 100;
Behavior on rotation {
  SpringAnimation { spring: 2.0; damping: 0.15 }
}

Item {
  id: sticky
  scale: 0.7

  Image {
    id: stickyImage
    x: 8 + -width * 0.6 / 2; y: -20
    source: "note-yellow.png"
    scale: 0.6; transformOrigin: Item.TopLeft
    smooth: true
  }

  TextEdit {
    id: myText
    x: -104; y: 36; width: 215; height: 200
    smooth: true
    font.pixelSize: 24
    readOnly: false
    rotation: -8
    text: noteText
  }

  Item {
    x: stickyImage.x; y: -20
    width: stickyImage.width * stickyImage.scale
    height: stickyImage.height * stickyImage.scale

    MouseArea {
      id: mouse
      anchors.fill: parent
      drag.target: stickyPage
      drag.axis: Drag.XandYAxis
      drag.minimumY: 0
      drag.maximumY: page.height - 80
      drag.minimumX: 100
      drag.maximumX: page.width - 140
      onClicked: { myText.focus = true; myText.openSoftwareInputPanel(); }
    }
  }
}

Image {

```

```

        x: -width / 2; y: -height * 0.5 / 2
        source: "tack.png"
        scale: 0.7; transformOrigin: Item.TopLeft
    }

    states: State {
        name: "pressed"
        when: mouse.pressed
        PropertyChanges { target: sticky; rotation: 8; scale: 1 }
        PropertyChanges { target: page; z: 8 }
    }

    transitions: Transition {
        NumberAnimation { properties: "rotation,scale"; duration: 200 }
    }
}
}
}
}

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```

```
*****/
```

```
import QtQuick 1.0
```

```
Rectangle {  
    width: 800; height: 480  
    color: "#464646"
```

```
ListModel {  
    id: list
```

```
ListElement {  
    name: "Sunday"  
    notes: [  
        ListElement { noteText: "Lunch" },  
        ListElement { noteText: "Birthday Party" }  
    ]  
}
```

```
ListElement {  
    name: "Monday"  
    notes: [  
        ListElement { noteText: "Pickup kids from\nschool\n4.30pm" },  
        ListElement { noteText: "Checkout Qt" }, ListElement { noteText: "Read email" }  
    ]  
}
```

```
ListElement {  
    name: "Tuesday"  
    notes: [  
        ListElement { noteText: "Walk dog" },  
        ListElement { noteText: "Buy newspaper" }  
    ]  
}
```

```
ListElement {  
    name: "Wednesday"  
    notes: [ ListElement { noteText: "Cook dinner" } ]  
}
```

```
ListElement {
```



```

    name: "Thursday"
    notes: [
        ListElement { noteText: "Meeting\n5.30pm" },
        ListElement { noteText: "Weed garden" }
    ]
}

ListElement {
    name: "Friday"
    notes: [
        ListElement { noteText: "More work" },
        ListElement { noteText: "Grocery shopping" }
    ]
}

ListElement {
    name: "Saturday"
    notes: [
        ListElement { noteText: "Drink" },
        ListElement { noteText: "Download Qt\nPlay with QML" }
    ]
}
}

ListView {
    id: flickable

    anchors.fill: parent
    focus: true
    highlightRangeMode: ListView.StrictlyEnforceRange
    orientation: ListView.Horizontal
    snapMode: ListView.SnapOneItem
    model: list
    delegate: Day { }
}
}

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*****/

```

```

import QtQuick 1.0
import "itemCreation.js" as Code

```

```

Image {
    id: paletteItem

    property string componentFile
    property string image

    source: image

    MouseArea {
        anchors.fill: parent

        onPressed: Code.startDrag(mouse);
        onPositionChanged: Code.continueDrag(mouse);
        onReleased: Code.endDrag(mouse);
    }
}

```

```

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```

```

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**/
```

```
import QtQuick 1.0
```

```
Image {
```

```
    id: rootItem
```

```
    property bool created: false
```

```
    property string image
```

```
    property double scaledBottom: y + (height + height*scale) / 2
```

```
    property bool onLand: scaledBottom > window.height / 2
```

```
    source: image
```

```
    opacity: onLand ? 1 : 0.25
```

```
scale: Math.max((y + height - 250) * 0.01, 0.3)
```

```
smooth: true
```

```
onCreatedChanged: {  
    if (created && !onLand)  
        rootItem.destroy();  
    else  
        z = scaledBottom;  
}
```

```
onYChanged: z = scaledBottom;
```

```
}
```

```
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```

\*\*\*\*\*/

```
import QtQuick 1.0
```

```
Image {
```

```
    property bool created: false
```

```
    property string image
```

```
    source: image
```

```
}
```

```
*****/
```

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```

import QtQuick 1.0

Image {
    id: sun

    property bool created: false
    property string image: "../images/sun.png"

    source: image

    // once item is created, start moving offscreen
    NumberAnimation on y {
        to: window.height / 2
        running: created
        onRunningChanged: {
            if (running)
                duration = (window.height - sun.y) * 10;
            else
                state = "OffScreen"
        }
    }

    states: State {
        name: "OffScreen"
        StateChangeScript {
            script: { sun.created = false; sun.destroy() }
        }
    }

    onCreatedChanged: {
        if (created) {
            sun.z = 1; // above the sky but below the ground layer
            window.activeSuns++;
        } else {
            window.activeSuns--;
        }
    }
}

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```

```

import QtQuick 1.0
import Qt.labs.particles 1.0

Item {
    id: window

    property int activeSuns: 0

    //This is a desktop-sized example
    width: 800; height: 480

    MouseArea {
        anchors.fill: parent
        onClicked: window.focus = false;
    }

    //This is the message box that pops up when there's an error
    Rectangle {

```

```

id: dialog

opacity: 0
anchors.centerIn: parent
width: dialogText.width + 6; height: dialogText.height + 6
border.color: 'black'
color: 'lightsteelblue'
z: 65535 //Arbitrary number chosen to be above all the items, including the scaled perspective ones.

function show(str){
    dialogText.text = str;
    dialogAnim.start();
}

Text {
    id: dialogText
    x: 3; y: 3
    font.pixelSize: 14
}

SequentialAnimation {
    id: dialogAnim
    NumberAnimation { target: dialog; property:"opacity"; to: 1; duration: 1000 }
    PauseAnimation { duration: 5000 }
    NumberAnimation { target: dialog; property:"opacity"; to: 0; duration: 1000 }
}

// sky
Rectangle {
    id: sky
    anchors { left: parent.left; top: parent.top; right: toolbox.right; bottom: parent.verticalCenter }
    gradient: Gradient {
        GradientStop { id: gradientStopA; position: 0.0; color: "#0E1533" }
        GradientStop { id: gradientStopB; position: 1.0; color: "#437284" }
    }
}

// stars (when there's no sun)
Particles {
    id: stars
    x: 0; y: 0; width: parent.width; height: parent.height / 2
    source: "images/star.png"
    angleDeviation: 360
    velocity: 0; velocityDeviation: 0
    count: parent.width / 10
    fadeInDuration: 2800
    opacity: 1
}

```



```

}

// ground
Rectangle {
    id: ground
    z: 2 // just above the sun so that the sun can set behind it
    anchors { left: parent.left; top: parent.verticalCenter; right: toolbox.left; bottom: parent.bottom }
    gradient: Gradient {
        GradientStop { position: 0.0; color: "ForestGreen" }
        GradientStop { position: 1.0; color: "DarkGreen" }
    }
}

SystemPalette { id: activePalette }

// right-hand panel
Rectangle {
    id: toolbox

    width: 380
    color: activePalette.window
    anchors { right: parent.right; top: parent.top; bottom: parent.bottom }

    Column {
        anchors.centerIn: parent
        spacing: 8

        Text { text: "Drag an item into the scene." }

        Rectangle {
            width: palette.width + 10; height: palette.height + 10
            border.color: "black"

            Row {
                id: palette
                anchors.centerIn: parent
                spacing: 8

                PaletteItem {
                    anchors.verticalCenter: parent.verticalCenter
                    componentFile: "Sun.qml"
                    image: "images/sun.png"
                }
                PaletteItem {
                    anchors.verticalCenter: parent.verticalCenter
                    componentFile: "GenericSceneItem.qml"
                    image: "images/moon.png"
                }
            }
        }
    }
}

```

```

    PaletteItem {
        anchors.verticalCenter: parent.verticalCenter
        componentFile: "PerspectiveItem.qml"
        image: "images/tree_s.png"
    }
    PaletteItem {
        anchors.verticalCenter: parent.verticalCenter
        componentFile: "PerspectiveItem.qml"
        image: "images/rabbit_brown.png"
    }
    PaletteItem {
        anchors.verticalCenter: parent.verticalCenter
        componentFile: "PerspectiveItem.qml"
        image: "images/rabbit_bw.png"
    }
}

Text { text: "Active Suns: " + activeSuns }

Rectangle { width: parent.width; height: 1; color: "black" }

Text { text: "Arbitrary QML:" }

Rectangle {
    width: 360; height: 240

    TextEdit {
        id: qmlText
        anchors.fill: parent; anchors.margins: 5
        readOnly: false
        font.pixelSize: 14
        wrapMode: TextEdit.WordWrap

        text: "import QtQuick 1.0\nImage {\n id: smile\n x: 360 * Math.random()\n y: 180 *
Math.random()\n source: 'images/face-smile.png'\n NumberAnimation on opacity { \n to: 0; duration:
1500\n }\n Component.onCompleted: smile.destroy(1500);\n}"
    }
}

Button {
    text: "Create"
    onClicked: {
        try {
            Qt.createQmlObject(qmlText.text, window, 'CustomObject');
        } catch(err) {
            dialog.show("Error on line " + err.qmlErrors[0].lineNumber + "\n" + err.qmlErrors[0].message);
        }
    }
}

```

```

    }
  }
}

//Day state, for when a sun is added to the scene
states: State {
    name: "Day"
    when: window.activeSuns > 0

    PropertyChanges { target: gradientStopA; color: "DeepSkyBlue" }
    PropertyChanges { target: gradientStopB; color: "SkyBlue" }
    PropertyChanges { target: stars; opacity: 0 }
}

transitions: Transition {
    PropertyAnimation { duration: 3000 }
    ColorAnimation { duration: 3000 }
}

}

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```

```
**
```

```
*****/
```

```
import QtQuick 1.0
```

```
Rectangle {
```

```
    id: container
```

```
    property variant text
```

```
    signal clicked
```

```
    height: text.height + 10; width: text.width + 20
```

```
    border.width: 1
```

```
    radius: 4
```

```
    smooth: true
```

```
    gradient: Gradient {
```

```
        GradientStop {
```

```
            position: 0.0
```

```
            color: !mouseArea.pressed ? activePalette.light : activePalette.button
```

```
        }
```

```
        GradientStop {
```

```
            position: 1.0
```

```
            color: !mouseArea.pressed ? activePalette.button : activePalette.dark
```

```
        }
```

```
    }
```

```
    SystemPalette { id: activePalette }
```

```
    MouseArea {
```

```
        id: mouseArea
```

```
        anchors.fill: parent
```

```
        onClicked: container.clicked()
```

```
    }
```

```
    Text {
```

```
        id: text
```

```
        anchors.centerIn: parent
```

```
        font.pointSize: 10
```

```
        text: parent.text
```

```

        color: activePalette.buttonText
    }
}
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QT      += dbus
CONFIG  += static warn_on
TARGET  = qpydbus
TEMPLATE = lib

SOURCES = \
    qpydbus_chimera_helpers.cpp \
    qpydbus_post_init.cpp \
    qpydbuspendingreply.cpp \
    qpydbusreply.cpp

HEADERS = \
    qpydbus_api.h \
    qpydbus_chimera_helpers.h \
    qpydbuspendingreply.h \
    qpydbusreply.h

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```

```
import QtQuick 1.0
import "content"
import "content/tic-tac-toe.js" as Logic

Rectangle {
    id: game

    property bool running: true
    property real difficulty: 1.0 //chance it will actually think

    width: display.width; height: display.height + 10

    Image {
```

```

    id: boardImage
    source: "content/pics/board.png"
}

Column {
    id: display

    Grid {
        id: board
        width: boardImage.width; height: boardImage.height
        columns: 3

        Repeater {
            model: 9

            TicTac {
                width: board.width/3
                height: board.height/3

                onClicked: {
                    if (game.running && Logic.canPlayAtPos(index)) {
                        if (!Logic.makeMove(index, "X"))
                            Logic.computerTurn();
                    }
                }
            }
        }
    }
}

Row {
    spacing: 4
    anchors.horizontalCenter: parent.horizontalCenter

    Button {
        text: "Hard"
        pressed: game.difficulty == 1.0
        onClicked: { game.difficulty = 1.0 }
    }
    Button {
        text: "Moderate"
        pressed: game.difficulty == 0.8
        onClicked: { game.difficulty = 0.8 }
    }
    Button {
        text: "Easy"
        pressed: game.difficulty == 0.2
        onClicked: { game.difficulty = 0.2 }
    }
}

```

```
    }  
  }  
}
```

```
Text {  
  id: messageDisplay  
  anchors.centerIn: parent  
  color: "blue"  
  style: Text.Outline; styleColor: "white"  
  font.pixelSize: 50; font.bold: true  
  visible: false
```

```
  Timer {  
    running: messageDisplay.visible  
    onTriggered: {  
      messageDisplay.visible = false;  
      Logic.restartGame();  
    }  
  }  
}
```

```
}
```

```
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```

*****/

```

```

import QtQuick 1.0

```

```

Item {

```

```

    signal clicked

```

```

    states: [

```

```

        State { name: "X"; PropertyChanges { target: image; source: "pics/x.png" } },

```

```

        State { name: "O"; PropertyChanges { target: image; source: "pics/o.png" } }

```

```

    ]

```

```

    Image {

```

```

        id: image

```

```

        anchors.centerIn: parent

```

```

    }

```

```

    MouseArea {

```

```

        anchors.fill: parent

```

```

        onClicked: parent.clicked()

```

```

    }

```

```

}

```

```

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```

```
import QtQuick 1.0
```

```

Rectangle {
    id: container

    property string text
    property bool pressed: false

    signal clicked

    width: buttonLabel.width + 20; height: buttonLabel.height + 6
    border { width: 1; color: Qt.darker(container.color) }
    radius: 8
    color: "lightgray"
    smooth: true

    gradient: Gradient {
        GradientStop {
            position: 0.0
            color: container.pressed ? "darkgray" : "white"
        }
        GradientStop {
            position: 1.0
            color: container.color
        }
    }
}

```

```
MouseArea {
    anchors.fill: parent
    onClicked: container.clicked()
}
```

```
Text {
    id: buttonLabel
    anchors.centerIn: container
    text: container.text
    font.pixelSize: 14
}
}
```

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```
import QtQuick 1.0
```

```
Rectangle {
```

```
    id: page
```

```
    width: 640; height: 480
```

```
    color: "Black"
```

```
    // Make a ball to bounce
```

```
    Rectangle {
```

```
        id: ball
```

```
        // Add a property for the target y coordinate
```

```
        property variant direction : "right"
```

```
        x: 20; width: 20; height: 20; z: 1
```

```
        color: "Lime"
```

```
        // Move the ball to the right and back to the left repeatedly
```

```
        SequentialAnimation on x {
```

```
            loops: Animation.Infinite
```

```
            NumberAnimation { to: page.width - 40; duration: 2000 }
```

```
            PropertyAction { target: ball; property: "direction"; value: "left" }
```

```
            NumberAnimation { to: 20; duration: 2000 }
```

```
            PropertyAction { target: ball; property: "direction"; value: "right" }
```

```
        }
```

```
        // Make y move with a velocity of 200
```

```
        Behavior on y { SpringAnimation{ velocity: 200; }
```

```
    }
```

```
    Component.onCompleted: y = page.height-10; // start the ball motion
```

```
    // Detect the ball hitting the top or bottom of the view and bounce it
```

```
    onYChanged: {
```

```
        if (y <= 0) {
```

```
            y = page.height - 20;
```

```
        } else if (y >= page.height - 20) {
```

```
            y = 0;
```

```
        }
```

```
    }
```

```
}
```

```
    // Place bats to the left and right of the view, following the y
```

```
    // coordinates of the ball.
```

```
    Rectangle {
```

```

    id: leftBat
    color: "Lime"
    x: 2; width: 20; height: 90
    y: ball.direction == 'left' ? ball.y - 45 : page.height/2 -45;
    Behavior on y { SpringAnimation{ velocity: 300 } }
}
Rectangle {
    id: rightBat
    color: "Lime"
    x: page.width - 22; width: 20; height: 90
    y: ball.direction == 'right' ? ball.y - 45 : page.height/2 -45;
    Behavior on y { SpringAnimation{ velocity: 300 } }
}

// The rest, to make it look realistic, if neither ever scores...
Rectangle { color: "Lime"; x: page.width/2-80; y: 0; width: 40; height: 60 }
Rectangle { color: "Black"; x: page.width/2-70; y: 10; width: 20; height: 40 }
Rectangle { color: "Lime"; x: page.width/2+40; y: 0; width: 40; height: 60 }
Rectangle { color: "Black"; x: page.width/2+50; y: 10; width: 20; height: 40 }
Repeater {
    model: page.height / 20
    Rectangle { color: "Lime"; x: page.width/2-5; y: index * 20; width: 10; height: 10 }
}
}
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```

```

**

```

```

*****/

```

```

import QtQuick 1.0
import "content"

```

```

Rectangle {
    width: 640; height: 240
    color: "#646464"

```

```

    Row {
        anchors.centerIn: parent
        Clock { city: "New York"; shift: -4 }
        Clock { city: "Mumbai"; shift: 5.5 }
        Clock { city: "Tokyo"; shift: 9 }
    }

```

```

    QuitButton {
        anchors.right: parent.right
        anchors.top: parent.top
        anchors.margins: 10
    }
}

```

```

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```

```

import QtQuick 1.0
Image {
    source: "quit.png"
    scale: quitMouse.pressed ? 0.8 : 1.0
    smooth: quitMouse.pressed
    MouseArea {
        id: quitMouse
        anchors.fill: parent
        anchors.margins: -10
        onClicked: Qt.quit()
    }
}
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```

```
import QtQuick 1.0
```

```
Item {
```

```
    id: clock
```

```
    width: 200; height: 230
```

```
    property alias city: cityLabel.text
```

```
    property int hours
```

```
    property int minutes
```

```
    property int seconds
```

```
    property real shift
```

```
    property bool night: false
```

```
    function timeChanged() {
```

```
        var date = new Date;
```

```
        hours = shift ? date.getUTCHours() + Math.floor(clock.shift) : date.getHours()
```

```
        night = ( hours < 7 || hours > 19 )
```

```
        minutes = shift ? date.getUTCMinutes() + ((clock.shift % 1) * 60) : date.getMinutes()
```

```
        seconds = date.getUTCSeconds();
```

```
    }
```

```
    Timer {
```

```
        interval: 100; running: true; repeat: true;
```



```

    onTriggered: clock.timeChanged()
  }

Image { id: background; source: "clock.png"; visible: clock.night == false }
Image { source: "clock-night.png"; visible: clock.night == true }

```

```

Image {
  x: 92.5; y: 27
  source: "hour.png"
  smooth: true
  transform: Rotation {
    id: hourRotation
    origin.x: 7.5; origin.y: 73;
    angle: (clock.hours * 30) + (clock.minutes * 0.5)
    Behavior on angle {
      SpringAnimation { spring: 2; damping: 0.2; modulus: 360 }
    }
  }
}

```

```

Image {
  x: 93.5; y: 17
  source: "minute.png"
  smooth: true
  transform: Rotation {
    id: minuteRotation
    origin.x: 6.5; origin.y: 83;
    angle: clock.minutes * 6
    Behavior on angle {
      SpringAnimation { spring: 2; damping: 0.2; modulus: 360 }
    }
  }
}

```

```

Image {
  x: 97.5; y: 20
  source: "second.png"
  smooth: true
  transform: Rotation {
    id: secondRotation
    origin.x: 2.5; origin.y: 80;
    angle: clock.seconds * 6
    Behavior on angle {
      SpringAnimation { spring: 2; damping: 0.2; modulus: 360 }
    }
  }
}

```

```
Image {
    anchors.centerIn: background; source: "center.png"
}
```

```
Text {
    id: cityLabel
    y: 200; anchors.horizontalCenter: parent.horizontalCenter
    color: "white"
    font.bold: true; font.pixelSize: 14
    style: Text.Raised; styleColor: "black"
}
}
```

```
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import QtQuick 1.0

//![0]

ListView {

width: 100; height: 100

anchors.fill: parent

model: myModel

delegate: Rectangle {

height: 25

width: 100

color: model.modelData.color

Text { text: name }

}

}

//![0]

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```
**
```

```
*****/
```

```
import QtQuick 1.0  
import "content"
```

```
Rectangle {  
    color: "white"  
    width: 400; height: 250
```

```
//![0]  
    Switch { anchors.centerIn: parent; on: false }  
//![0]  
}
```

```
/******
```

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```
//![0]
```

```
import QtQuick 1.0
```

```
Item {
```

```
    id: toggleswitch
```

```
    width: background.width; height: background.height
```

```
//![1]
```

```
    property bool on: false
```

```
//![1]
```

```
//![2]
```

```
    function toggle() {
```

```
        if (toggleswitch.state == "on")
```

```
            toggleswitch.state = "off";
```

```
        else
```

```
            toggleswitch.state = "on";
```

```
    }
```

```
//![2]
```

```
//![3]
```

```
    function releaseSwitch() {
```

```
        if (knob.x == 1) {
```

```
            if (toggleswitch.state == "off") return;
```

```
        }
```

```
        if (knob.x == 78) {
```

```
            if (toggleswitch.state == "on") return;
```

```
        }
```

```
        toggle();
```

```
    }
```

```
//![3]
```

```
//![4]
```

```
    Image {
```

```
        id: background
```

```
        source: "background.svg"
```

```

    MouseArea { anchors.fill: parent; onClicked: toggle() }
}
//![4]

//![5]
Image {
    id: knob
    x: 1; y: 2
    source: "knob.svg"

    MouseArea {
        anchors.fill: parent
        drag.target: knob; drag.axis: Drag.XAxis; drag.minimumX: 1; drag.maximumX: 78
        onClicked: toggle()
        onReleased: releaseSwitch()
    }
}
//![5]

//![6]
states: [
    State {
        name: "on"
        PropertyChanges { target: knob; x: 78 }
        PropertyChanges { target: toggleswitch; on: true }
    },
    State {
        name: "off"
        PropertyChanges { target: knob; x: 1 }
        PropertyChanges { target: toggleswitch; on: false }
    }
]
//![6]

//![7]
transitions: Transition {
    NumberAnimation { properties: "x"; easing.type: Easing.InOutQuad; duration: 200 }
}
//![7]
}
//![0]
# This is the qmake project file for the QPy support code for the QtDeclarative
# module.
#
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#
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#

```

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```

```
QT += declarative
CONFIG += static warn_on
TARGET = qpydeclarative
TEMPLATE = lib
```

```
SOURCES = \
    qpydeclarative_chimera_helpers.cpp \
    qpydeclarative_listwrapper.cpp \
    qpydeclarative_post_init.cpp \
    qpydeclarativelistproperty.cpp
```

```
HEADERS = \
    qpydeclarative_api.h \
    qpydeclarative_chimera_helpers.h \
    qpydeclarative_listwrapper.h \
    qpydeclarativelistproperty.h \
    qpydeclarativepropertyvaluesource.h
```

```
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```

```

import QtQuick 1.0
import "content"

```

```

Rectangle {
    id: window

```

```

    width: 480; height: 320
    color: "darkgreen"

```

```

    Row {
        anchors.centerIn: parent; spacing: 30
        Card { image: "content/9_club.png"; angle: 180; yAxis: 1 }
        Card { image: "content/5_heart.png"; angle: 540; xAxis: 1 }
    }
}

```

```

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```

```
import QtQuick 1.0
```

```

Flipable {
    id: container

    property alias image: frontImage.source
    property bool flipped: true
    property int xAxis: 0
    property int yAxis: 0
    property int angle: 0

    width: front.width; height: front.height

    front: Image { id: frontImage; smooth: true }
    back: Image { source: "back.png"; smooth: true }

    state: "back"

```

```

MouseArea { anchors.fill: parent; onClicked: container.flipped = !container.flipped }

transform: Rotation {
    id: rotation; origin.x: container.width / 2; origin.y: container.height / 2
    axis.x: container.xAxis; axis.y: container.yAxis; axis.z: 0
}

states: State {
    name: "back"; when: container.flipped
    PropertyChanges { target: rotation; angle: container.angle }
}

transitions: Transition {
    ParallelAnimation {
        NumberAnimation { target: rotation; properties: "angle"; duration: 600 }
        SequentialAnimation {
            NumberAnimation { target: container; property: "scale"; to: 0.75; duration: 300 }
            NumberAnimation { target: container; property: "scale"; to: 1.0; duration: 300 }
        }
    }
}
}
}

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```

```
import QtQuick 1.0
```

```
TabWidget {
```

```
    id: tabs
```

```
    width: 640; height: 480
```

```
    Rectangle {
```

```
        property string title: "Red"
```

```
        anchors.fill: parent
```

```
        color: "#e3e3e3"
```

```
        Rectangle {
```

```
            anchors.fill: parent; anchors.margins: 20
```

```
            color: "#ff7f7f"
```

```
            Text {
```

```
                width: parent.width - 20
```

```
                anchors.centerIn: parent; horizontalAlignment: Qt.AlignHCenter
```

```
                text: "Roses are red"
```

```
                font.pixelSize: 20
```

```
                wrapMode: Text.WordWrap
```

```
            }
```

```
        }
```

```
    }
```

```
    Rectangle {
```

```
        property string title: "Green"
```

```
        anchors.fill: parent
```

```
        color: "#e3e3e3"
```

```
        Rectangle {
```

```
            anchors.fill: parent; anchors.margins: 20
```

```
            color: "#7fff7f"
```

```
            Text {
```

```
                width: parent.width - 20
```

```
                anchors.centerIn: parent; horizontalAlignment: Qt.AlignHCenter
```

```

        text: "Flower stems are green"
        font.pixelSize: 20
        wrapMode: Text.WordWrap
    }
}
}

```

```

Rectangle {
    property string title: "Blue"
    anchors.fill: parent; color: "#e3e3e3"
}

```

```

Rectangle {
    anchors.fill: parent; anchors.margins: 20
    color: "#7f7fff"
    Text {
        width: parent.width - 20
        anchors.centerIn: parent; horizontalAlignment: Qt.AlignHCenter
        text: "Violets are blue"
        font.pixelSize: 20
        wrapMode: Text.WordWrap
    }
}
}
}

```

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```
import QtQuick 1.0
```

```
Item {
    id: tabWidget

    // Setting the default property to stack.children means any child items
    // of the TabWidget are actually added to the 'stack' item's children.
    // See the "Property Binding"
    // documentation for details on default properties.
    default property alias content: stack.children

    property int current: 0

    onCurrentChanged: setOpacities()
    Component.onCompleted: setOpacities()

    function setOpacities() {
        for (var i = 0; i < stack.children.length; ++i) {
            stack.children[i].opacity = (i == current ? 1 : 0)
        }
    }
}

Row {
    id: header

    Repeater {
        model: stack.children.length
        delegate: Rectangle {
            width: tabWidget.width / stack.children.length; height: 36

            Rectangle {
                width: parent.width; height: 1
                anchors { bottom: parent.bottom; bottomMargin: 1 }
                color: "#acb2c2"
            }
        }
    }
}
```

```

    }
    BorderImage {
        anchors { fill: parent; leftMargin: 2; topMargin: 5; rightMargin: 1 }
        border { left: 7; right: 7 }
        source: "tab.png"
        visible: tabWidget.current == index
    }
    Text {
        horizontalAlignment: Qt.AlignHCenter; verticalAlignment: Qt.AlignVCenter
        anchors.fill: parent
        text: stack.children[index].title
        elide: Text.ElideRight
        font.bold: tabWidget.current == index
    }
    MouseArea {
        anchors.fill: parent
        onClicked: tabWidget.current = index
    }
}
}
}

Item {
    id: stack
    width: tabWidget.width
    anchors.top: header.bottom; anchors.bottom: tabWidget.bottom
}
}
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```

```

//! [imports]
import QtQuick 1.0
import "content"
//! [imports]

//! [0]
Rectangle {
    color: "#545454"
    width: 300; height: 300

    // Dial with a slider to adjust it
    Dial {
        id: dial
        anchors.centerIn: parent
        value: slider.x * 100 / (container.width - 34)
    }

    Rectangle {
        id: container
        anchors { bottom: parent.bottom; left: parent.left
            right: parent.right; leftMargin: 20; rightMargin: 20
            bottomMargin: 10
        }
        height: 16

        radius: 8
        opacity: 0.7
        smooth: true
        gradient: Gradient {
            GradientStop { position: 0.0; color: "gray" }

```

```

    GradientStop { position: 1.0; color: "white" }
}

Rectangle {
    id: slider
    x: 1; y: 1; width: 30; height: 14
    radius: 6
    smooth: true
    gradient: Gradient {
        GradientStop { position: 0.0; color: "#424242" }
        GradientStop { position: 1.0; color: "black" }
    }

    MouseArea {
        anchors.fill: parent
        anchors.margins: -16 // Increase mouse area a lot outside the slider
        drag.target: parent; drag.axis: Drag.XAxis
        drag.minimumX: 2; drag.maximumX: container.width - 32
    }
}
}
}

QuitButton {
    anchors.right: parent.right
    anchors.top: parent.top
    anchors.margins: 10
}
}
}

//! [0]
/*****
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```

```
import QtQuick 1.0
```

```

Item {
    id: root
    property real value : 0

    width: 210; height: 210

    Image { source: "background.png" }

```

```

//! [needle_shadow]
Image {
    x: 96
    y: 35
    source: "needle_shadow.png"
    transform: Rotation {
        origin.x: 9; origin.y: 67
        angle: needleRotation.angle
    }
}

```

```
//! [needle_shadow]
```

```
//! [needle]
```

```

Image {
    id: needle
    x: 98; y: 33
    smooth: true
    source: "needle.png"
    transform: Rotation {
        id: needleRotation
        origin.x: 5; origin.y: 65
    }
}

```

```

    //! [needle angle]
    angle: Math.min(Math.max(-130, root.value*2.6 - 130), 133)
    Behavior on angle {
        SpringAnimation {
            spring: 1.4
            damping: .15
        }
    }
    //! [needle angle]
}
}
//! [needle]
//! [overlay]
    Image { x: 21; y: 18; source: "overlay.png" }
//! [overlay]
}
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```

```
import QtQuick 1.0
```

```
Rectangle {
    width: 640
    height: 480
```

```
// Create a flickable to view a large image.
```

```
Flickable {
    id: view
    anchors.fill: parent
    contentWidth: picture.width
    contentHeight: picture.height
```

```
Image {
    id: picture
    source: "niagara_falls.jpg"
    asynchronous: true
}
```

```
// Only show the scrollbars when the view is moving.
```

```
states: State {
    name: "ShowBars"
    when: view.movingVertically || view.movingHorizontally
    PropertyChanges { target: verticalScrollBar; opacity: 1 }
    PropertyChanges { target: horizontalScrollBar; opacity: 1 }
}
```

```
transitions: Transition {
    NumberAnimation { properties: "opacity"; duration: 400 }
}
```

```
// Attach scrollbars to the right and bottom edges of the view.
```

```
ScrollBar {
    id: verticalScrollBar
    width: 12; height: view.height-12
    anchors.right: view.right
    opacity: 0
    orientation: Qt.Vertical
    position: view.visibleArea.yPosition
    pageSize: view.visibleArea.heightRatio
}
```

```

ScrollBar {
    id: horizontalScrollBar
    width: view.width-12; height: 12
    anchors.bottom: view.bottom
    opacity: 0
    orientation: Qt.Horizontal
    position: view.visibleArea.xPosition
    pageSize: view.visibleArea.widthRatio
}
}
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```

```

import QtQuick 1.0

Item {
    id: scrollBar

    // The properties that define the scrollbar's state.
    // position and pageSize are in the range 0.0 - 1.0. They are relative to the
    // height of the page, i.e. a pageSize of 0.5 means that you can see 50%
    // of the height of the view.
    // orientation can be either Qt.Vertical or Qt.Horizontal
    property real position
    property real pageSize
    property variant orientation : Qt.Vertical

    // A light, semi-transparent background
    Rectangle {
        id: background
        anchors.fill: parent
        radius: orientation == Qt.Vertical ? (width/2 - 1) : (height/2 - 1)
        color: "white"
        opacity: 0.3
    }

    // Size the bar to the required size, depending upon the orientation.
    Rectangle {
        x: orientation == Qt.Vertical ? 1 : (scrollBar.position * (scrollBar.width-2) + 1)
        y: orientation == Qt.Vertical ? (scrollBar.position * (scrollBar.height-2) + 1) : 1
        width: orientation == Qt.Vertical ? (parent.width-2) : (scrollBar.pageSize * (scrollBar.width-2))
        height: orientation == Qt.Vertical ? (scrollBar.pageSize * (scrollBar.height-2)) : (parent.height-2)
        radius: orientation == Qt.Vertical ? (width/2 - 1) : (height/2 - 1)
        color: "black"
        opacity: 0.7
    }
}

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```

```

import QtQuick 1.0
import "content"

Rectangle {
    id: main

    width: 600; height: 405
    color: "#edecec"

    Flickable {
        anchors.fill: parent
        contentHeight: column.height + 20

        Column {
            id: column
            x: 10; y: 10
            spacing: 10

            Repeater {
                model: 25

                ProgressBar {
                    property int r: Math.floor(Math.random() * 5000 + 1000)
                }
            }
        }
    }
}

```

width: main.width - 20

NumberAnimation on value { duration: r; from: 0; to: 100; loops: Animation.Infinite }

ColorAnimation on color { duration: r; from: "lightsteelblue"; to: "thistle"; loops: Animation.Infinite }

ColorAnimation on secondColor { duration: r; from: "steelblue"; to: "#CD96CD"; loops:

Animation.Infinite }

}

}

}

}

}

/\*\*\*\*\*

\*\*

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```

import QtQuick 1.0

Item {
    id: progressbar

    property int minimum: 0
    property int maximum: 100
    property int value: 0
    property alias color: gradient1.color
    property alias secondColor: gradient2.color

    width: 250; height: 23
    clip: true

    BorderImage {
        source: "background.png"
        width: parent.width; height: parent.height
        border { left: 4; top: 4; right: 4; bottom: 4 }
    }

    Rectangle {
        id: highlight

        property int widthDest: ((progressbar.width * (value - minimum)) / (maximum - minimum) - 6)

        width: highlight.widthDest
        Behavior on width { SmoothedAnimation { velocity: 1200 } }

        anchors { left: parent.left; top: parent.top; bottom: parent.bottom; margins: 3 }
        radius: 1
        gradient: Gradient {
            GradientStop { id: gradient1; position: 0.0 }
            GradientStop { id: gradient2; position: 1.0 }
        }
    }

    Text {
        anchors { right: highlight.right; rightMargin: 6; verticalCenter: parent.verticalCenter }
        color: "white"
        font.bold: true
        text: Math.floor((value - minimum) / (maximum - minimum) * 100) + '%'
    }
}

# This is the qmake project file for the QPy support code for the QtDesigner
# module.
#
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```



```

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```

```

CONFIG += designer static plugin warn_on
TARGET = qpydesigner
TEMPLATE = lib

```

```

HEADERS = \
    qpydesignercontainerextension.h \
    qpydesignercustomwidgetcollectionplugin.h \
    qpydesignercustomwidgetplugin.h \
    qpydesignermembersheetextension.h \
    qpydesignerpropertysheetextension.h \
    qpydesignertaskmenuextension.h

```

```

/*****

```

```

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```

```

import QtQuick 1.0

Rectangle {
    id: page
    width: 500; height: 250
    color: "#edecec"

    MouseArea {
        anchors.fill: parent
        onClicked: page.focus = false;
    }

    Column {
        anchors { horizontalCenter: parent.horizontalCenter; verticalCenter: parent.verticalCenter }
        spacing: 10

        SearchBox { id: search1; KeyNavigation.tab: search2; KeyNavigation.backtab: search3; focus: true }
        SearchBox { id: search2; KeyNavigation.tab: search3; KeyNavigation.backtab: search1 }
        SearchBox { id: search3; KeyNavigation.tab: search1; KeyNavigation.backtab: search2 }
    }
}

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```

```
import QtQuick 1.0
```

```

FocusScope {
    id: focusScope
    width: 250; height: 28

    BorderImage {
        source: "images/lineedit-bg.png"
        width: parent.width; height: parent.height
        border { left: 4; top: 4; right: 4; bottom: 4 }
    }

    BorderImage {
        source: "images/lineedit-bg-focus.png"
        width: parent.width; height: parent.height
    }
}

```

```

border { left: 4; top: 4; right: 4; bottom: 4 }
visible: parent.activeFocus ? true : false
}

Text {
  id: typeSomething
  anchors.fill: parent; anchors.leftMargin: 8
  verticalAlignment: Text.AlignVCenter
  text: "Type something..."
  color: "gray"
  font.italic: true
}

MouseArea {
  anchors.fill: parent
  onClicked: { focusScope.focus = true; textInput.openSoftwareInputPanel(); }
}

TextInput {
  id: textInput
  anchors { left: parent.left; leftMargin: 8; right: clear.left; rightMargin: 8; verticalCenter: parent.verticalCenter }
  focus: true
  selectByMouse: true
}

Image {
  id: clear
  anchors { right: parent.right; rightMargin: 8; verticalCenter: parent.verticalCenter }
  source: "images/clear.png"
  opacity: 0

  MouseArea {
    anchors.fill: parent
    onClicked: { textInput.text = ""; focusScope.focus = true; textInput.openSoftwareInputPanel(); }
  }
}

states: State {
  name: "hasText"; when: textInput.text != ""
  PropertyChanges { target: typeSomething; opacity: 0 }
  PropertyChanges { target: clear; opacity: 1 }
}

transitions: [
  Transition {
    from: ""; to: "hasText"
    NumberAnimation { exclude: typeSomething; properties: "opacity" }
  },

```

```

    Transition {
        from: "hasText"; to: ""
        NumberAnimation { properties: "opacity" }
    }
]
}
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import QtQuick 1.0
import "content"

Rectangle {

```

width: 240; height: 320

```
Column {  
    y: 20; x: 20; spacing: 20
```

```
    Spinner {  
        id: spinner  
        width: 200; height: 240  
        focus: true  
        model: 20  
        itemHeight: 30  
        delegate: Text { font.pixelSize: 25; text: index; height: 30 }  
    }  
  
    Text { text: "Current item index: " + spinner.currentIndex }  
}
```

```
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```

```

**

```

```

*****/

```

```

import QtQuick 1.0

```

```

Image {

```

```

    property alias model: view.model
    property alias delegate: view.delegate
    property alias currentIndex: view.currentIndex
    property real itemHeight: 30

```

```

    source: "spinner-bg.png"
    clip: true

```

```

    PathView {

```

```

        id: view
        anchors.fill: parent

```

```

        pathItemCount: height/itemHeight
        preferredHighlightBegin: 0.5
        preferredHighlightEnd: 0.5
        highlight: Image { source: "spinner-select.png"; width: view.width; height: itemHeight+4 }
        dragMargin: view.width/2

```

```

        path: Path {

```

```

            startX: view.width/2; startY: -itemHeight/2
            PathLine { x: view.width/2; y: view.pathItemCount*itemHeight + itemHeight }
        }

```

```

    }

```

```

    Keys.onDownPressed: view.incrementCurrentIndex()

```

```

    Keys.onUpPressed: view.decrementCurrentIndex()

```

```

}

```

```

<ui version="4.0" >

```

```

<author></author>

```

```

<comment></comment>

```

```

<exportmacro></exportmacro>

```

```

<class>CalculatorForm</class>

```

```

<widget class="QWidget" name="CalculatorForm" >

```

```

    <property name="objectName" >

```

```

        <string notr="true" >CalculatorForm</string>

```

```

    </property>

```

```

    <property name="geometry" >

```

```

        <rect>

```

```

<x>0</x>
<y>0</y>
<width>400</width>
<height>300</height>
</rect>
</property>
<property name="sizePolicy" >
<sizepolicy>
<hsizetype>5</hsizetype>
<vsizetype>5</vsizetype>
<horstretch>0</horstretch>
<verstretch>0</verstretch>
</sizepolicy>
</property>
<property name="windowTitle" >
<string>Calculator Form</string>
</property>
<layout class="QGridLayout" >
<property name="objectName" >
<string notr="true" />
</property>
<property name="margin" >
<number>9</number>
</property>
<property name="spacing" >
<number>6</number>
</property>
<item row="0" column="6" >
<spacer>
<property name="objectName" >
<string notr="true" >horizontalSpacer</string>
</property>
<property name="geometry" >
<rect>
<x>239</x>
<y>9</y>
<width>152</width>
<height>52</height>
</rect>
</property>
<property name="orientation" >
<enum>Qt::Horizontal</enum>
</property>
<property name="sizeHint" >
<size>
<width>40</width>
<height>20</height>
</size>

```



```

</property>
</spacer>
</item>
<item row="0" column="4" >
<widget class="QLabel" name="label_3_2" >
<property name="objectName" >
<string notr="true" >label_3_2</string>
</property>
<property name="geometry" >
<rect>
<x>169</x>
<y>9</y>
<width>20</width>
<height>52</height>
</rect>
</property>
<property name="text" >
<string>=</string>
</property>
<property name="alignment" >
<set>Qt::AlignCenter</set>
</property>
</widget>
</item>
<item row="0" column="5" >
<layout class="QVBoxLayout" >
<property name="objectName" >
<string notr="true" />
</property>
<property name="margin" >
<number>1</number>
</property>
<property name="spacing" >
<number>6</number>
</property>
<item>
<widget class="QLabel" name="label_2_2_2" >
<property name="objectName" >
<string notr="true" >label_2_2_2</string>
</property>
<property name="geometry" >
<rect>
<x>1</x>
<y>1</y>
<width>36</width>
<height>17</height>
</rect>
</property>

```

```

    <property name="text" >
      <string>Output</string>
    </property>
  </widget>
</item>
<item>
  <widget class="QLabel" name="outputWidget" >
    <property name="objectName" >
      <string notr="true" >outputWidget</string>
    </property>
    <property name="geometry" >
      <rect>
        <x>1</x>
        <y>24</y>
        <width>36</width>
        <height>27</height>
      </rect>
    </property>
    <property name="frameShape" >
      <enum>QFrame::Box</enum>
    </property>
    <property name="frameShadow" >
      <enum>QFrame::Sunken</enum>
    </property>
    <property name="text" >
      <string>0</string>
    </property>
    <property name="alignment" >
<set>Qt::AlignAbsolute|Qt::AlignBottom|Qt::AlignCenter|Qt::AlignHCenter|Qt::AlignHorizontal_Mask|Qt::AlignJustify|Qt::AlignLeading|Qt::AlignLeft|Qt::AlignRight|Qt::AlignTop|Qt::AlignTrailing|Qt::AlignVertical_Mask</set>
    </property>
  </widget>
</item>
</layout>
</item>
<item row="1" column="2" >
  <spacer>
    <property name="objectName" >
      <string notr="true" >verticalSpacer</string>
    </property>
    <property name="geometry" >
      <rect>
        <x>89</x>
        <y>67</y>
        <width>20</width>
        <height>224</height>
      </rect>

```

```

</property>
<property name="orientation" >
  <enum>Qt::Vertical</enum>
</property>
<property name="sizeHint" >
  <size>
    <width>20</width>
    <height>40</height>
  </size>
</property>
</spacer>
</item>
<item row="0" column="3" >
  <layout class="QVBoxLayout" >
    <property name="objectName" >
      <string notr="true" />
    </property>
    <property name="margin" >
      <number>1</number>
    </property>
    <property name="spacing" >
      <number>6</number>
    </property>
    <item>
      <widget class="QLabel" name="label_2" >
        <property name="objectName" >
          <string notr="true" >label_2</string>
        </property>
        <property name="geometry" >
          <rect>
            <x>1</x>
            <y>1</y>
            <width>46</width>
            <height>19</height>
          </rect>
        </property>
        <property name="text" >
          <string>Input 2</string>
        </property>
      </widget>
    </item>
    <item>
      <widget class="QSpinBox" name="inputSpinBox2" >
        <property name="objectName" >
          <string notr="true" >inputSpinBox2</string>
        </property>
        <property name="geometry" >
          <rect>

```

```

        <x>1</x>
        <y>26</y>
        <width>46</width>
        <height>25</height>
    </rect>
</property>
</widget>
</item>
</layout>
</item>
<item row="0" column="1" >
    <widget class="QLabel" name="label_3" >
        <property name="objectName" >
            <string notr="true" >label_3</string>
        </property>
        <property name="geometry" >
            <rect>
                <x>63</x>
                <y>9</y>
                <width>20</width>
                <height>52</height>
            </rect>
        </property>
        <property name="text" >
            <string>+</string>
        </property>
        <property name="alignment" >
            <set>Qt::AlignCenter</set>
        </property>
    </widget>
</item>
<item row="0" column="0" >
    <layout class="QVBoxLayout" >
        <property name="objectName" >
            <string notr="true" />
        </property>
        <property name="margin" >
            <number>1</number>
        </property>
        <property name="spacing" >
            <number>6</number>
        </property>
        <item>
            <widget class="QLabel" name="label" >
                <property name="objectName" >
                    <string notr="true" >label</string>
                </property>
                <property name="geometry" >

```

```

    <rect>
      <x>1</x>
      <y>1</y>
      <width>46</width>
      <height>19</height>
    </rect>
  </property>
  <property name="text" >
    <string>Input 1</string>
  </property>
</widget>
</item>
<item>
  <widget class="QSpinBox" name="inputSpinBox1" >
    <property name="objectName" >
      <string notr="true" >inputSpinBox1</string>
    </property>
    <property name="geometry" >
      <rect>
        <x>1</x>
        <y>26</y>
        <width>46</width>
        <height>25</height>
      </rect>
    </property>
  </widget>
</item>
</layout>
</item>
</layout>
</widget>
<pixmapfunction></pixmapfunction>
<resources/>
<connections/>
</ui>
<RCC>
  <qresource prefix="/" >
    <file>images/head.png</file>
  </qresource>
</RCC>
<RCC>
  <qresource prefix="/" >
    <file>images/cheese.jpg</file>
  </qresource>
</RCC>
<RCC>
  <qresource>
    <file>images/blue_angle_swirl.jpg</file>

```

```

<file>images/artsfftscope.png</file>
<file>images/kontakt_contacts.png</file>
<file>images/kontakt_journal.png</file>
<file>images/kontakt_mail.png</file>
<file>images/kontakt_notes.png</file>
<file>images/kopeteavailable.png</file>
<file>images/metacontact_online.png</file>
<file>images/minitools.png</file>
<file>images/blue_angle_swirl.jpg</file>
</qresource>
</RCC>
<ui version="4.0" >
<class>BackSide</class>
<widget class="QWidget" name="BackSide" >
<property name="geometry" >
<rect>
<x>0</x>
<y>0</y>
<width>378</width>
<height>385</height>
</rect>
</property>
<property name="windowTitle" >
<string>BackSide</string>
</property>
<layout class="QVBoxLayout" name="verticalLayout_2" >
<item>
<widget class="QGroupBox" name="groupBox" >
<property name="title" >
<string>Settings</string>
</property>
<property name="flat" >
<bool>true</bool>
</property>
<property name="checkable" >
<bool>true</bool>
</property>
<layout class="QGridLayout" name="gridLayout" >
<item row="0" column="0" >
<widget class="QLabel" name="label" >
<property name="text" >
<string>Title:</string>
</property>
</widget>
</item>
<item row="0" column="1" >
<widget class="QLineEdit" name="hostName" >
<property name="text" >

```

```

    <string>Pad Navigator Example</string>
  </property>
</widget>
</item>
<item row="1" column="0" >
  <widget class="QLabel" name="label_2" >
    <property name="text" >
      <string>Modified:</string>
    </property>
  </widget>
</item>
<item row="2" column="0" >
  <widget class="QLabel" name="label_3" >
    <property name="text" >
      <string>Extent</string>
    </property>
  </widget>
</item>
<item row="2" column="1" >
  <layout class="QHBoxLayout" name="horizontalLayout" >
    <item>
      <widget class="QSlider" name="horizontalSlider" >
        <property name="value" >
          <number>42</number>
        </property>
        <property name="orientation" >
          <enum>Qt::Horizontal</enum>
        </property>
      </widget>
    </item>
    <item>
      <widget class="QSpinBox" name="spinBox" >
        <property name="value" >
          <number>42</number>
        </property>
      </widget>
    </item>
  </layout>
</item>
<item row="1" column="1" >
  <widget class="QDateTimeEdit" name="dateTimeEdit" />
</item>
</layout>
</widget>
</item>
<item>
  <widget class="QGroupBox" name="groupBox_2" >
    <property name="title" >

```

```

<string>Other input</string>
</property>
<property name="flat" >
  <bool>true</bool>
</property>
<property name="checkable" >
  <bool>true</bool>
</property>
<layout class="QHBoxLayout" name="horizontalLayout_2" >
  <item>
    <widget class="QTreeWidget" name="treeWidget" >
      <column>
        <property name="text" >
          <string>Widgets On Graphics View</string>
        </property>
      </column>
      <item>
        <property name="text" >
          <string>QGraphicsProxyWidget</string>
        </property>
      <item>
        <property name="text" >
          <string>QGraphicsWidget</string>
        </property>
      <item>
        <property name="text" >
          <string>QObject</string>
        </property>
      </item>
      <item>
        <property name="text" >
          <string>QGraphicsItem</string>
        </property>
      </item>
      <item>
        <property name="text" >
          <string>QGraphicsLayoutItem</string>
        </property>
      </item>
      </item>
      <item>
        <property name="text" >
          <string>QGraphicsGridLayout</string>
        </property>
      </item>
      <item>
        <property name="text" >
          <string>QGraphicsLayout</string>

```



```

    </property>
  </item>
  <property name="text" >
    <string>QGraphicsLayoutItem</string>
  </property>
</item>
</item>
</item>
<item>
  <property name="text" >
    <string>QGraphicsLinearLayout</string>
  </property>
  <item>
    <property name="text" >
      <string>QGraphicsLayout</string>
    </property>
    <item>
      <property name="text" >
        <string>QGraphicsLayoutItem</string>
      </property>
    </item>
  </item>
</item>
</item>
</item>
</widget>
</item>
</layout>
</widget>
</item>
</layout>
</widget>
<tabstops>
  <tabstop>groupBox</tabstop>
  <tabstop>hostName</tabstop>
  <tabstop>dateTimeEdit</tabstop>
  <tabstop>horizontalSlider</tabstop>
  <tabstop>spinBox</tabstop>
  <tabstop>groupBox_2</tabstop>
  <tabstop>treeWidget</tabstop>
</tabstops>
<resources/>
<connections>
  <connection>
    <sender>horizontalSlider</sender>
    <signal>valueChanged(int)</signal>
    <receiver>spinBox</receiver>
    <slot>setValue(int)</slot>
  <hints>
    <hint type="sourcelabel" >

```

```

    <x>184</x>
    <y>125</y>
  </hint>
  <hint type="destinationlabel" >
    <x>275</x>
    <y>127</y>
  </hint>
</hints>
</connection>
<connection>
  <sender>spinBox</sender>
  <signal>valueChanged(int)</signal>
  <receiver>horizontalSlider</receiver>
  <slot>setValue(int)</slot>
<hints>
  <hint type="sourcelabel" >
    <x>272</x>
    <y>114</y>
  </hint>
  <hint type="destinationlabel" >
    <x>190</x>
    <y>126</y>
  </hint>
</hints>
</connection>
</connections>
</ui>
<ui version="4.0" >
<author></author>
<comment></comment>
<exportmacro></exportmacro>
<class>ChatMainWindow</class>
<widget class="QMainWindow" name="ChatMainWindow" >
  <property name="geometry" >
    <rect>
      <x>0</x>
      <y>0</y>
      <width>800</width>
      <height>600</height>
    </rect>
  </property>
  <property name="windowTitle" >
    <string>QtDBus Chat</string>
  </property>
  <widget class="QWidget" name="centralwidget" >
    <layout class="QHBoxLayout" >
      <property name="margin" >
        <number>9</number>

```

```

</property>
<property name="spacing" >
  <number>6</number>
</property>
<item>
  <layout class="QVBoxLayout" >
    <property name="margin" >
      <number>0</number>
    </property>
    <property name="spacing" >
      <number>6</number>
    </property>
    <item>
      <widget class="QTextBrowser" name="chatHistory" >
        <property name="acceptDrops" >
          <bool>false</bool>
        </property>
        <property name="toolTip" >
          <string>Messages sent and received from other users</string>
        </property>
        <property name="acceptRichText" >
          <bool>true</bool>
        </property>
      </widget>
    </item>
    <item>
      <layout class="QHBoxLayout" >
        <property name="margin" >
          <number>0</number>
        </property>
        <property name="spacing" >
          <number>6</number>
        </property>
        <item>
          <widget class="QLabel" name="label" >
            <property name="text" >
              <string>Message:</string>
            </property>
            <property name="buddy" >
              <cstring>messageLineEdit</cstring>
            </property>
          </widget>
        </item>
        <item>
          <widget class="QLineEdit" name="messageLineEdit" />
        </item>
        <item>
          <widget class="QPushButton" name="sendButton" >

```

```

<property name="sizePolicy" >
  <sizepolicy>
    <hsizetype>1</hsizetype>
    <vsizetype>0</vsizetype>
    <horstretch>0</horstretch>
    <verstretch>0</verstretch>
  </sizepolicy>
</property>
<property name="toolTip" >
  <string>Sends a message to other people</string>
</property>
<property name="whatsThis" >
  <string/>
</property>
<property name="text" >
  <string>Send</string>
</property>
</widget>
</item>
</layout>
</item>
</layout>
</item>
</layout>
</widget>
<widget class="QMenuBar" name="menubar" >
  <property name="geometry" >
    <rect>
      <x>0</x>
      <y>0</y>
      <width>800</width>
      <height>31</height>
    </rect>
  </property>
  <widget class="QMenu" name="menuQuit" >
    <property name="title" >
      <string>Help</string>
    </property>
    <addaction name="actionAboutQt" />
  </widget>
  <widget class="QMenu" name="menuFile" >
    <property name="title" >
      <string>File</string>
    </property>
    <addaction name="actionChangeNickname" />
    <addaction name="separator" />
    <addaction name="actionQuit" />
  </widget>

```

```

<addaction name="menuFile" />
<addaction name="menuQuit" />
</widget>
<widget class="QStatusBar" name="statusbar" />
<action name="actionQuit" >
<property name="text" >
<string>Quit</string>
</property>
<property name="shortcut" >
<string>Ctrl+Q</string>
</property>
</action>
<action name="actionAboutQt" >
<property name="text" >
<string>About Qt...</string>
</property>
</action>
<action name="actionChangeNickname" >
<property name="text" >
<string>Change nickname...</string>
</property>
<property name="shortcut" >
<string>Ctrl+N</string>
</property>
</action>
</widget>
<pixmapfunction></pixmapfunction>
<tabstops>
<tabstop>chatHistory</tabstop>
<tabstop>messageLineEdit</tabstop>
<tabstop>sendButton</tabstop>
</tabstops>
<resources/>
<connections>
<connection>
<sender>messageLineEdit</sender>
<signal>returnPressed()</signal>
<receiver>sendButton</receiver>
<slot>animateClick()</slot>
<hints>
<hint type="sourcelabel" >
<x>299</x>
<y>554</y>
</hint>
<hint type="destinationlabel" >
<x>744</x>
<y>551</y>
</hint>

```

```

</hints>
</connection>
<connection>
  <sender>actionQuit</sender>
  <signal>triggered(bool)</signal>
  <receiver>ChatMainWindow</receiver>
  <slot>close()</slot>
  <hints>
    <hint type="sourcelabel" >
      <x>-1</x>
      <y>-1</y>
    </hint>
    <hint type="destinationlabel" >
      <x>399</x>
      <y>299</y>
    </hint>
  </hints>
</connection>
</connections>
</ui>
# This is the qmake project file for the QPy support code for the QtGui module.
#
# Copyright (c) 2013 Riverbank Computing Limited <info@riverbankcomputing.com>
#
# This file is part of PyQt.
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# WARRANTY OF DESIGN, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

CONFIG += static warn_on
TARGET = qpygui
TEMPLATE = lib

```

```

HEADERS = \
    qpytextobject.h
<ui version="4.0" >
<author></author>
<comment></comment>
<exportmacro></exportmacro>
<class>NicknameDialog</class>
<widget class="QDialog" name="NicknameDialog" >
  <property name="geometry" >
    <rect>
      <x>0</x>
      <y>0</y>
      <width>396</width>
      <height>105</height>
    </rect>
  </property>
  <property name="sizePolicy" >
    <sizepolicy>
      <hsizetype>1</hsizetype>
      <vsizetype>1</vsizetype>
      <horstretch>0</horstretch>
      <verstretch>0</verstretch>
    </sizepolicy>
  </property>
  <property name="windowTitle" >
    <string>Set nickname</string>
  </property>
  <layout class="QVBoxLayout" >
    <property name="margin" >
      <number>9</number>
    </property>
    <property name="spacing" >
      <number>6</number>
    </property>
    <item>
      <layout class="QVBoxLayout" >
        <property name="margin" >
          <number>0</number>
        </property>
        <property name="spacing" >
          <number>6</number>
        </property>
        <item>
          <widget class="QLabel" name="label" >
            <property name="sizePolicy" >
              <sizepolicy>
                <hsizetype>1</hsizetype>

```

```

    <vsizetype>1</vsizetype>
    <horstretch>0</horstretch>
    <verstretch>0</verstretch>
  </sizepolicy>
</property>
<property name="text" >
  <string>New nickname:</string>
</property>
</widget>
</item>
<item>
  <widget class="QLineEdit" name="nickname" />
</item>
</layout>
</item>
<item>
  <layout class="QHBoxLayout" >
    <property name="margin" >
      <number>0</number>
    </property>
    <property name="spacing" >
      <number>6</number>
    </property>
    <item>
      <spacer>
        <property name="orientation" >
          <enum>Qt::Horizontal</enum>
        </property>
        <property name="sizeHint" >
          <size>
            <width>131</width>
            <height>31</height>
          </size>
        </property>
      </spacer>
    </item>
    <item>
      <widget class="QPushButton" name="okButton" >
        <property name="text" >
          <string>OK</string>
        </property>
      </widget>
    </item>
    <item>
      <widget class="QPushButton" name="cancelButton" >
        <property name="text" >
          <string>Cancel</string>
        </property>

```



```

</widget>
</item>
<item>
<spacer>
  <property name="orientation" >
    <enum>Qt::Horizontal</enum>
  </property>
  <property name="sizeHint" >
    <size>
      <width>40</width>
      <height>20</height>
    </size>
  </property>
</spacer>
</item>
</layout>
</item>
</layout>
</widget>
<pixmapfunction></pixmapfunction>
<resources/>
<connections>
<connection>
  <sender>okButton</sender>
  <signal>clicked()</signal>
  <receiver>NicknameDialog</receiver>
  <slot>accept()</slot>
  <hints>
    <hint type="sourcelabel" >
      <x>278</x>
      <y>253</y>
    </hint>
    <hint type="destinationlabel" >
      <x>96</x>
      <y>254</y>
    </hint>
  </hints>
</connection>
<connection>
  <sender>cancelButton</sender>
  <signal>clicked()</signal>
  <receiver>NicknameDialog</receiver>
  <slot>reject()</slot>
  <hints>
    <hint type="sourcelabel" >
      <x>369</x>
      <y>253</y>
    </hint>

```

```

<hint type="destinationlabel" >
  <x>179</x>
  <y>282</y>
</hint>
</hints>
</connection>
</connections>
</ui>
<ui version="4.0" >
<class>Controller</class>
<widget class="QWidget" name="Controller" >
  <property name="geometry" >
    <rect>
      <x>0</x>
      <y>0</y>
      <width>255</width>
      <height>111</height>
    </rect>
  </property>
  <property name="windowTitle" >
    <string>Controller</string>
  </property>
  <layout class="QGridLayout" >
    <property name="margin" >
      <number>9</number>
    </property>
    <property name="spacing" >
      <number>6</number>
    </property>
    <item row="1" column="1" >
      <widget class="QLabel" name="label" >
        <property name="text" >
          <string>Controller</string>
        </property>
        <property name="alignment" >
          <set>Qt::AlignCenter</set>
        </property>
      </widget>
    </item>
    <item row="2" column="1" >
      <widget class="QPushButton" name="decelerate" >
        <property name="text" >
          <string>Decelerate</string>
        </property>
      </widget>
    </item>
    <item row="0" column="1" >
      <widget class="QPushButton" name="accelerate" >

```

```

    <property name="text" >
      <string>Accelerate</string>
    </property>
  </widget>
</item>
<item row="1" column="2" >
  <widget class="QPushButton" name="right" >
    <property name="text" >
      <string>Right</string>
    </property>
  </widget>
</item>
<item row="1" column="0" >
  <widget class="QPushButton" name="left" >
    <property name="text" >
      <string>Left</string>
    </property>
  </widget>
</item>
</layout>
</widget>
<resources/>
<connections/>
</ui>

```

```

/*****

```

```

**

```

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** Contact: Nokia Corporation (qt-info@nokia.com)

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```

**

```

```

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```

```

**

```

```

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**

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```
import QtQuick 1.0
```

```
import "MinehuntCore" 1.0
```

```
Item {
```

```
    id: field
```

```
    property int clickx: 0
```

```
    property int clicky: 0
```

```
    width: 450; height: 450
```

```
    Image { source: "MinehuntCore/pics/No-Ones-Laughing-3.jpg"; anchors.fill: parent; fillMode: Image.Tile }
```

```
    Grid {
```

```
        anchors.horizontalCenter: parent.horizontalCenter
```

```
        columns: 9; spacing: 1
```

```
        Repeater {
```

```
            id: repeater
```

```
            model: tiles
```

```
            delegate: Tile {}
```

```
        }
```

```
    }
```

```
    Row {
```

```
        id: gamedata
```

```
        x: 20; spacing: 20
```

```
        anchors.bottom: field.bottom; anchors.bottomMargin: 15
```

```
        Image {
```

```
            source: "MinehuntCore/pics/quit.png"
```

```
            scale: quitMouse.pressed ? 0.8 : 1.0
```

```

smooth: quitMouse.pressed
y: 10
MouseArea {
    id: quitMouse
    anchors.fill: parent
    anchors.margins: -20
    onClicked: Qt.quit()
}
}
Column {
    spacing: 2
    Image { source: "MinehuntCore/pics/bomb-color.png" }
    Text { anchors.horizontalCenter: parent.horizontalCenter; color: "white"; text: numMines }
}

Column {
    spacing: 2
    Image { source: "MinehuntCore/pics/flag-color.png" }
    Text { anchors.horizontalCenter: parent.horizontalCenter; color: "white"; text: numFlags }
}
}

Image {
    anchors.bottom: field.bottom; anchors.bottomMargin: 15
    anchors.right: field.right; anchors.rightMargin: 20
    source: isPlaying ? 'MinehuntCore/pics/face-smile.png' :
    hasWon ? 'MinehuntCore/pics/face-smile-big.png': 'MinehuntCore/pics/face-sad.png'

    MouseArea { anchors.fill: parent; onPressed: reset() }
}
Text {
    anchors.centerIn: parent; width: parent.width - 20
    horizontalAlignment: Text.AlignHCenter
    wrapMode: Text.WordWrap
    text: "Minehunt will not run properly if the C++ plugin is not compiled.\n\nPlease see README."
    color: "white"; font.bold: true; font.pixelSize: 14
    visible: tiles == undefined
}
}

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```

```

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```

```

import QtQuick 1.0
import Qt.labs.particles 1.0

Item {
    property bool explode : false

    Particles {
        id: particles
        width: 40
        height: 40
        lifeSpan: 1000
        lifeSpanDeviation: 0
        source: "pics/star.png"
        count: 0
        angle: 270
    }
}

```

```

    angleDeviation: 360
    velocity: 100
    velocityDeviation: 20
    z: 100
  }
  states: State { name: "exploding"; when: explode
    StateChangeScript { script: particles.burst(200); }
  }
}
Explosion 1.0 Explosion.qml
Tile 1.0 Tile.qml
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```
import QtQuick 1.0
```

```
Flipable {
```

```
    id: flipable
```

```
    property int angle: 0
```

```
    width: 40; height: 40
```

```
    transform: Rotation { origin.x: 20; origin.y: 20; axis.x: 1; axis.z: 0; angle: flipable.angle }
```

```
    front: Image {
```

```
        source: "pics/front.png"; width: 40; height: 40
```

```
        Image {
```

```
            anchors.centerIn: parent
```

```
            source: "pics/flag.png"; opacity: modelData.hasFlag
```

```
            Behavior on opacity { NumberAnimation {} }
```

```
        }
```

```
    }
```

```
    back: Image {
```

```
        source: "pics/back.png"
```

```
        width: 40; height: 40
```

```
        Text {
```

```
            anchors.centerIn: parent
```

```
            text: modelData.hint; color: "white"; font.bold: true
```

```
            opacity: !modelData.hasMine && modelData.hint > 0
```

```
        }
```

```
        Image {
```

```
            anchors.centerIn: parent
```

```
            source: "pics/bomb.png"; opacity: modelData.hasMine
```

```
        }
```

```
        Explosion { id: expl }
```

```
    }
```

```
    states: State {
```

```
        name: "back"; when: modelData.flipped
```

```
        PropertyChanges { target: flipable; angle: 180 }
```

```
    }
```



```

property real pauseDur: 250
transitions: Transition {
  SequentialAnimation {
    ScriptAction {
      script: {
        var ret = Math.abs(flipable.x - field.clickx)
          + Math.abs(flipable.y - field.clicky);
        if (modelData.hasMine && modelData.flipped)
          pauseDur = ret * 3
        else
          pauseDur = ret
      }
    }
    PauseAnimation {
      duration: pauseDur
    }
    RotationAnimation { easing.type: Easing.InOutQuad }
    ScriptAction { script: if (modelData.hasMine && modelData.flipped) { expl.explode = true } }
  }
}

```

```

MouseArea {
  anchors.fill: parent
  acceptedButtons: Qt.LeftButton | Qt.RightButton
  onClicked: {
    field.clickx = flipable.x
    field.clicky = flipable.y
    var row = Math.floor(index / 9)
    var col = index - (Math.floor(index / 9) * 9)
    if (mouse.button == undefined || mouse.button == Qt.RightButton) {
      flag(row, col)
    } else {
      flip(row, col)
    }
  }
  onPressAndHold: {
    field.clickx = flipable.x
    field.clicky = flipable.y
    var row = Math.floor(index / 9)
    var col = index - (Math.floor(index / 9) * 9)
    flag(row, col)
  }
}

```

```

<?xml version="1.0" encoding="ISO-8859-1"?>
<xsl:stylesheet version="1.0" xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
<xsl:template match="/">
<html>

```

```

<head><title>SameGame High Scores</title></head>
<body>
<h2>SameGame High Scores</h2>
<table border="1">
  <tr bgcolor="lightsteelblue">
    <th>Name</th>
    <th>Score</th>
    <th>Grid Size</th>
    <th>Time, s</th>
  </tr>
  <xsl:for-each select="records/record">
    <xsl:sort select="score" data-type="number" order="descending"/>
    <tr>
      <td><xsl:value-of select="name"/></td>
      <td><xsl:value-of select="score"/></td>
      <td><xsl:value-of select="gridSize"/></td>
      <td><xsl:value-of select="seconds"/></td>
    </tr>
  </xsl:for-each>
</table>
</body>
</html>
</xsl:template>
</xsl:stylesheet>
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```
import QtQuick 1.0
```

```
Rectangle {
```

```
    id: page
```

```
    property Item text: dialogText
```

```
    signal closed
```

```
    signal opened
```

```
    function forceClose() {
```

```
        if(page.opacity == 0)
```

```
            return; //already closed
```

```
        page.closed();
```

```
        page.opacity = 0;
```

```
    }
```

```
    function show(txt) {
```

```
        page.opened();
```

```
        dialogText.text = txt;
```

```
        page.opacity = 1;
```

```
    }
```

```
    width: dialogText.width + 20; height: dialogText.height + 20
```

```
    color: "white"
```

```
    border.width: 1
```

```
    opacity: 0
```

```
    visible: opacity > 0
```

```
    Behavior on opacity {
```

```
        NumberAnimation { duration: 1000 }
```

```
    }
```

```
Text { id: dialogText; anchors.centerIn: parent; text: "Hello World!" }

MouseArea { anchors.fill: parent; onClicked: forceClose(); }
}
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*****/

import QtQuick 1.0
import Qt.labs.particles 1.0
```

```

Item {
  id: block
  property bool dying: false
  property bool spawned: false
  property int type: 0

  Behavior on x {
    enabled: spawned;
    SpringAnimation{ spring: 2; damping: 0.2 }
  }
  Behavior on y {
    SpringAnimation{ spring: 2; damping: 0.2 }
  }

Image {
  id: img
  source: {
    if(type == 0){
      "pics/redStone.png";
    } else if(type == 1) {
      "pics/blueStone.png";
    } else {
      "pics/greenStone.png";
    }
  }
  opacity: 0
  Behavior on opacity { NumberAnimation { duration: 200 } }
  anchors.fill: parent
}

Particles {
  id: particles

  width: 1; height: 1
  anchors.centerIn: parent

  emissionRate: 0
  lifeSpan: 700; lifeSpanDeviation: 600
  angle: 0; angleDeviation: 360;
  velocity: 100; velocityDeviation: 30
  source: {
    if(type == 0){
      "pics/redStar.png";
    } else if (type == 1) {
      "pics/blueStar.png";
    } else {
      "pics/greenStar.png";
    }
  }
}

```

```

    }
}

states: [
    State {
        name: "AliveState"; when: spawned == true && dying == false
        PropertyChanges { target: img; opacity: 1 }
    },

    State {
        name: "DeathState"; when: dying == true
        StateChangeScript { script: particles.burst(50); }
        PropertyChanges { target: img; opacity: 0 }
        StateChangeScript { script: block.destroy(1000); }
    }
]
}
}
BoomBlock BoomBlock.qml
Button Button.qml
Dialog Dialog.qml
# This is the qmake project file for the QPy support code for the QtOpenGL
# module.
#
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QT += opengl
CONFIG += static warn_on

```

TARGET = qpyopengl

TEMPLATE = lib

SOURCES = \

qpyopengl\_attribute\_array.cpp \  
qpyopengl\_uniform\_value\_array.cpp

HEADERS = \

qpyopengl\_api.h

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```
import QtQuick 1.0

Rectangle {
    id: container

    property string text: "Button"

    signal clicked

    width: buttonLabel.width + 20; height: buttonLabel.height + 6
    smooth: true
    border { width: 1; color: Qt.darker(activePalette.button) }
    radius: 8
    color: activePalette.button

    gradient: Gradient {
        GradientStop {
            position: 0.0
            color: {
                if (mouseArea.pressed)
                    return activePalette.dark
                else
                    return activePalette.light
            }
        }
        GradientStop { position: 1.0; color: activePalette.button }
    }

    MouseArea { id: mouseArea; anchors.fill: parent; onClicked: container.clicked() }

    Text {
        id: buttonLabel; text: container.text; anchors.centerIn: container; color: activePalette.buttonText
    }
}
```

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```
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```

import QtQuick 1.0
import "SamegameCore"
import "SamegameCore/samegame.js" as Logic

Rectangle {
    id: screen
    width: 490; height: 720
    property bool inAnotherDemo: false //Samegame often is just plonked straight into other demos

    SystemPalette { id: activePalette }

    Item {
        width: parent.width
        anchors { top: parent.top; bottom: toolBar.top }

        Image {
            id: background
            anchors.fill: parent
            source: "SamegameCore/pics/background.png"
        }
    }
  
```

```

        fillMode: Image.PreserveAspectCrop
    }

    Item {
        id: gameCanvas
        property int score: 0
        property int blockSize: 40

        z: 20; anchors.centerIn: parent
        width: parent.width - (parent.width % blockSize);
        height: parent.height - (parent.height % blockSize);

        MouseArea {
            anchors.fill: parent; onClicked: Logic.handleClick(mouse.x,mouse.y);
        }
    }
}

Dialog { id: dialog; anchors.centerIn: parent; z: 21 }

Dialog {
    id: nameInputDialog

    property int initialWidth: 0

    anchors.centerIn: parent
    z: 22;

    Behavior on width {
        NumberAnimation {}
        enabled: nameInputDialog.initialWidth != 0
    }

    onOpened: nameInputText.focus = true;
    onClosed: {
        nameInputText.focus = false;
        if (nameInputText.text != "")
            Logic.saveHighScore(nameInputText.text);
    }
    Text {
        id: dialogText
        anchors { left: nameInputDialog.left; leftMargin: 20; verticalCenter: parent.verticalCenter }
        text: "You won! Please enter your name: "
    }
    MouseArea {
        anchors.fill: parent
        onClicked: {
            if (nameInputText.text == "")

```

```

        nameInputText.openSoftwareInputPanel();
    else
        nameInputDialog.forceClose();
    }
}

TextInput {
    id: nameInputText
    anchors { verticalCenter: parent.verticalCenter; left: dialogText.right }
    focus: false
    autoScroll: false
    maximumLength: 24
    onTextChanged: {
        var newWidth = nameInputText.width + dialogText.width + 40;
        if ( (newWidth > nameInputDialog.width && newWidth < screen.width)
            || (nameInputDialog.width > nameInputDialog.initialWidth) )
            nameInputDialog.width = newWidth;
    }
    onAccepted: {
        nameInputDialog.forceClose();
    }
}

Rectangle {
    id: toolBar
    width: parent.width; height: 32
    color: activePalette.window
    anchors.bottom: screen.bottom

    Button {
        id: newGameButton
        anchors { left: parent.left; leftMargin: 3; verticalCenter: parent.verticalCenter }
        text: "New Game"
        onClicked: Logic.startNewGame()
    }

    Button {
        visible: !inAnotherDemo
        text: "Quit"
        anchors { left: newGameButton.right; leftMargin: 3; verticalCenter: parent.verticalCenter }
        onClicked: Qt.quit();
    }

    Text {
        id: score
        anchors { right: parent.right; rightMargin: 3; verticalCenter: parent.verticalCenter }
        text: "Score: " + gameCanvas.score
    }
}

```

```

        font.bold: true
        color: activePalette.windowText
    }
}
}
/*****
**
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**
*****/

import QtQuick 1.0

Item {
    id: main
    //height and width set by program to fill window
    //below properties are sometimes set from C++
    property url qmlFile: ""
    property bool show: false

    Item { id: embeddedViewer
        width: parent.width
        height: parent.height
        opacity: 0;
        z: 10
        Loader {
            id: loader
            z: 10
            focus: true //Automatic FocusScope
            clip: true
            source: qmlFile
            anchors.centerIn: parent
            onStatusChanged: {
                if(status == Loader.Null) {
                    loader.focus = false; //fixes QTBUG11411, probably because the focusScope needs to gain focus to focus
                }
            }
        }
    }
}

```

the right child

```
    }else if(status == Loader.Ready) {
        if(loader.item.width > 640)
            loader.item.width = 640;
        if(loader.item.height > 480)
            loader.item.height = 480;
    }
}

Rectangle{ id: frame
    z: 9
    anchors.fill: loader.status == Loader.Ready ? loader : errorTxt
    anchors.margins: -8
    radius: 4
    smooth: true
    border.color: "#88aaaaaa"
    gradient: Gradient{
        GradientStop{ position: 0.0; color: "#14FFFFFF" }
        GradientStop{ position: 1.0; color: "#5AFFFFFF" }
    }
    MouseArea{
        anchors.fill: parent
        acceptedButtons: Qt.LeftButton | Qt.RightButton | Qt.MiddleButton
        onClicked: loader.focus=true; /* and don't propagate to the 'exit' area */
    }

    Rectangle{ id: innerFrame
        anchors.margins: 7
        anchors.bottomMargin: 8
        anchors.rightMargin: 8
        color: "black"
        border.color: "#44000000"
        anchors.fill:parent
    }

}

Rectangle{ id: closeButton
    width: 24
    height: 24
    z: 11
    border.color: "#aaaaaaaa"
    gradient: Gradient{
        GradientStop{ position: 0.0; color: "#34FFFFFF" }
        GradientStop{ position: 1.0; color: "#7AFFFFFF" }
    }
    anchors.left: frame.right
    anchors.bottom: frame.top
    anchors.margins: -(2*width/3)
```

```

Text{
    text: 'X'
    font.bold: true
    color: "white"
    font.pixelSize: 12
    anchors.centerIn: parent
}
MouseArea{
    anchors.fill: parent
    onClicked: main.show = false;
}
}

Text{
    id: errorTxt
    z: 10
    anchors.centerIn: parent
    color: 'white'
    smooth: true
    visible: loader.status == Loader.Error
    textFormat: Text.RichText
    //Note that if loader is Error, it is because the file was found but there was an error creating the component
    //This means either we have a bug in our demos, or the required modules (which ship with Qt) did not deploy
correctly
    text: "The example has failed to load.<br />If you installed all Qt's C++ and QML modules then this is a
bug!<br />"
        + "Report it at <a href="http://bugreports.qt-project.org">http://bugreports.qt-project.org</a>";
    onLinkActivated: Qt.openUrlExternally(link);
}
}
Rectangle{ id: blackout //Maybe use a colorize effect instead?
    z: 8
    anchors.fill: parent
    color: "#000000"
    opacity: 0
}
MouseArea{
    z: 8
    enabled: main.show
    hoverEnabled: main.show //To steal focus from the buttons
    acceptedButtons: Qt.LeftButton | Qt.RightButton | Qt.MiddleButton
    anchors.fill: parent
}

states: [
    State {
        name: "show"
        when: show == true

```

```

        PropertyChanges {
            target: embeddedViewer
            opacity: 1
        }
        PropertyChanges {
            target: blackout
            opacity: 0.5
        }
    }
]
transitions: [//Should not be too long, because the component has already started running
    Transition { from: ""; to: "show"; reversible: true
        ParallelAnimation{
            NumberAnimation{ properties: "opacity"; easing.type: Easing.InQuad; duration: 500}
            PropertyAction { target: loader; property: "focus"; value: true}//Might be needed to ensure the focus stays
with us
        }
    }
]
}
<RCC>
    <qresource prefix="/">
        <file>xml/examples.xml</file>
        <file>images/qtlogo_small.png</file>
        <file>images/trolltech-logo.png</file>
        <file>images/demobg.png</file>
    </qresource>
    <qresource prefix="/qml" lang="qml">
        <file>qmlShell.qml</file>
    </qresource>
</RCC>
<RCC>
    <qresource>
        <file>No-Ones-Laughing-3.jpg</file>
    </qresource>
</RCC>
<ui version="4.0" >
<class>embeddedDialog</class>
<widget class="QDialog" name="embeddedDialog" >
    <property name="geometry" >
        <rect>
            <x>0</x>
            <y>0</y>
            <width>407</width>
            <height>134</height>
        </rect>
    </property>
    <property name="windowTitle" >

```

```

<string>Embedded Dialog</string>
</property>
<layout class="QFormLayout" name="formLayout" >
  <item row="0" column="0" >
    <widget class="QLabel" name="label" >
      <property name="text" >
        <string>Layout Direction:</string>
      </property>
      <property name="buddy" >
        <cstring>layoutDirection</cstring>
      </property>
    </widget>
  </item>
  <item row="0" column="1" >
    <widget class="QComboBox" name="layoutDirection" >
      <item>
        <property name="text" >
          <string>Left to Right</string>
        </property>
      </item>
      <item>
        <property name="text" >
          <string>Right to Left</string>
        </property>
      </item>
    </widget>
  </item>
  <item row="1" column="0" >
    <widget class="QLabel" name="label_2" >
      <property name="text" >
        <string>Select Font:</string>
      </property>
      <property name="buddy" >
        <cstring>fontComboBox</cstring>
      </property>
    </widget>
  </item>
  <item row="1" column="1" >
    <widget class="QFontComboBox" name="fontComboBox" />
  </item>
  <item row="2" column="0" >
    <widget class="QLabel" name="label_3" >
      <property name="text" >
        <string>Style:</string>
      </property>
      <property name="buddy" >
        <cstring>style</cstring>
      </property>
    </widget>
  </item>

```



```

</widget>
</item>
<item row="2" column="1" >
  <widget class="QComboBox" name="style" />
</item>
<item row="3" column="0" >
  <widget class="QLabel" name="label_4" >
    <property name="text" >
      <string>Layout spacing:</string>
    </property>
    <property name="buddy" >
      <cstring>spacing</cstring>
    </property>
  </widget>
</item>
<item row="3" column="1" >
  <widget class="QSlider" name="spacing" >
    <property name="orientation" >
      <enum>Qt::Horizontal</enum>
    </property>
  </widget>
</item>
</layout>
</widget>
<resources/>
<connections/>
</ui>

```

Qt  
 Quarterly  
 is  
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added  
insight  
and  
pleasure  
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programming  
with  
high  
quality  
technical  
articles  
written  
by  
Qt  
experts  
Colorless  
green  
ideas  
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furiously  
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colorless  
green  
idea  
is  
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new  
untried  
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is  
without  
vividness  
dull  
and  
unexciting  
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sleep  
furiously  
may  
seem  
a  
puzzling

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 of  
 phrase  
 but  
 the  
 mind  
 in  
 sleep  
 often  
 indeed  
 moves  
 furiously  
 with  
 ideas  
 and  
 images  
 flickering  
 in  
 and  
 out  
 <?xml version="1.0" encoding="UTF-8"?>  
 <ui version="4.0">  
 <class>SchemaMainWindow</class>  
 <widget class="QMainWindow" name="SchemaMainWindow">  
 <property name="geometry">  
 <rect>  
 <x>0</x>  
 <y>0</y>  
 <width>417</width>  
 <height>594</height>  
 </rect>  
 </property>  
 <property name="windowTitle">  
 <string>XML Schema Validation</string>  
 </property>  
 <widget class="QWidget" name="centralwidget">  
 <layout class="QGridLayout" name="gridLayout">  
 <item row="0" column="0" colspan="2">  
 <widget class="QLabel" name="schemaLabel">  
 <property name="text">  
 <string>XML Schema Document:</string>  
 </property>  
 </widget>  
 </item>  
 <item row="0" column="2" colspan="2">  
 <widget class="QComboBox" name="schemaSelection"/>  
 </item>  
 <item row="1" column="0" colspan="4">

```

<widget class="QTextBrowser" name="schemaView"/>
</item>
<item row="2" column="0" colspan="2">
<widget class="QLabel" name="instanceLabel">
<property name="text">
<string>XML Instance Document:</string>
</property>
</widget>
</item>
<item row="2" column="2" colspan="2">
<widget class="QComboBox" name="instanceSelection"/>
</item>
<item row="3" column="0" colspan="4">
<widget class="QTextEdit" name="instanceEdit"/>
</item>
<item row="4" column="0">
<widget class="QLabel" name="label">
<property name="text">
<string>Status:</string>
</property>
</widget>
</item>
<item row="4" column="1" colspan="2">
<widget class="QLabel" name="validationStatus">
<property name="text">
<string>not validated</string>
</property>
</widget>
</item>
<item row="4" column="3">
<widget class="QPushButton" name="validateButton">
<property name="text">
<string>Validate</string>
</property>
</widget>
</item>
</layout>
</widget>
<widget class="QStatusBar" name="statusbar"/>
</widget>
<resources/>
<connections/>
</ui>
<ui version="4.0" >
<class>Form</class>
<widget class="QWidget" name="Form" >
<property name="geometry" >
<rect>

```

```

<x>0</x>
<y>0</y>
<width>911</width>
<height>688</height>
</rect>
</property>
<property name="windowTitle" >
<string>Form</string>
</property>
<layout class="QHBoxLayout" name="horizontalLayout_4" >
<item>
<widget class="QSplitter" name="splitter" >
<property name="orientation" >
<enum>Qt::Horizontal</enum>
</property>
<widget class="QGroupBox" name="editorBox" >
<property name="title" >
<string>HTML Editor</string>
</property>
<layout class="QHBoxLayout" name="horizontalLayout_2" >
<item>
<layout class="QVBoxLayout" name="verticalLayout_2" >
<item>
<widget class="QPlainTextEdit" name="plainTextEdit" />
</item>
<item>
<layout class="QHBoxLayout" name="horizontalLayout" >
<item>
<widget class="QPushButton" name="clearButton" >
<property name="text" >
<string>Clear</string>
</property>
</widget>
</item>
<item>
<widget class="QPushButton" name="previewButton" >
<property name="text" >
<string>Preview</string>
</property>
</widget>
</item>
</layout>
</item>
</layout>
</item>
</layout>
<widget class="QGroupBox" name="previewerBox" >

```

```

<property name="title" >
  <string>HTML Preview</string>
</property>
<layout class="QHBoxLayout" name="horizontalLayout_3" >
  <item>
    <widget class="QWebView" name="webView" >
      <property name="url" >
        <url>
          <string>about:blank</string>
        </url>
      </property>
    </widget>
  </item>
</layout>
</widget>
</widget>
</item>
</layout>
</widget>
<customwidgets>
  <customwidget>
    <class>QWebView</class>
    <extends>QWidget</extends>
    <header>QtWebKit/QWebView</header>
  </customwidget>
</customwidgets>
<resources/>
<connections>
  <connection>
    <sender>clearButton</sender>
    <signal>clicked()</signal>
    <receiver>plainTextEdit</receiver>
    <slot>clear()</slot>
    <hints>
      <hint type="sourcelabel" >
        <x>56</x>
        <y>653</y>
      </hint>
      <hint type="destinationlabel" >
        <x>98</x>
        <y>551</y>
      </hint>
    </hints>
  </connection>
</connections>
</ui>

```

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=====

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```
<ui version="4.0" >  
<class>Form</class>  
<widget class="QWidget" name="Form" >  
<property name="geometry" >
```

```

<rect>
  <x>0</x>
  <y>0</y>
  <width>680</width>
  <height>218</height>
</rect>
</property>
<property name="windowTitle" >
  <string>Form</string>
</property>
<layout class="QHBoxLayout" name="horizontalLayout" >
  <item>
    <widget class="QGroupBox" name="webFormGroupBox" >
      <property name="title" >
        <string>Web Form</string>
      </property>
      <layout class="QVBoxLayout" name="verticalLayout_2" >
        <item>
          <layout class="QVBoxLayout" name="verticalLayout" >
            <item>
              <widget class="QWebView" name="webView" >
                <property name="minimumSize" >
                  <size>
                    <width>200</width>
                    <height>150</height>
                  </size>
                </property>
                <property name="maximumSize" >
                  <size>
                    <width>400</width>
                    <height>16777215</height>
                  </size>
                </property>
                <property name="url" >
                  <url>
                    <string>about:blank</string>
                  </url>
                </property>
              </widget>
            </item>
          </layout>
        </item>
      </layout>
    </widget>
  </item>
  <spacer name="horizontalSpacer" >
    <property name="orientation" >

```



```

<enum>Qt::Horizontal</enum>
</property>
<property name="sizeHint" stdset="0" >
  <size>
    <width>28</width>
    <height>20</height>
  </size>
</property>
</spacer>
</item>
<item>
  <widget class="QGroupBox" name="dataGroupBox" >
    <property name="title" >
      <string>Extracted Data</string>
    </property>
    <layout class="QVBoxLayout" name="verticalLayout_3" >
      <item>
        <layout class="QFormLayout" name="formLayout" >
          <property name="fieldGrowthPolicy" >
            <enum>QFormLayout::FieldsStayAtSizeHint</enum>
          </property>
          <item row="0" column="0" >
            <widget class="QLabel" name="firstNameLabel" >
              <property name="text" >
                <string>First Name</string>
              </property>
            </widget>
          </item>
          <item row="0" column="1" >
            <widget class="QLineEdit" name="firstNameEdit" >
              <property name="readOnly" >
                <bool>true</bool>
              </property>
            </widget>
          </item>
          <item row="1" column="0" >
            <widget class="QLabel" name="lastNameLabel" >
              <property name="text" >
                <string>Last Name</string>
              </property>
            </widget>
          </item>
          <item row="1" column="1" >
            <widget class="QLineEdit" name="lastNameEdit" >
              <property name="readOnly" >
                <bool>true</bool>
              </property>
            </widget>
          </item>
        </layout>
      </item>
    </layout>
  </widget>
</item>

```

```

</item>
<item row="2" column="0" >
  <widget class="QLabel" name="genderLabel" >
    <property name="text" >
      <string>Gender</string>
    </property>
  </widget>
</item>
<item row="2" column="1" >
  <widget class="QLineEdit" name="genderEdit" >
    <property name="readOnly" >
      <bool>true</bool>
    </property>
  </widget>
</item>
<item row="3" column="0" >
  <widget class="QLabel" name="updatesLabel" >
    <property name="text" >
      <string>Receive Updates</string>
    </property>
  </widget>
</item>
<item row="3" column="1" >
  <widget class="QLineEdit" name="updatesEdit" >
    <property name="readOnly" >
      <bool>true</bool>
    </property>
  </widget>
</item>
</layout>
</item>
<item>
  <spacer name="verticalSpacer" >
    <property name="orientation" >
      <enum>Qt::Vertical</enum>
    </property>
    <property name="sizeHint" stdset="0" >
      <size>
        <width>20</width>
        <height>24</height>
      </size>
    </property>
  </spacer>
</item>
</layout>
</widget>
</item>
</layout>

```

```

</widget>
<customwidgets>
  <customwidget>
    <class>QWebView</class>
    <extends>QWidget</extends>
    <header>QtWebKit/QWebView</header>
  </customwidget>
</customwidgets>
<resources/>
<connections/>
</ui>
<?xml version="1.0" encoding="UTF-8"?>
<ui version="4.0">
  <class>Window</class>
  <widget class="QMainWindow" name="Window">
    <property name="geometry">
      <rect>
        <x>0</x>
        <y>0</y>
        <width>800</width>
        <height>600</height>
      </rect>
    </property>
    <property name="windowTitle">
      <string>Web Element DOM Traversal</string>
    </property>
    <widget class="QWidget" name="centralwidget">
      <layout class="QVBoxLayout" name="verticalLayout_2">
        <property name="topMargin">
          <number>4</number>
        </property>
        <property name="bottomMargin">
          <number>4</number>
        </property>
        <item>
          <widget class="QWebView" name="webView">
            <property name="url">
              <url>
                <string>http://qt.nokia.com/</string>
              </url>
            </property>
          </widget>
        </item>
      </layout>
    </widget>
    <widget class="QMenuBar" name="menubar">
      <property name="geometry">
        <rect>

```

```

<x>0</x>
<y>0</y>
<width>800</width>
<height>27</height>
</rect>
</property>
</widget>
<widget class="QStatusBar" name="statusbar"/>
<widget class="QDockWidget" name="dockWidget">
  <property name="allowedAreas">
    <set>Qt::LeftDockWidgetArea|Qt::RightDockWidgetArea</set>
  </property>
  <property name="windowTitle">
    <string>Document Structure</string>
  </property>
  <attribute name="dockWidgetArea">
    <number>1</number>
  </attribute>
  <widget class="QWidget" name="dockWidgetContents">
    <layout class="QVBoxLayout" name="verticalLayout">
      <property name="margin">
        <number>4</number>
      </property>
      <item>
        <widget class="QTreeWidget" name="treeWidget">
          <attribute name="headerVisible">
            <bool>>false</bool>
          </attribute>
          <attribute name="headerVisible">
            <bool>>false</bool>
          </attribute>
          <column>
            <property name="text">
              <string notr="true">1</string>
            </property>
          </column>
        </widget>
      </item>
    </layout>
  </widget>
</widget>
</widget>
<customwidgets>
  <customwidget>
    <class>QWebView</class>
    <extends>QWidget</extends>
    <header>QtWebKit/QWebView</header>
  </customwidget>

```

```

</customwidgets>
<resources/>
<connections/>
</ui>
<?xml version="1.0" encoding="UTF-8"?>
<ui version="4.0">
<class>Form</class>
<widget class="QWidget" name="Form">
  <property name="geometry">
    <rect>
      <x>0</x>
      <y>0</y>
      <width>286</width>
      <height>413</height>
    </rect>
  </property>
  <property name="windowTitle">
    <string>Google Talk Client</string>
  </property>
  <layout class="QVBoxLayout" name="verticalLayout">
    <property name="spacing">
      <number>0</number>
    </property>
    <property name="margin">
      <number>0</number>
    </property>
    <item>
      <widget class="QStackedWidget" name="stackedWidget">
        <property name="currentIndex">
          <number>1</number>
        </property>
        <widget class="QWidget" name="page_3">
          <layout class="QVBoxLayout" name="verticalLayout_4">
            <item>
              <spacer name="verticalSpacer_4">
                <property name="orientation">
                  <enum>Qt::Vertical</enum>
                </property>
                <property name="sizeHint" stdset="0">
                  <size>
                    <width>20</width>
                    <height>170</height>
                  </size>
                </property>
              </spacer>
            </item>
            <item>
              <widget class="QLabel" name="statusLabel">

```

```

<property name="text">
  <string>TextLabel</string>
</property>
<property name="alignment">
  <set>Qt::AlignCenter</set>
</property>
<property name="wordWrap">
  <bool>true</bool>
</property>
</widget>
</item>
<item>
  <widget class="QProgressBar" name="progressBar">
    <property name="value">
      <number>24</number>
    </property>
  </widget>
</item>
<item>
  <spacer name="verticalSpacer_5">
    <property name="orientation">
      <enum>Qt::Vertical</enum>
    </property>
    <property name="sizeHint" stdset="0">
      <size>
        <width>20</width>
        <height>169</height>
      </size>
    </property>
  </spacer>
</item>
</layout>
</widget>
<widget class="QWidget" name="page">
  <layout class="QVBoxLayout" name="verticalLayout_2">
    <item>
      <spacer name="verticalSpacer_3">
        <property name="orientation">
          <enum>Qt::Vertical</enum>
        </property>
        <property name="sizeHint" stdset="0">
          <size>
            <width>20</width>
            <height>119</height>
          </size>
        </property>
      </spacer>
    </item>

```

```

<item>
  <widget class="QLabel" name="userNameLabel">
    <property name="text">
      <string>Google username:</string>
    </property>
  </widget>
</item>
<item>
  <widget class="QLineEdit" name="userNameEdit"/>
</item>
<item>
  <spacer name="verticalSpacer_2">
    <property name="orientation">
      <enum>Qt::Vertical</enum>
    </property>
    <property name="sizeType">
      <enum>QSizePolicy::Fixed</enum>
    </property>
    <property name="sizeHint" stdset="0">
      <size>
        <width>20</width>
        <height>17</height>
      </size>
    </property>
  </spacer>
</item>
<item>
  <widget class="QLabel" name="passwordLabel">
    <property name="text">
      <string>Password:</string>
    </property>
  </widget>
</item>
<item>
  <widget class="QLineEdit" name="passwordEdit">
    <property name="echoMode">
      <enum>QLineEdit::Password</enum>
    </property>
  </widget>
</item>
<item>
  <spacer name="verticalSpacer">
    <property name="orientation">
      <enum>Qt::Vertical</enum>
    </property>
    <property name="sizeHint" stdset="0">
      <size>
        <width>20</width>

```

```

    <height>118</height>
  </size>
</property>
</spacer>
</item>
<item>
<layout class="QHBoxLayout" name="horizontalLayout">
  <item>
    <spacer name="horizontalSpacer">
      <property name="orientation">
        <enum>Qt::Horizontal</enum>
      </property>
      <property name="sizeHint" stdset="0">
        <size>
          <width>40</width>
          <height>20</height>
        </size>
      </property>
    </spacer>
  </item>
  <item>
    <widget class="QPushButton" name="loginButton">
      <property name="text">
        <string>Login</string>
      </property>
      <property name="default">
        <bool>true</bool>
      </property>
    </widget>
  </item>
  <item>
    <spacer name="horizontalSpacer_2">
      <property name="orientation">
        <enum>Qt::Horizontal</enum>
      </property>
      <property name="sizeHint" stdset="0">
        <size>
          <width>40</width>
          <height>20</height>
        </size>
      </property>
    </spacer>
  </item>
</layout>
</item>
</layout>
</widget>
<widget class="QWidget" name="page_2">

```



```

<layout class="QVBoxLayout" name="verticalLayout_3">
  <property name="spacing">
    <number>0</number>
  </property>
  <property name="margin">
    <number>0</number>
  </property>
  <item>
    <widget class="QWebView" name="webView">
      <property name="url">
        <url>
          <string>about:blank</string>
        </url>
      </property>
    </widget>
  </item>
</layout>
</widget>
</widget>
</item>
</layout>
</widget>
<customwidgets>
  <customwidget>
    <class>QWebView</class>
    <extends>QWidget</extends>
    <header>QtWebKit/QWebView</header>
  </customwidget>
</customwidgets>
<resources/>
<connections/>
</ui>
<RCC>
  <qresource prefix="/" >
    <file>jquery.min.js</file>
  </qresource>
</RCC>
<?xml version="1.0" encoding="UTF-8"?>
<ui version="4.0">
  <class>Window</class>
  <widget class="QWidget" name="Window">
    <property name="geometry">
      <rect>
        <x>0</x>
        <y>0</y>
        <width>640</width>
        <height>480</height>
      </rect>

```

```

</property>
<property name="windowTitle">
  <string>Web Element Selector</string>
</property>
<layout class="QVBoxLayout" name="verticalLayout">
  <item>
    <widget class="QWebView" name="webView">
      <property name="url">
        <url>
          <string>http://webkit.org</string>
        </url>
      </property>
    </widget>
  </item>
  <item>
    <layout class="QHBoxLayout" name="horizontalLayout">
      <item>
        <layout class="QFormLayout" name="formLayout">
          <property name="fieldGrowthPolicy">
            <enum>QFormLayout::ExpandingFieldsGrow</enum>
          </property>
          <item row="0" column="0">
            <widget class="QLabel" name="elementLabel">
              <property name="text">
                <string>&Element:</string>
              </property>
              <property name="buddy">
                <cstring>elementLineEdit</cstring>
              </property>
            </widget>
          </item>
          <item row="0" column="1">
            <widget class="QLineEdit" name="elementLineEdit">
              <property name="text">
                <string>li a</string>
              </property>
            </widget>
          </item>
        </layout>
      </item>
      <item>
        <widget class="QPushButton" name="highlightButton">
          <property name="text">
            <string>&Highlight</string>
          </property>
        </widget>
      </item>
    </layout>
  </item>
</layout>

```

```
</item>
</layout>
</widget>
<customwidgets>
<customwidget>
<class>QWebView</class>
<extends>QWidget</extends>
<header>QtWebKit/QWebView</header>
</customwidget>
</customwidgets>
<resources/>
<connections/>
</ui>
```

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London,4,red

Stockholm,5,pink

Paris,2,lightgreen

Rome,11,green

Lisbon,9,blue

Madrid,8,lightblue

Berlin,6,magenta

Vienna,7,purple

Scientific Research,21,#99e600

Engineering & Design,18,#99cc00

Automotive,14,#99b300

Aerospace,13,#9f991a

Automation & Machine Tools,13,#a48033

Medical & Bioinformatics,13,#a9664d

Imaging & Special Effects,12,#ae4d66

Defense,11,#b33380

Test & Measurement Systems,9,#a64086

Oil & Gas,9,#994d8d

Entertainment & Broadcasting,7,#8d5a93

Financial,6,#806699

Consumer Electronics,4,#8073a6

Other,38,#8080b3

<ui version="4.0" >

<class>MainWindow</class>

<widget class="QMainWindow" name="MainWindow" >

<property name="geometry" >

<rect>

<x>0</x>

<y>0</y>

<width>573</width>

<height>468</height>

</rect>

</property>

<property name="windowTitle" >

<string>Editable Tree Model</string>

</property>

<widget class="QWidget" name="centralwidget" >

<layout class="QVBoxLayout" >

<property name="margin" >

<number>0</number>

</property>

<property name="spacing" >

<number>0</number>

```

</property>
<item>
<widget class="QTreeView" name="view" >
  <property name="alternatingRowColors" >
    <bool>true</bool>
  </property>
  <property name="selectionBehavior" >
    <enum>QAbstractItemView::SelectItems</enum>
  </property>
  <property name="horizontalScrollMode" >
    <enum>QAbstractItemView::ScrollPerPixel</enum>
  </property>
  <property name="animated" >
    <bool>>false</bool>
  </property>
  <property name="allColumnsShowFocus" >
    <bool>true</bool>
  </property>
</widget>
</item>
</layout>
</widget>
<widget class="QMenuBar" name="menubar" >
  <property name="geometry" >
    <rect>
      <x>0</x>
      <y>0</y>
      <width>573</width>
      <height>31</height>
    </rect>
  </property>
  <widget class="QMenu" name="fileMenu" >
    <property name="title" >
      <string>&File</string>
    </property>
    <addaction name="exitAction" />
  </widget>
  <widget class="QMenu" name="actionsMenu" >
    <property name="title" >
      <string>&Actions</string>
    </property>
    <addaction name="insertRowAction" />
    <addaction name="insertColumnAction" />
    <addaction name="separator" />
    <addaction name="removeRowAction" />
    <addaction name="removeColumnAction" />
    <addaction name="separator" />
    <addaction name="insertChildAction" />

```

```

</widget>
<addaction name="fileMenu" />
<addaction name="actionsMenu" />
</widget>
<widget class="QStatusBar" name="statusbar" />
<action name="exitAction" >
<property name="text" >
<string>E&xit</string>
</property>
<property name="shortcut" >
<string>Ctrl+Q</string>
</property>
</action>
<action name="insertRowAction" >
<property name="text" >
<string>Insert Row</string>
</property>
<property name="shortcut" >
<string>Ctrl+I, R</string>
</property>
</action>
<action name="removeRowAction" >
<property name="text" >
<string>Remove Row</string>
</property>
<property name="shortcut" >
<string>Ctrl+R, R</string>
</property>
</action>
<action name="insertColumnAction" >
<property name="text" >
<string>Insert Column</string>
</property>
<property name="shortcut" >
<string>Ctrl+I, C</string>
</property>
</action>
<action name="removeColumnAction" >
<property name="text" >
<string>Remove Column</string>
</property>
<property name="shortcut" >
<string>Ctrl+R, C</string>
</property>
</action>
<action name="insertChildAction" >
<property name="text" >
<string>Insert Child</string>

```

```
</property>
<property name="shortcut" >
  <string>Ctrl+N</string>
</property>
</action>
</widget>
<connections/>
</ui>
<RCC>
  <qresource prefix="/" >
    <file>default.txt</file>
  </qresource>
</RCC>
%License /Type="gpl"/
GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007
```

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## 1.89 runit 2.1.1

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## 1.91 Strace 4.5.18

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## 1.94 tar 1.26

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Version 3, 29 June 2007

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## 1.96 tcl 8.4.19

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## 1.99 traceroute6 1.4.2.1

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```

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## 1.102 uClibc 0.9.33.2

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Return-Path: <gsf@research.att.com>

X-Original-To: mps@bridge.intra

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Received: from localhost (localhost [127.0.0.1])

by localhost (Postfix) with ESMTP id B8C814E4F

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Wed, 1 Mar 2006 20:30:42 +0100 (CET)

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X-Flags: 0000

Delivered-To: GMX delivery to ps.m@gmx.net

Received: (qmail invoked by alias); 01 Mar 2006 19:23:46 -0000

Received: from mail-red.research.att.com (EHLO mail-white.research.att.com) [192.20.225.110]

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by raptor.research.att.com (SGI-8.9.3p2/8.8.7) id OAA86112

for ps.m@gmx.net; Wed, 1 Mar 2006 14:23:45 -0500 (EST)

Date: Wed, 1 Mar 2006 14:23:45 -0500 (EST)

From: Glenn Fowler <gsf@research.att.com>

Message-Id: <200603011923.OAA86112@raptor.research.att.com>

Organization: AT&T Research

X-Mailer: mailx (AT&T/BSD) 9.9 2005-04-21

Mime-Version: 1.0

Content-Type: text/plain; charset=us-ascii

Content-Transfer-Encoding: 7bit  
References: <Pine.LNX.4.44.0603012011250.6386-100000@lnx.bridge.intra>  
To: mps@bridge.intra  
Subject: Re: testregex licensing question  
X-GMX-Antivirus: -1 (not scanned, may not use virus scanner)  
X-GMX-Antispam: 0 (Mail was not recognized as spam)  
X-GMX-UID: IJF3ZO9DeSEkJ2TcbHQhaXN1IGRvb0Ca  
X-Virus-Scanned: by amavisd-new at localhost  
Status: RO  
X-Status:  
X-Keywords:  
X-UID: 44736

you may include it directly  
retain the testregex.c header comment  
it uses a very free license to maximize distribution  
you can copy that .c comment to any test data files you use  
using # comment style to be complete

let me know how it works with your libc  
also pass on any new tests you cook up

On Wed, 1 Mar 2006 20:15:02 +0100 (CET) Peter S. Mazinger wrote:

> Hello Glenn!

> I would want to add testregex.c and the related \*.dat files to the uClibc  
> testsuite. uClibc is licensed under LGPL v2.1. I haven't found any  
> licensing related info on testregex.

> Is it allowed to use the code there, or should I accomodate the testsuite  
> to download the needed files from the original site each time it is ran?

> Thanks, Peter

> --

> Peter S. Mazinger <ps dot m at gmx dot net> ID: 0xA5F059F2  
> Key fingerprint = 92A4 31E1 56BC 3D5A 2D08 BB6E C389 975E A5F0 59F2

/\*

\* regex(3) test harness

\*

\* build: cc -o testregex testregex.c

\* help: testregex --man

\* note: REG\_\* features are detected by #ifdef; if REG\_\* are enums

\* then supply #define REG\_foo REG\_foo for each enum REG\_foo

\*

\* Glenn Fowler <gsf@research.att.com>

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 \*/

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## 1.104 util-linux 2.22.2

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## 1.105 util-linux 2.31

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```
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```

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```
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```

```
<signature of Ty Coon>, 1 April 1989  
Ty Coon, President of Vice
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```
7zXZF!t/o."w[7gp<G  
H:Oed 18uyMQ9|FO6  
87I8.mhGl^eb_X/UQKuB  
)Cdk!B_M/tw|11np#_(~*uM%S61opMG`YfRXvY[R+t[ BS=)d  
;*!;_>KfBqxY(F|0.Ve%S61opMG`YfRXvY[R+t[ BS=)d  
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;\*!;\_>KfBqxY(F|0.Ve%S61opMG`YfRXx+sS|11np#\_(~\*uM%S61opMG`YfRXvY[R+t[ BS=)d  
;\*!;\_>KfBqxY(F|0.Ve%S61opMG`YfRXvY[R+t[ BS=)d ;\*!;\_>KfBqxY(F|0.Ve%Q?f\_{+T@Uo)2fgYZ  
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# 1.106 xinetd 2.3.15

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So, if you want, you may use any 2.N.\* (N >= 3) version string for future xinetd versions that you release. Note that I am excluding the 2.2.\* line; using that would only create confusion. Naming the next release 2.3.0 would put to rest the confusion about 2.2.1 and 2.1.8.\*.

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## 1.107 xpath.lua NA

### 1.107.1 Available under license :

Author: Ben Kersten

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## 1.108 Zlib 1.2.3

### 1.108.1 Available under license :

ZLIB DATA COMPRESSION LIBRARY

zlib 1.2.3 is a general purpose data compression library. All the code is thread safe. The data format used by the zlib library is described by RFCs (Request for Comments) 1950 to 1952 in the files <http://www.ietf.org/rfc/rfc1950.txt> (zlib format), [rfc1951.txt](http://www.ietf.org/rfc/rfc1951.txt) (deflate format) and [rfc1952.txt](http://www.ietf.org/rfc/rfc1952.txt) (gzip format). These documents are also available in other formats from <ftp://ftp.uu.net/graphics/png/documents/zlib/zdoc-index.html>

All functions of the compression library are documented in the file `zlib.h` (volunteer to write man pages welcome, contact [zlib@gzip.org](mailto:zlib@gzip.org)). A usage example of the library is given in the file `example.c` which also tests that the library is working correctly. Another example is given in the file `minigzip.c`. The compression library itself is composed of all source files except `example.c` and `minigzip.c`.

To compile all files and run the test program, follow the instructions given at the top of `Makefile`. In short "make test; make install" should work for most machines. For Unix: `./configure; make test; make install`. For MSDOS, use one of the special makefiles such as `Makefile.msc`. For VMS, use `make_vms.com`.

Questions about zlib should be sent to [<zlib@gzip.org>](mailto:zlib@gzip.org), or to Gilles Vollant [<info@winimage.com>](mailto:info@winimage.com) for the Windows DLL version. The zlib home page is <http://www.zlib.org> or <http://www.gzip.org/zlib/> Before reporting a problem, please check this site to verify that you have the latest version of zlib; otherwise get the latest version and check whether the problem still exists or not.

PLEASE read the zlib FAQ [http://www.gzip.org/zlib/zlib\\_faq.html](http://www.gzip.org/zlib/zlib_faq.html) before asking for help.

Mark Nelson [<markn@ieee.org>](mailto:markn@ieee.org) wrote an article about zlib for the Jan. 1997 issue of *Dr. Dobbs' Journal*; a copy of the article is available in <http://dogma.net/markn/articles/zlibtool/zlibtool.htm>

The changes made in version 1.2.3 are documented in the file `ChangeLog`.

Unsupported third party contributions are provided in directory "contrib".

A Java implementation of zlib is available in the Java Development Kit <http://java.sun.com/j2se/1.4.2/docs/api/java/util/zip/package-summary.html>  
See the zlib home page <http://www.zlib.org> for details.

A Perl interface to zlib written by Paul Marquess [<pmqs@cpan.org>](mailto:pmqs@cpan.org) is in the CPAN (Comprehensive Perl Archive Network) sites <http://www.cpan.org/modules/by-module/Compress/>

A Python interface to zlib written by A.M. Kuchling [<amk@amk.ca>](mailto:amk@amk.ca) is available in Python 1.5 and later versions, see <http://www.python.org/doc/lib/module-zlib.html>

A zlib binding for TCL written by Andreas Kupries [<a.kupries@westend.com>](mailto:a.kupries@westend.com) is available at [http://www.oche.de/~akupries/soft/trf/trf\\_zip.html](http://www.oche.de/~akupries/soft/trf/trf_zip.html)

An experimental package to read and write files in `.zip` format, written on top of zlib by Gilles Vollant [<info@winimage.com>](mailto:info@winimage.com), is available in the `contrib/minizip` directory of zlib.

Notes for some targets:

- For Windows DLL versions, please see win32/DLL\_FAQ.txt
- For 64-bit Irix, deflate.c must be compiled without any optimization. With -O, one libpng test fails. The test works in 32 bit mode (with the -n32 compiler flag). The compiler bug has been reported to SGI.
- zlib doesn't work with gcc 2.6.3 on a DEC 3000/300LX under OSF/1 2.1 it works when compiled with cc.
- On Digital Unix 4.0D (formely OSF/1) on AlphaServer, the cc option -std1 is necessary to get gzprintf working correctly. This is done by configure.
- zlib doesn't work on HP-UX 9.05 with some versions of /bin/cc. It works with other compilers. Use "make test" to check your compiler.
- gzopen is not supported on RISCOS, BEOS and by some Mac compilers.
- For PalmOs, see <http://palmzlib.sourceforge.net/>
- When building a shared, i.e. dynamic library on Mac OS X, the library must be installed before testing (do "make install" before "make test"), since the library location is specified in the library.

Acknowledgments:

The deflate format used by zlib was defined by Phil Katz. The deflate and zlib specifications were written by L. Peter Deutsch. Thanks to all the people who reported problems and suggested various improvements in zlib; they are too numerous to cite here.

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Jean-loup Gailly      Mark Adler  
jloup@gzip.org      madler@alumni.caltech.edu

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# 1.109 zlib 1.2.11

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