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/*

www.sourceforge.net/projects/tinyxml

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1.5 ngx-cookie-service 1.0.10

1.5.1 Available under license :

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1.6 boost 1.67.0

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1.7 ngx-translate-core 11.0.1

1.8 bootstrap 4.3.1

1.8.1 Available under license :

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1.9 rxjs 6.4.0

1.9.1 Available under license :

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1.10 angular 8.0.1

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```
import { HttpClientTestingModule, HttpTestingController } from '@angular/common/http/testing';
import { Injector } from '@angular/core';
import { TestBed } from '@angular/core/testing';
```

```
import { ContributorService } from './contributor.service';
import { ContributorGroup } from './contributors.model';
```

```
describe('ContributorService', () => {
```

```
  let injector: Injector;
  let contribService: ContributorService;
  let httpMock: HttpTestingController;
```

```
  beforeEach(() => {
    injector = TestBed.configureTestingModule({
      imports: [HttpClientTestingModule],
```

```

    providers: [
      ContributorService
    ]
  });

  contribService = injector.get<ContributorService>(ContributorService);
  httpMock = injector.get(HttpTestingController);
});

afterEach(() => httpMock.verify());

it('should make a single connection to the server', () => {
  const req = httpMock.expectOne({});
  expect(req.request.url).toBe('generated/contributors.json');
});

describe('#contributors', () => {

  let contribs: ContributorGroup[];
  let testData: any;

  beforeEach(() => {
    testData = getTestContribs();
    httpMock.expectOne({}).flush(testData);
    contribService.contributors.subscribe(results => contribs = results);
  });

  it('contributors observable should complete', () => {
    let completed = false;
    contribService.contributors.subscribe(undefined, undefined, () => completed = true);
    expect(completed).toBe(true, 'observable completed');
  });

  it('should reshape the contributor json to expected result', () => {
    const groupNames = contribs.map(g => g.name).join(',');
    expect(groupNames).toEqual('Angular,Collaborators,GDE');
  });

  it('should have expected "GDE" contribs in order', () => {
    const gde = contribs[2];
    const actualAngularNames = gde.contributors.map(l => l.name).join(',');
    const expectedAngularNames = [testData.gkalpak, testData.kapunahewong].map(l
=> l.name).join(',');
    expect(actualAngularNames).toEqual(expectedAngularNames);
  });

  it('should support including a contributor in multiple groups', () => {
    const contributor = testData.gkalpak;

```

```

const matchedGroups = contribs
  .filter(group => group.contributors.includes(contributor))
  .map(group => group.name);

expect(matchedGroups).toEqual(['Collaborators', 'GDE']);
});
});

it('should do WHAT(?) if the request fails');
});

function getTestContribs() {
return {
  kapunahewong: {
    name: 'Kapunahele Wong',
    picture: 'kapunahewong.jpg',
    website: 'https://github.com/kapunahewong',
    twitter: 'kapunahele',
    bio: 'Kapunahele is a front-end developer and contributor to angular.io',
    groups: ['GDE']
  },
  misko: {
    name: 'Miko Hevery',
    picture: 'misko.jpg',
    twitter: 'mhevery',
    website: 'http://misko.hevery.com',
    bio: 'Miko Hevery is the creator of AngularJS framework.',
    groups: ['Angular']
  },
  igor: {
    name: 'Igor Minar',
    picture: 'igor-minar.jpg',
    twitter: 'IgorMinar',
    website: 'https://google.com/+IgorMinar',
    bio: 'Igor is a software engineer at Angular.',
    groups: ['Angular']
  },
  kara: {
    name: 'Kara Erickson',
    picture: 'kara-erickson.jpg',
    twitter: 'karaforthewin',
    website: 'https://github.com/kara',
    bio: 'Kara is a software engineer on the Angular team at Angular and a co-organizer of the Angular-SF Meetup. ',
    groups: ['Angular']
  },
  jeffcross: {
    name: 'Jeff Cross',
    picture: 'jeff-cross.jpg',

```

```

    twitter: 'jeffbcross',
    website: 'https://twitter.com/jeffbcross',
    bio: 'Jeff was one of the earliest core team members on AngularJS.',
    groups: ['Collaborators']
  },
  naomi: {
    name: 'Naomi Black',
    picture: 'naomi.jpg',
    twitter: 'naomitraveller',
    website: 'http://google.com/+NaomiBlack',
    bio: 'Naomi is Angular\'s TPM generalist and jack-of-all-trades.',
    groups: ['Angular']
  },
  gkalpak: {
    name: 'George Kalpakas',
    picture: 'gkalpak.jpg',
    twitter: 'gkalpakas',
    bio: 'George wrote this test, so he gets to have his name included here.',
    groups: ['GDE', 'Collaborators'],
  }
};
}
import { Component, Input } from '@angular/core';

import { Contributor } from './contributors.model';
import { CONTENT_URL_PREFIX } from 'app/documents/document.service';

@Component({
  selector: 'aio-contributor',
  template: `
    <div [ngClass]="{ 'flipped': person.isFlipped }" class="contributor-card">

      <div class="card-front" (click)="flipCard(person)">
        <h3>{{ person.name }}</h3>

        <div class="contributor-image" [style.background-image]="url('+pictureBase+(person.picture ||
noPicture)+')">
          <div class="contributor-info">
            <a *ngIf="person.bio" mat-button class="info-item">
              View Bio
            </a>
            <a *ngIf="person.twitter" mat-icon-button class="info-item icon"
              href="https://twitter.com/{{ person.twitter }}" target="_blank" (click)="$event.stopPropagation()">
              <mat-icon svgIcon="logos:twitter"></mat-icon>
            </a>
            <a *ngIf="person.website" mat-icon-button class="info-item icon"
              href="{{ person.website }}" target="_blank" (click)="$event.stopPropagation()">
              <mat-icon class="link-icon">link</mat-icon>

```

```

        </a>
      </div>
    </div>
  </div>

  <div class="card-back" *ngIf="person.isFlipped" (click)="flipCard(person)">
    <h3>{{ person.name }}</h3>
    <p class="contributor-bio">{{ person.bio }}</p>
  </div>
</div>
,
})
export class ContributorComponent {
  @Input() person: Contributor;
  noPicture = '_no-one.png';
  pictureBase = CONTENT_URL_PREFIX + 'images/bios/';

  flipCard(person: Contributor) {
    person.isFlipped = !person.isFlipped;
  }
}
import { Injectable } from '@angular/core';
import { HttpClient } from '@angular/common/http';

import { ConnectableObservable, Observable } from 'rxjs';
import { map, publishLast } from 'rxjs/operators';

import { Contributor, ContributorGroup } from './contributors.model';

// TODO(AndrewJ): Look into changing this so that we don't import the service just to get the const
import { CONTENT_URL_PREFIX } from 'app/documents/document.service';

const contributorsPath = CONTENT_URL_PREFIX + 'contributors.json';
const knownGroups = ['Angular', 'Collaborators', 'GDE'];

@Injectable()
export class ContributorService {
  contributors: Observable<ContributorGroup[]>;

  constructor(private http: HttpClient) {
    this.contributors = this.getContributors();
  }

  private getContributors() {
    const contributors = this.http.get<{ [key: string]: Contributor }>(contributorsPath).pipe(
      // Create group map
      map(contribs => {
        const contribMap: { [name: string]:

```



```

Contributor[] = {};
    Object.keys(contribs).forEach(key => {
        const contributor = contribs[key];
        contributor.groups.forEach(group => {
            const contribGroup = contribMap[group] || (contribMap[group] = []);
            contribGroup.push(contributor);
        });
    });

    return contribMap;
}),

// Flatten group map into sorted group array of sorted contributors
map(cmap => {
    return Object.keys(cmap).map(key => {
        const order = knownGroups.indexOf(key);
        return {
            name: key,
            order: order === -1 ? knownGroups.length : order,
            contributors: cmap[key].sort(compareContributors)
        } as ContributorGroup;
    })
    .sort(compareGroups);
}),

publishLast(),
);

(contributors as ConnectableObservable<ContributorGroup[]>).connect();
return contributors;
}
}

function compareContributors(l: Contributor,
r: Contributor) {
return l.name.toUpperCase() > r.name.toUpperCase() ? 1 : -1;
}

function compareGroups(l: ContributorGroup, r: ContributorGroup) {
return l.order === r.order ?
(l.name > r.name ? 1 : -1) :
l.order > r.order ? 1 : -1;
}
import { ReflectiveInjector } from '@angular/core';

import { of } from 'rxjs';

import { ContributorGroup } from './contributors.model';

```

```

import { ContributorListComponent } from './contributor-list.component';
import { ContributorService } from './contributor.service';
import { LocationService } from 'app/shared/location.service';

// Testing the component class behaviors, independent of its template
// Let e2e tests verify how it displays.
describe('ContributorListComponent', () => {

  let component: ContributorListComponent;
  let injector: ReflectiveInjector;
  let contributorService: TestContributorService;
  let locationService: TestLocationService;
  let contributorGroups: ContributorGroup[];

  beforeEach(() => {
    injector = ReflectiveInjector.resolveAndCreate([
      ContributorListComponent,
      { provide: ContributorService, useClass: TestContributorService },
      { provide: LocationService, useClass: TestLocationService }
    ]);

    locationService
    = injector.get(LocationService);
    contributorService = injector.get(ContributorService);
    contributorGroups = contributorService.testContributors;
  });

  it('should select the first group when no query string', () => {
    component = getComponent();
    expect(component.selectedGroup).toBe(contributorGroups[0]);
  });

  it('should select the first group when query string w/o "group" property', () => {
    locationService.searchResult = { foo: 'GDE' };
    component = getComponent();
    expect(component.selectedGroup).toBe(contributorGroups[0]);
  });

  it('should select the first group when query group not found', () => {
    locationService.searchResult = { group: 'foo' };
    component = getComponent();
    expect(component.selectedGroup).toBe(contributorGroups[0]);
  });

  it('should select the GDE group when query group is "GDE"', () => {
    locationService.searchResult = { group: 'GDE' };
    component = getComponent();
    expect(component.selectedGroup).toBe(contributorGroups[1]);
  }

```

```

});

it('should select the GDE group when query group is "gde" (case insensitive)', () => {
  locationService.searchResult = { group: 'gde' };
  component = getComponent();
  expect(component.selectedGroup).toBe(contributorGroups[1]);
});

it('should set the query to the "GDE" group when user selects "GDE"', () => {
  component = getComponent();
  component.selectGroup('GDE');
  expect(locationService.searchResult['group']).toBe('GDE');
});

it('should set the query to the first group when user selects unknown name', () => {
  component = getComponent();
  component.selectGroup('GDE'); // a legit group that isn't the first

  component.selectGroup('foo'); // not a legit group name
  expect(locationService.searchResult['group']).toBe('Angular');
});

//// Test Helpers ////
function getComponent(): ContributorListComponent {
  const comp = injector.get(ContributorListComponent);
  comp.ngOnInit();
  return comp;
}

interface SearchResult { [index: string]: string; }

class TestLocationService {
  searchResult: SearchResult = {};
  search = jasmine.createSpy('search').and.callFake(() => this.searchResult);
  setSearch = jasmine.createSpy('setSearch')
    .and.callFake((label: string, result: SearchResult) => {
      this.searchResult = result;
    });
}

class TestContributorService {
  testContributors = getTestData();
  contributors = of(this.testContributors);
}

function getTestData(): ContributorGroup[] {
  return [
    // Not interested in the contributors data in these tests

```

```

    { name: 'Angular', order: 0, contributors: [] },
    { name: 'GDE', order: 1, contributors: [] },
  ];
}
});
{
  "mhevery": {
    "name": "Miko Hevery",
    "picture": "misko.jpg",
    "twitter": "mhevery",
    "website": "http://misko.hevery.com",
    "bio": "Miko Hevery is the creator of AngularJS framework. He has passion for making complex things simple. He currently works at Google, but has previously worked at Adobe, Sun Microsystems, Intel, and Xerox, where he became an expert in building web applications in web related technologies such as Java, JavaScript, Flex and ActionScript.",
    "groups": ["Angular"],
    "lead": "kara"
  },
  "igorminar": {
    "name": "Igor Minar",
    "picture": "igor-minar.jpg",
    "twitter": "IgorMinar",
    "website": "https://google.com/+IgorMinar",
    "bio": "Igor is a software engineer at Google. He is a lead on the Angular project, practitioner of test driven development, open source enthusiast, hacker. In his free time, Igor enjoys spending time with his wife and two kids, doing outdoor activities (including but not limited to sports, gardening and building retaining walls).",
    "groups": ["Angular"],
    "lead": "bradlygreen"
  },
  "bradlygreen": {
    "name": "Brad Green",
    "picture": "brad-green.jpg",
    "twitter": "bradlygreen",
    "website": "https://plus.google.com/+BradGreen",
    "bio": "Brad Green works at Google as an engineering director. Brad manages the Google Sales Platform suite of projects as well as the AngularJS framework. Prior to Google, Brad worked on the early mobile web at AvantGo, founded and sold startups, and spent a few hard years toiling as a caterer. Brad's first job out of school was as lackey to Steve Jobs at NeXT Computer writing demo software and designing his slide presentations. Brad enjoys throwing dinner parties with his wife Heather and putting on plays with his children.",
    "groups": ["Angular"]
  },
  "jelbourn": {
    "name": "Jeremy Elbourn",
    "picture": "jelbourn.jpg",
    "twitter": "jelbourn",
    "website": "https://plus.google.com/+JeremyElbourn/",

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```

    "bio": "Angular Material Team Lead. FE Engineer @ Google specializing in AngularJS, component design, and
the cleanest of code.",
    "groups": ["Angular"],
    "lead": "igorminar"
  },
  "petebacondarwin": {
    "name": "Pete Bacon Darwin",
    "picture": "pete.jpg",
    "twitter": "petebd",
    "website": "http://www.bacondarwin.com",
    "bio": "AngularJS for JS Team Lead. Pete has been working on the core team since 2012 and became the team
lead for the AngularJS for JS branch in November 2014. He has co-authored a book on AngularJS and regularly
talks about and teaches Angular.",
    "groups": ["Angular"],
    "lead": "igorminar"
  },
  "stephenfluin": {
    "name": "Stephen Fluin",
    "picture": "stephenfluin.jpg",
    "twitter": "stephenfluin",
    "website": "https://plus.google.com/+stephenfluin",
    "bio": "Stephen is a Developer Advocate working on the Angular team. Before joining Google, he was a Google
Expert. Stephen loves to help enterprises
use technology more effectively.",
    "groups": ["Angular"],
    "lead": "bradlygreen"
  },
  "robwormald": {
    "name": "Rob Wormald",
    "picture": "rob-wormald.jpg",
    "twitter": "robwormald",
    "website": "http://github.com/robwormald",
    "bio": "Rob is a Developer Advocate on the Angular team at Google. He's the Angular team's resident reactive
programming geek and founded the Reactive Extensions for Angular project, ngrx.",
    "groups": ["Angular"],
    "lead": "stephenfluin"
  },
  "rkirov": {
    "name": "Rado Kirov",
    "picture": "rado.jpg",
    "twitter": "radokirov",
    "website": "https://plus.sandbox.google.com/+RadoslavKirov",
    "bio": "Rado has been on the Angular Core team since Summer 2014. Before Angular, he worked on the AdSense
serving stack, responsible for serving billions of ads daily. Being passionate about open source, he made
contributions to Angular as a Google-20% project, before making the fulltime jump. He is a recovering
academic; ask him about error-correcting codes from algebraic curves (or don't).",
    "groups": ["Angular"],
    "lead": "mprobst"
  }

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},
"alexeagle": {
  "name": "Alex Eagle",
  "picture": "alex-eagle.jpg",
  "twitter": "jakeherringbone",
  "website": "http://google.com/+alexeagle",
  "bio": "Alex works on language tooling for JavaScript and TypeScript. Previously Alex spent five years in Google's developer testing tools. He has developed systems including Google's continuous integration service, capturing build&test failures, and explaining them to developers. Before Google, Alex worked at startups including Opower, and consulted for large government IT. In his 20% time, he created the Error-Prone static analysis tool, which detects common Java programming mistakes and reports them as compile errors.",
  "groups": ["Angular"],
  "lead": "igorminar"
},
"kyliau": {
  "name": "Keen Yee Liau",
  "groups": ["Angular"],
  "lead": "alexeagle",
  "picture": "kyliau.jpg"
},
"clydin": {
  "name": "Charles Lyding",
  "groups": ["Angular"],
  "lead": "alexeagle",
  "picture": "clydin.jpg"
},
"alan-agius4": {
  "name": "Alan Agius",
  "groups": ["Angular"],
  "lead": "alexeagle",
  "picture": "alan-agius4.jpg",
  "bio": "Angular CLI Member, Loves TypeScript, Build Tools, Food, Beer & Coffee:)"
},
"gregmagolan": {
  "name": "Greg Magolan",
  "groups": ["Angular"],
  "lead": "alexeagle",
  "picture": "gregmagolan.jpg",
  "bio": "Building great software with Angular and Node.js."
},
"mprobst": {
  "name": "Martin Probst",
  "picture": "martin-probst.jpg",
  "twitter": "martin_probst",
  "website": "http://probst.io",
  "bio": "Martin is a software engineer at Google in the AngularJS team. He holds a MSc in Software Engineering from HPI in Potsdam, Germany. Before joining the AngularJS team at Google, he worked at a database startup in the Netherlands,

```

at EMC, at SAP, and as a freelancer. In his free time, he likes to cook and sail, not necessarily at the same time.",

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"groups": ["Angular"],
"lead": "bradlygreen"
},
"alxhub": {
  "name": "Alex Rickabaugh",
  "picture": "alex-rickabaugh.jpg",
  "twitter": "synalx",
  "website": "https://plus.google.com/+AlexRickabaugh/about",
  "bio": "Core team member working to optimize the Angular platform for the next generation of applications,
including mobile. Before joining the Angular team, Alex worked in the Google sales organization where he helped
build the first large Angular application within Google.",
  "groups": ["Angular"],
  "lead": "kara"
},
"matsko": {
  "name": "Matias Niemela",
  "picture": "matias.jpg",
  "twitter": "yearofmoo",
  "website": "http://yearofmoo.com",
  "bio": "Matias Niemela is a fullstack web developer who has been programming & building websites for over 10
years, and a core team member of AngularJS for two
years. In the spring of 2015 Matias joined Angular full time at Google. In his free time Matias loves to build
complex things and is always up for public speaking, travelling and tweaking his current Vim setup.",
  "groups": ["Angular"],
  "lead": "kara"
},
"hansl": {
  "name": "Hans Larsen",
  "picture": "hansl.jpg",
  "twitter": "hanslatwork",
  "website": "http://www.codingatwork.com/",
  "bio": "Hans is a software engineer at Google on the Angular team and was previously at Slack. He works
everyday to help make it easier for everyone to create beautiful, consistent web applications using Angular, using
Material Design components and the CLI tool.",
  "groups": ["Angular"],
  "lead": "alex eagle"
},
"kara": {
  "name": "Kara Erickson",
  "picture": "kara-erickson.jpg",
  "twitter": "karaforthewin",
  "website": "https://github.com/kara",
  "bio": "Kara is a software engineer on the Angular team at Google and a co-organizer of the
Angular-SF Meetup. Prior to Google, she helped build UI components in Angular for guest management systems at
OpenTable. She enjoys snacking indiscriminately and probably other things too.",
  "groups": ["Angular"],
  "lead": "igorminar"

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},
"vikerman": {
  "name": "Vikram Subramanian",
  "picture": "vikram.jpg",
  "twitter": "vikerman",
  "bio": "Vikram is a Software Engineer on the Angular team focused on Engineering Productivity. That means he makes sure people on the team can move fast and not break things. Vikram enjoys doing Yoga and going on walks with his daughter.",
  "groups": ["Angular"],
  "lead": "alexeagle"
},
"pkozlowski-opensource": {
  "name": "Pawel Kozlowski",
  "picture": "pawel.jpg",
  "twitter": "pkozlowski_os",
  "bio": "Open source hacker, AngularJS book author, AngularUI lead developer. Pawel is an software-development addict who believes in free, open source software. He is a core contributor to the AngularJS framework, AngularUI, Karma-runner and several other projects. He is the co-author of the \"Mastering Web Application Development with AngularJS\" book. When not coding, Pawel can be spotted speaking at various software development conferences.",
  "groups": ["Angular"],
  "lead": "kara"
},
"devversion": {
  "name": "Paul Gschwendtner",
  "picture": "devversion.jpg",
  "twitter": "DevVersion",
  "website": "https://github.com/DevVersion",
  "bio": "Paul is a 17-year-old developer living in Germany. While he attends school, Paul works as a core team member on Angular Material. Paul focuses on tooling and building components for Angular.",
  "groups": ["Angular"],
  "lead": "kara"
},
"EladBezalel": {
  "name": "Elad Bezalel",
  "picture": "eladbezalel.jpg",
  "website": "https://github.com/EladBezalel",
  "bio": "Elad is a fullstack developer with a very strong love for design. Since 8 years old, he's been designing in Photoshop and later on fell in love with programing. This strong bond between design and computer programming gave birth to a new kind of love. And he is currently doing the combination of both, as a core member of the ngMaterial project.",
  "groups": ["GDE"]
},
"marclaval": {
  "name": "Marc Laval",
  "picture": "marclaval.jpg",
  "twitter": "marclaval",
  "website": "https://github.com/mlaval",

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"bio": "Marc is a manager at Amadeus where he leads the team in charge of developing and recommending UI
frameworks for the company. He is also an open source developer and a contributor to Angular.",
"groups": ["Angular"],
"lead": "kara"
},
"wardbell": {
"name": "Ward Bell",
"picture": "wardbell.jpg",
"website": "https://github.com/wardbell",
"twitter": "wardbell",
"bio": "Ward is an all-around developer with JavaScript, Node.js, and .net chops. He's a frequent conference
speaker and podcaster, trainer, Google Developer Expert for Angular, Microsoft
MVP, and PluralSight author. He is also president of IdeaBlade, an enterprise software consulting firm and the
makers of breeze.js. He would like to get more sleep and spend more time in the mountains.",
"groups": ["GDE"]
},
"Narretz": {
"name": "Martin Staffa",
"picture": "martinstaffa.jpg",
"twitter": "Narretz",
"bio": "Martin is an English major turned web developer who loves frontend stuff. He's been part of the AngularJS
team since 2014. If you can't find him roaming the Github issue queues, he's probably out with his camera
somewhere.",
"groups": ["Angular"],
"lead": "petebacondarwin"
},
"filipesilva": {
"name": "Filipe Silva",
"picture": "filipe-silva.jpg",
"twitter": "filipematossilv",
"website": "http://github.com/filipesilva",
"bio": "Filipe is a passion-driven developer that always strives for the most elegant solution for each problem. He
is currently an author for Angular.io, a core contributor
for Angular-CLI and senior front end engineer at KonnectAgain. When not busy going through PRs, you can find
him scouring reddit for new dinner recipes to cook or enjoying a craft beer in Dublin.",
"groups": ["Angular"],
"lead": "alex eagle"
},
"andrewseguin": {
"name": "Andrew Seguin",
"picture": "andrewseguin.jpg",
"website": "http://github.com/andrewseguin",
"bio": "Andrew is an engineer on the Angular Material team working on bringing material components to the
world. When hes not obsessing over pixels and design, he is probably off somewhere having adventures with his
wife and daughters.",
"groups": ["Angular"],
"lead": "jelbourn"
},

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"crisbeto": {
  "name": "Kristiyan Kostadinov",
  "picture": "crisbeto.jpg",
  "website": "http://crisbeto.com/",
  "bio": "Kristiyan is a front-end developer, passionate open-source contributor and a core team member on Angular
Material.",
  "groups": ["Angular"],
  "lead": "jelbourn"
},
"gkalpak": {
  "name": "Georgios Kalpakas",
  "picture": "gkalpak.jpg",
  "twitter": "gkalpakas",
  "website": "https://github.com/gkalpak",
  "bio": "George is a Software Engineer with a passion for chess, robotics and automating stuff. He has a strong
need to know how things work (so if you already know, he'd love to have a talk with you). He has been a member of
the AngularJS team since 2014. When not doing geeky stuff, he is probably trying to convince his wife and kids to
apply programming principles in real life. (Or is it the other way around?)",
  "groups": ["Angular"],
  "lead": "igorminar"
},
"mmalerba": {
  "name": "Miles Malerba",
  "picture": "mmalerba.jpg",
  "bio": "Miles is a software engineer on the Angular Material team at Google. In addition to Javascripting he enjoys
eating food and ogling cute puppies.",
  "groups": ["Angular"],
  "lead": "jelbourn"
},
"jasonaden": {
  "name": "Jason Aden",
  "picture":
"jasonaden.jpg",
  "bio": "Jason is a software engineer at Google on the Angular Core team. He is enthusiastic about Angular and
application development in the modern age. In his free time Jason enjoys spending time with his wife and four
children and doing outdoor activities (hiking, fishing, snowboarding, etc.).",
  "groups": ["Angular"],
  "lead": "igorminar"
},
"jeffwhelpley": {
  "name": "Jeff Whelpley",
  "picture": "jeffwhelpley.jpg",
  "twitter": "jeffwhelpley",
  "website": "https://medium.com/@jeffwhelpley",
  "bio": "Jeff Whelpley is a Google Developer Expert and the CTO of GetHuman. He is the co-organizer of the
Angular Boston meetup group, co-creator of Angular Universal, former host of AngularAir and frequent speaker at
Angular events.",
  "groups": ["GDE"]
}

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},
"pascalprecht": {
  "name": "Pascal Precht",
  "picture": "pascalprecht.jpg",
  "website": "https://twitter.com/PascalPrecht",
  "bio": "Pascal is a software engineer,
author and Google Developer Expert for the Angular team. He loves contributing to open source and is the creator
of the popular angular-translate module. In his spare time hes fiddling with EDM production.",
  "groups": ["GDE"]
},
"deborah": {
  "name": "Deborah Kurata",
  "picture": "deborah.jpg",
  "twitter": "deborahkurata",
  "website": "http://blogs.msmvps.com/deborahk/",
  "bio": "Deborah is a software developer, author, and Google Developer Expert. She is author of several Pluralsight
courses including: 'Angular 2: Getting Started' and Angular Routing",
  "groups": ["Collaborators", "GDE"],
  "mentor": "kara"
},
"alyssa": {
  "name": "Alyssa Nicoll",
  "picture": "mickey_mouse.jpg",
  "twitter": "alyssanicoll",
  "website": "alyssa.io",
  "bio": "I am an energetic, ber passionate GDE and Web Dev. I have some Front-End and Angular courses on
Egghead.io and Code School. I love to learn new things and share them with others.
I Scuba Dive and have a toothless dog named 'Gummy'. My DM is always open, come talk sometime.",
  "groups": ["GDE"]
},
"ralph": {
  "name": "Ralph Wang",
  "picture": "ralph.jpg",
  "twitter": "ralph_wang_gde",
  "bio": "Ralph(Zhicheng Wang) is a senior consultant at ThoughtWorks and also a GDE. He is a technology
enthusiast and he is a passionate advocate of 'Simplicity, Professionalism and Sharing'. In his eighteen years of R&D
career, he worked as tester, R&D engineer, project manager, product manager and CTO. He is immersed in the
excitement of the arrival of the baby.",
  "groups": ["GDE"]
},
"manekinecko": {
  "name": "Wassim Chegham",
  "picture": "wassim.jpg",
  "twitter": "manekinecko",
  "website": "https://medium.com/@wassimchegham",
  "bio": "Wassim (aka manekinecko on Twitter/Github) is a Developer Advocate at SFEIR, in Web technologies
(Angular, Polymer, PWA, Web Components...). He is also a Developer Expert in Web technologies

```

nominated by Google. He enjoys writing technical articles, meeting developers at events, speaking at conferences and contributing to open source projects. Wassim loves the Web Platform and works hard to move it forward.",

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"groups": ["Angular"],  
"mentor": "filipesilva"
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},
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"chrisnoring": {
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"name": "Christoffer Noring",
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"picture": "chrisnoring.jpg",
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"twitter": "chris_noring",
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"website": "softchris.github.io",
```

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"bio": "Chris is a Full Stack Developer at McKinsey. A Google Developer Expert in Web Technologies and Angular. He is also a Nativescript Developer Expert. He is one of the organizers of the Angular conference ngVikings and an author of the book RxJS 5 Ultimate",
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"groups": ["GDE"]
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},
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"jorgeucano": {
```

```
"name": "Jorge Cano",
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"picture": "jorgeucano.jpg",
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"twitter": "jorgeucano",
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"website": "https://medium.com/@jorgeucano",
```

```
"bio": "After more than 10 years working in the tech industry, Jorge is a full stack developer with focus on JavaScript technologies. Today, Jorge is working at Hero Devs using Angular / RxJS / Firebase as well as other technologies. He delivered several courses and talks as well as write some tech articles on these subjects. Because of that, he was recognised as a Google Developer Expert in Angular & web technologies and Nativescript Developer Expert.",
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"groups": ["GDE"]
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"toddmotto": {
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"picture": "toddmotto.jpg",
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"twitter": "toddmotto",
```

```
"website": "https://ultimateangular.com",
```

```
"bio": "Owner and trainer at Ultimate Angular. Lives in England, UK. Has a love for teaching, OSS and speaking at conferences. Google Developer Expert for Web Technologies and Angular.",
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"groups": ["GDE"]
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"michaelhladky": {
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"name": "Michael Hladky",
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"picture": "michael-hladky.jpg",
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"twitter": "Michael_Hladky",
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"website": "https://github.com/BioPhoton",
```

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"bio": "Michael is a self employed trainer, consultant and developer with the focus on Angular, and located in Vienna, Austria. He gives workshops on Angular, RxJS and Ionic. As Google Developer Expert, founder of Angular-Austria-Association and Angular-Vienna meetup, and speaker he is an active part of the community.",
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"groups": ["GDE"]
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"michaelprentice": {
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"name": "Michael Prentice",
"picture": "michaelprentice.jpg",
"twitter": "splaktar",
"website": "https://www.DevIntent.com",
"bio": "Lead for AngularJS Material. Owner and consultant at DevIntent. Ex-Angular GDE. Founder of the
Google Developers Group (GDG) community on the Space Coast of Florida, USA.",
"groups": ["Angular"],
"lead": "jelbourn"
},
"manfredsteyer": {
"name": "Manfred Steyer",
"picture": "steyer.jpg",
"twitter": "ManfredSteyer",
"website": "https://www.softwarearchitekt.at",
"bio": "Trainer and Consultant with focus on Angular. Writes for O'Reilly, the German Java Magazine and Heise.
Regularly speaks at conferences.",
"mentor": "mgechev",
"groups": ["GDE", "Collaborators"]
},
"maximalsalnikov": {
"name": "Maxim Salnikov",
"picture": "maximalsalnikov.jpg",
"twitter": "webmaxru",
"website": "https://medium.com/@webmaxru",
"bio": "Oslo-based web front-end engineer, a Google Developer Expert in Angular, Web technologies and IoT.
Active public speaker & trainer for the developer events. Leader of Norways largest meetups dedicated to web front-
end and mobile development. Founder of ngVikings and Mobile Era conferences. Progressive Web Apps advocate.",
"groups": ["GDE"]
},
"jeremywilken": {
"name": "Jeremy Wilken",
"picture": "jeremywilken.jpg",
"twitter": "gnomeontherun",
"website": "https://gnomeontherun.com",
"bio": "Based in Austin Texas, Jeremy is an application architect and homebrewer. He is a Google Developer
Expert in Web Technologies and Angular, with a focus on speaking and training and
author of Angular in Action and Ionic in Action.",
"groups": ["GDE"]
},
"mgechev": {
"name": "Minko Gechev",
"picture": "minko.jpg",
"twitter": "mgechev",
"website": "http://blog.mgechev.com",
"bio": "Software engineer who enjoys theoretical computer science and its practical applications. Speaker, author
of the book 'Switching to Angular', codelyzer, Guess.js, and the Go linter revive. Working for faster and more
reliable software.",
"groups": ["Angular"],

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"lead": "alexeagle"
},
"urish": {
  "name": "Uri Shaked",
  "picture": "urish.jpg",
  "twitter": "UriShaked",
  "website": "https://urish.org",
  "bio": "Uri Shaked is a Google Developer Expert for Web Technologies. He regularly writes about Web and IoT
related technologies in his medium blog, and speaks about these topics in conferences and meetup around the world.
Among his interests are reverse engineering, hardware hacking, building 3d-printed robots and games, playing
music and Salsa dancing.",
  "groups": ["GDE"]
},
"eusoj": {
  "name": "Josue Gutierrez",
  "picture": "josue.jpg",
  "twitter": "eusoj",
  "website": "http://techtam.io",
  "bio": "Based in Mexico, Josue has been web developer since the last 10 years, he is part of the Google Developer
Expert Program, passionate about teaching and building communities",
  "groups": ["GDE"]
},
"SanderElias": {
  "name": "Sander Elias",
  "picture": "sanderelias.jpg",
  "twitter": "esoSanderElias",
  "website": "https://sanderelias.nl",
  "bio": "Sander is a versed developer with over 4 decades of practice under his belt. He is also an Google
Developer Expert for web, specializing in Angular. Organizer of meetups and conferences. Helping out others
wherever he can. When he is not breathing code, he is fiddling around with IOT, photography, science and anything
that might vaguely is gadget-like! Thinks he a master of the grill, but in reality you probably
don't get a food-poisoning ;) Also, and actually the most important thing to him, he is a father of 4, and has the most
patient girlfriend in the universe.",
  "groups": ["GDE"]
},
"filipbech": {
  "name": "Filip Bruun Bech-Larsen",
  "picture": "filipbech.jpg",
  "twitter": "filipbech",
  "website": "http://filipbech.github.io/",
  "bio": "Filip is a Frontend developer from Denmark. He works at IMPACT, delivering large-scale, high-
performance e-commerce to international clients - most often build in Angular. He runs the local Angular usergroup
- ngAarhus, and gives talks/workshops around and beyond the country of Denmark.",
  "groups": ["GDE"]
},
"ocombe": {
  "name": "Olivier Combe",
  "picture": "ocombe.jpg",

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```

    "twitter": "ocombe",
    "bio": "Olivier is a passionate front-end engineer who loves interacting with the community by doing open source
projects (ocLazyLoad, ngx-translate), being a panelist at Angular-Air, giving talks or just
chatting on Twitter and Slack. Hes a member of the Angular Core team and works on i18n.",
    "groups": ["Angular"],
    "lead": "kara"
  },
  "cironunes": {
    "name": "Ciro Nunes",
    "picture": "cironunes.jpg",
    "twitter": "cironunesdev",
    "bio": "Ciro is the Lead Front-end Engineer of CrossEngage and Google Developer Expert in Web Technologies.",
    "groups": ["GDE"]
  },
  "elecash": {
    "name": "Ral Jimnez",
    "picture": "raul.jpg",
    "twitter": "elecash",
    "bio": "Raul works as a CEO and Front-end Architect at Byte Default for companies around the world helping
them to build high-performance web apps. In his spare time he's usually working on Videogular, involved in local
meetups, speaking at conferences and contributing to open source projects.",
    "groups": ["GDE"]
  },
  "simpulton": {
    "name": "Lukas Ruebelke",
    "picture": "lukas.jpg",
    "twitter": "simpulton",
    "bio": "Developer. Hacker. Community backer. Author and blogger.
Console logger.",
    "groups": ["GDE"]
  },
  "christianweyer": {
    "name": "Christian Weyer",
    "picture": "christianweyer.jpg",
    "twitter": "ChristianWeyer",
    "website": "https://www.thinktecture.com",
    "bio": "Co-founder and CTO of Thinktecture AG, as well as Google GDE and Microsoft MVP. Since two decades
active as an engaged and passionate speaker on several software conferences and events all over the world. Some
people call him 'Mr. Cross-Platform'.",
    "groups": ["GDE"]
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  "shairez": {
    "name": "Shai Reznik",
    "picture": "shaireznik.jpg",
    "twitter": "shai_reznik",
    "website": "https://www.hirez.io",
    "bio": "Teaches Angular at HiRez.io the most entertaining online courses on the web. An experienced developer,
consultant and speaker also known for his unusual crazy Angular talks such as ng-wat, ng-show, ng-rap, etc. Shai is

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also the organizer of the largest JavaScript group in Israel and a professional Improv performer.",

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},
"danwahlin": {
  "name": "Dan Wahlin",
  "picture": "danwahlin.jpg",
  "twitter": "DanWahlin",
  "website": "https://codewithdan.com",
  "bio": "Dan Wahlin founded Wahlin Consulting which provides consulting and onsite/online training services on Web technologies such as JavaScript, Angular, TypeScript, Node.js, C#, ASP.NET Core, Web API, and Docker. Hes also published many developer courses on Pluralsight.com and Udemy.com. Dan is a Google GDE, Docker Captain, and Microsoft MVP and Regional Director and speaks at conferences and user groups around the world. Dan has written several books on Web technologies, hundreds of technical articles and blog posts (https://blog.codewithdan.com) and runs the 'Code with Dan Web Weekly Newsletter' - a great way to stay up on the latest technologies. Follow Dan on Twitter @DanWahlin.",
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  "name": "Joe Eames",
  "picture": "joeeames.jpg",
  "twitter":
"josepheames",
  "website": "https://joeeames.me",
  "bio": "Joe Eames is a developer and educator. He publishes course on Angular and JavaScript on Pluralsight.com. He is an organizer of ng-conf, a Google Developer Expert in Angular, gives lots of talks & workshops, and loves all things web.",
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  "website": "https://willmendesneto.github.io",
  "bio": "GDE (Google Developer Expert) Angular and Web Technologies, GDG Salvador organizer, passionate about technology and active in communities with a focus on web development, including Angular, JavaScript, HTML5, CSS3, Workflow, web performance, security and Internet of things. Participates in events organization, speaker at conferences in Brazil and other countries and contributes to several open source projects.",
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  "website": "https://developers.google.com/experts/people/jecelyn-yeen",
  "bio": "GDE (Google Developer Expert) Angular and Web Technologies, Women Who Code KL Director, Jecelyn specializes in professional application development with technologies, including Angular, HTML5, Typescript, JavaScript, CSS, C#, NodeJs, Cloud and ASP.NET.",
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  "bio": "Director of Experience Technology at SapienRazorfish. Consults various brands on their frontend and mobile web architecture. A speaker at various forums and mentor at Launchpad Accelerator and ngGirls India. Spends free time playing with Angular, Preact, web-components ",
  "groups": ["GDE"]
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  "bio": "Thierry is a senior consultant and trainer, specialized on Angular, and a Google Developer Expert.",
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"gerardsans": {
  "name": "Gerard Sans",
  "picture": "gerardsans.jpg",
  "twitter": "gerardsans",
  "website": "https://medium.com/@gerard.sans",
  "bio": "Gerard is very excited about the future of the Web and JavaScript. Always happy Computer Science Engineer and humble Google Developer Expert. He loves to share his learnings by giving talks, trainings and writing about cool technologies. He loves running AngularZone and GraphQL London, mentoring students and giving back to the community.",
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  "name": "Nir Kaufman",
  "picture": "nirkaufman.jpg",
  "twitter": "nirkaufman",
  "website": "http://ngnir.life/",
  "bio": "Nir is a Principal Frontend Consultant & Head of the Angular department at 500Tech, Google Developer Expert and community leader. He organizes the largest Angular meetup group in Israel (Angular-IL), talks and teaches about front-end technologies around the world. He is also the author of two books about Angular and the founder of the 'Frontend Band'.",
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  "picture": "alainchautard.png",
  "twitter": "AlainChautard",
  "website": "http://www.angulartraining.com",
  "bio": "Alain Chautard is a Google Developer Expert in Web Technologies / Angular. He started working with

```

Angular JS in 2011. Since then he has worked with all Angular versions on a daily basis, both as a developer and as a technical trainer. He is the organizer of the Sacramento Angular Meetup group, co-organizer of the Google Developer Group chapter in Sacramento, California, and published author of the Packt video course 'Getting Started with Angular',

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  "website": "https://coryrylan.com",
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  "bio": "Cory is a full time front end web developer. He works full time building responsive web applications and progressive web apps. When not building web apps he is busy teaching Angular and other web technologies in workshops and conferences. He loves the web and is optimistic of the places it can take us.",
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  "groups": ["GDE"]
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"mhartington": {
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```
  "name": "Mike Hartington",
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  "picture": "mhartington.png",
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  "twitter": "mhartington",
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  "website": "https://mhartington.io",
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  "bio": "Mike is a Developer Advocate for the Ionic Framework and a GDE in Angular. He spends most of his time making fast PWAs and exploring emerging web standards. When not behind a keyboard, you'll probably find him with a guitar and beer.",
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"juristr": {
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  "website": "https://juristr.com",
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  "bio": "Juri is a software engineer and freelance trainer and consultant currently mostly focusing on the frontend side using JavaScript, TypeScript and Angular. He has a passion for teaching and sharing his knowledge and experiences with others. This mostly happens by writing tech articles for his personal blog, by creating video courses for Egghead.io, during on-site workshops at companies or by speaking at conferences. In his free time he enjoys practicing Yoseikan Budo, a martial art where he currently owns the 3rd DAN black belt.",
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  "twitter": "mashhoodr",
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  "website": "http://imars.info/",
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  "bio": "Mashhood is the principal technical consultant at Recurship and a Google Developer Expert. He works with different startups in US and EU to help them crawl
```

```
through the technical maze and quickly build amazing products focused around the problems they are trying to solve. He specializes in using the latest web technologies available to execute the best possible solutions.",
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"kimmaida": {
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  "picture": "kimmaida.jpg",
  "twitter": "KimMaida",
  "website": "https://kmaida.io/",
  "bio": "Kim is an an Angular consultant, developer, speaker, writer, and Google Developer Expert. She is
passionate about learning from and sharing knowledge with other developers through blogging, speaking,
workshops, and open source.",
  "groups": ["GDE"]
},
"elanaolson": {
  "name": "Elana Olson",
  "picture": "elanaolson.jpg",
  "twitter": "elanathellama",
  "bio": "Elana is a Developer Relations intern on the Angular team at Google. She is working on migration paths
from AngularJS to Angular and would love to chat about your experience with upgrading.",
  "groups": ["Angular"],
  "lead": "stephenfluin"
},
"kevinyang": {
  "name": "Kevin Yang",
  "picture": "kevinyang.jpg",
  "twitter": "chgc",
  "website": "https://blog.kevinyang.net/",
  "bio": "Kevin is a Angular Taiwan, Angular Girls Taiwan community organzier. He loves sharing knowledge with
other developers through blogging, speaking, workshops.",
  "groups": ["GDE"]
},
"sajee": {
  "name": "Sajeetharan Sinnathurai",
  "picture": "sajee.jpg",
  "twitter": "kokkisajee",
  "website": "https://sajeetharan.herokuapp.com/",
  "bio": "Sajeetharan is a Developer, Top contributor on stackoverflow for #Angular, ng-SriLanka organizer. He
makes use of his extensive knowledge over the past years to contribute to community to make the world a better
place.",
  "groups": ["GDE"]
},
"lacolaco": {
  "name": "Suguru Inatomi",
  "picture": "lacolaco.jpg",
  "twitter": "laco2net",
  "website": "https://lacolaco.net",
  "bio": "Suguru is a community-loving
Frontend developer and a lead of Angular Japan User Group. He organizes the largest Angular event in Japan (ng-
japan). And he is a contributor to Angular by sending patches, writing, speaking, and localizing resources in

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Japanese.",
  "groups": ["GDE"]
},
"katerina": {
  "name": "Katerina Skroumpelou",
  "picture": "katerina.jpg",
  "twitter": "psybercity",
  "website": "https://mandarini.github.io/",
  "bio": "Katerina is a front end software engineer, a conference speaker and AngularAthens meetup organizer. She is obsessed with sharing knowledge about things she loves. She is also trying to support diversity in the community. She lives with her cat in Athens.",
  "groups": ["GDE"]
},
"blove": {
  "name": "Brian Love",
  "picture": "brian-love.jpg",
  "twitter": "brian_love",
  "website": "https://brianflove.com",
  "bio": "Brian is a software engineer and GDE in Angular with a passion for learning, writing, speaking, teaching and mentoring. Brian has been building web applications for over 20 years and has long been a fanboy of JavaScript. When not in front of his Macbook Pro Brian is in the Rocky Mountains skiing or hiking.",
  "groups": ["GDE"]
},
"jeffbrcross": {
  "name": "Jeff Cross",
  "picture": "jeff-cross.jpg",
  "twitter": "jeffbrcross",
  "website": "https://nrwl.io/",
  "bio": "Jeff is an Angular Consultant at nrwl.io where he helps enterprise teams succeed with Angular. Prior to founding Nrwl, Jeff was one of the earliest members of the Angular Core Team at Google, and contributed to many of the early state management and performance efforts of AngularJS and Angular.",
  "groups": ["GDE"]
},
"keilla": {
  "name": "Keilla Menezes Fernandes",
  "picture": "keilla.jpg",
  "twitter": "keillamenezes_",
  "bio": "I am Senior Software Development Consultant in ThoughtWorks and GDE in Angular. Graduated in Computer Science from Federal University of Bahia, I have been worked with software development for more than 11 years. Since 2017, I started with Angular Framework and I went deep into front-end ecosystem and became more specialized in this area. I participate in a computer science community, Campinas Front-end, that promotes events in this area. In the end of 2016, I started to do technical talks. The passion for science is the engine that drives me to seek answers to the problems that computing aims to solve. Besides that, sharing knowledge and experiences is the path I choose to democratize the technology for all.",
  "groups": ["GDE"]
},
"mira": {

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"name": "Stanimira Vlaeva",
"picture": "mira.jpg",
"twitter": "StanimiraVlaeva",
"website": "https://github.com/sis0k0",
"bio": "Software engineer on the NativeScript team at Progress, focused on NativeScript Angular, NativeScript
schematics, and integrating webpack in the {N} build system. Co-organizing the Angular Sofia meetup. Speaking
about Angular
things at conferences here and there.",
"groups": ["GDE"]
},
"sharondio": {
"name": "Sharon DiOrio",
"picture": "sharon.jpg",
"twitter": "sharondio",
"website": "https://medium.com/@sharondio",
"bio": "Sharon is a mother to four teenagers, wife of a USMC veteran/police officer, and lead front-end engineer
for an educational non-profit in Boston. In her spare time, she is the \"Head Instigator\" of the Angular-Boston
Meetup and an active member of the Boston meetups community. She occasionally speaks on Angular and related
topics at technology conferences across the country. She has a Bachelor of Fine Arts from SMU and a Masters with
honors from RTFM.",
"groups": ["GDE"]
},
"leonardoizzamia": {
"name": "Leonardo Zizzamia",
"picture": "leonardo.jpg",
"twitter": "zizzamia",
"website": "https://medium.com/@zizzamia",
"bio": "Leonardo is a Senior Software Engineer at Coinbase. He is deeply passionate about web performance
and most recently developed Perfume.js to help companies prioritize roadmaps and business, through performance
analytics. From 2018, co-organizer of the Angular San Francisco Meetup group and NGRome Conference.",
"groups": ["GDE"]
},
"tomastrajan": {
"name": "Tomas Trajan",
"picture": "tomastrajan.jpg",
"twitter": "tomastrajan",
"website": "https://medium.com/@tomastrajan",
"bio": "Tomas is a Senior Software Engineer with passion for frontend and especially Angular. He always strives
to provide lots of value and to empower teams he is working with by sharing know-how, introducing best practices
and automating mundane task to enable full focus on creating value for the users! He likes to share his Angular
know-how by blogging, speaking and recording video content. He is a co-organizer of Angular Meetup Zurich.",
"groups": ["GDE"]
},
"samjulien": {
"name": "Sam Julien",
"picture": "samjulien.jpg",
"twitter": "samjulien",

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    "website": "http://www.samjulien.com/",
    "bio": "Sam Julien builds software, articles, video courses, and campfires. A developer, speaker, writer, and GDE in the Pacific Northwest, Sam's favorite thing in the world is changing someone's life by teaching them to code.",
    "groups": ["Collaborators", "GDE"],
    "mentor": "gkalpak"
  },
  "JiaLiPassion": {
    "name": "JiaLi Passion",
    "groups": ["Collaborators"],
    "mentor": "mhevery",
    "picture": "JiaLiPassion.jpg",
    "bio": "A programmer with passion, angular/zone.js guy! Web frontend engineer @sylabs"
  },
  "cexbrayat": {
    "name": "Cdric Exbrayat",
    "mentor": "petebacondarwin",
    "groups": ["Collaborators"],
    "picture": "cexbrayat.jpg",
    "bio": "Author of `Become a ninja with Angular (2+)` https://books.ninja-squad.com/angular - Angular trainer and @Ninja-Squad co-founder"
  },
  "CaerusKaru": {
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    "groups": ["Collaborators"],
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  "JoostK": {
    "name": "Joost Koehoorn",
    "groups": ["Collaborators"],
    "mentor": "alxhub",
    "picture": "joostk.jpg",
    "twitter": "devjoost",
    "bio": "Joost is a Software Engineer from the Netherlands with an interest in open source software who likes to learn something new every day. He works at Bluერიq during the day and contributes to Angular in his spare time, by working on the Angular compiler and runtime. He may review your PR even if you never asked for it :)"
  },
  "jschwarty": {
    "name": "Justin Schwartzenberger",
    "picture": "justinschwartzenberger.jpg",
    "twitter": "schwarty",
    "website": "https://schwarty.com",

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"bio": "Justin (aka Schwarty) is a Google Developer Expert in Web Technologies and Angular, the host and maintainer of the weekly AngularAir live video broadcast, educator, writer and content creator. He has Angular courses available on LinkedIn Learning and Pluralsight and loves passing on years of full stack development knowledge to help empower others to find their inner awesomeness!",

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  "website": "https://brandonroberts.dev",
```

"bio": "Brandon is a developer and technical writer working on guides, tutorials, application development, and infrastructure for the Angular docs. He is also a maintainer of the NgRx project, building reactive libraries for Angular.",

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"groups": ["Angular"],
"lead": "dennispbrown"
},
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"chembu": {
  "name": "Sreevani Sreejith",
  "picture": "sreevani.jpg",
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"bio": "Sreevani is a tech writer with prior programming experience. She writes documentation for the Angular framework team. Outside of work, she likes practicing yoga, honing her skills on classical dance forms, and baking cakes.",

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"groups": ["Angular"],
"lead": "dennispbrown"
},
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  "name": "Denny Brown",
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"bio": "Denny is founder of Expert Support, a professional services firm specializing in technical communication, and leads the Angular technical writing team. His lifelong passion has been to reduce the time and effort required to understand complex technical information. Early on, he was Associate Chairman of the Computer Science Department at Stanford, where he taught introductory courses in programming. He also plays old-timers baseball in local leagues and national tournaments.",

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  "lead": "dennispbrown"
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"website": "http://silverpath.org",
"bio": "Jennifer is a technical content strategist, architect, designer, and writer. As lead of the Angular docs team, she's always interested in learning more about how developers learn and use Angular. Her offline persona is a horsewoman in Idaho.",
"groups": ["Angular"],
"lead": "dennispbrown"
},
"kapunahewong": {
"name": "Kapunahewe Wong",
"picture": "kapunahewe.jpg",
"twitter": "kapunahewe",
"bio": "Kapunahewe is a developer and Angular fan who works on the Angular docs writing guides and developing example apps. She also enjoys Native Hawaiian practices, textile arts, and marveling at little, inconspicuous plants growing in forgotten places outdoors.",
"groups": ["Angular"],
"lead": "dennispbrown"
},
"luixaviles": {
"name": "Luis Aviles",
"picture": "luixaviles.jpg",
"twitter": "luixaviles",
"website": "https://luixaviles.com",
"bio": "Luis is an enthusiast of
Open Source software and communities, as well as being a public speaker, a technology trainer and an author of courses and technical articles. He is the organizer of the Angular Bolivia community and NG Bolivia conference. When he's not coding, Luis is reading about Astronomy or nerding about outer space, photography or even doing Astrophotography.",
"groups": ["GDE"]
},
"siddajmera": {
"name": "Siddharth Ajmera",
"picture": "sidd-ajmera.jpg",
"twitter": "SiddAjmera",
"website": "https://webstackup.com/",
"bio": "Siddharth is a Full Stack JavaScript Developer and a GDE in Angular. He's passionate about sharing his knowledge on Angular, Firebase and the Web in general. He's the organizer of WebStack, a local community of developers focused on Web, Mobile, Voice and Server related technologies in general. WebStack hosts free monthly meetups every 2nd or 3rd Saturday of the month. Siddharth is also an avid photographer and loves traveling. Find him anywhere
on the Web with `SiddAjmera`.",
"groups": ["GDE"]
},
"bbrennan": {
"name": "Bonnie Brennan",
"twitter": "bonnster75",
"groups": ["GDE"],
"picture": "bonnie.jpg",
"bio": "Bonnie has been specializing in Angular since 2013. She is the founder of ngHouston Angular Meetup and

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a regular panelist on Angular Air. She is also the very proud parent component of @thelittlestdev!"

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      "picture": "ahsanayaz.jpg",
      "twitter": "ahsan_ayz",
      "website": "https://medium.com/@ahsan.ayaz",
      "bio": "Muhammad Ahsan Ayaz is Software Architect at Modus Create. He is absolutely passionate about Angular and Web Technologies. Uses Angular daily and talks about it everywhere. Runs NodeSchool Karachi and is a co-organizer of NgPakistan",
      "groups":
["GDE"]
    },
    "andrewkushnir": {
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      "bio": "Andrew is a software engineer at Google on the Angular Core team.",
      "groups": ["Angular"],
      "lead": "kara"
    },
    "kamilmysliwec": {
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      "picture": "kamilmysliwec.jpg",
      "twitter": "kammysliwec",
      "website": "https://github.com/kamilmysliwec",
      "bio": "Kamil Mysliwec is a software engineer truly passionate about Web Technologies. Creator of NestJS, Co-Founder of Trilon.io, speaker, and trainer.",
      "groups": ["GDE"]
    }
  }
}

import { NgModule, Type } from '@angular/core';
import { CommonModule } from '@angular/common';
import { MatIconModule } from '@angular/material/icon';
import { ContributorListComponent } from './contributor-list.component';
import { ContributorService } from './contributor.service';
import { ContributorComponent } from './contributor.component';
import { WithCustomElementComponent } from './element-registry';

@NgModule({
  imports: [ CommonModule, MatIconModule ],
  declarations: [ ContributorListComponent, ContributorComponent ],
  entryComponents: [ ContributorListComponent ],
```

```

providers: [ ContributorService ]
})
export class ContributorListModule implements WithCustomElementComponent {
  customElementComponent: Type<any> = ContributorListComponent;
}
#!/usr/bin/env node

// Imports
const { existsSync, readFileSync } = require('fs');
const { join, resolve } = require('path');

// Constants
const CONTENT_DIR = resolve(__dirname, '.././content');
const IMAGES_DIR = join(CONTENT_DIR, 'images/bios');
const CONTRIBUTORS_PATH = join(CONTENT_DIR, 'marketing/contributors.json');

// Run
_main();

// Functions - Definitions
function _main() {
  const contributors = JSON.parse(readFileSync(CONTRIBUTORS_PATH, 'utf8'));
  const expectedImages = Object.keys(contributors)
    .filter(key => !!contributors[key].picture)
    .map(key => join(IMAGES_DIR, contributors[key].picture));
  const missingImages = expectedImages.filter(path => !existsSync(path));

  if (missingImages.length > 0) {
    throw new Error(
      'The following pictures are referenced in \'contributors.json\' but do not exist:' +
      missingImages.map(path => `\\n - ${path}`).join(""));
  }
}

```

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```
export interface ContributorGroup {  
  name: string;  
  order: number;  
  contributors: Contributor[];  
}
```

```
export interface Contributor {  
  groups: string[];  
  name: string;  
  picture?: string;  
  website?: string;  
  twitter?: string;  
  bio?: string;  
  isFlipped?: boolean;  
}
```

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*/

'use strict';

// THIS CHECK SHOULD BE THE FIRST THING IN THIS FILE

// This is to ensure that we catch env issues before we error while requiring other dependencies.

const engines = require('./package.json').engines;

require('./tools/check-environment')({

 requiredNodeVersion: engines.node,

 requiredNpmVersion: engines.npm,

 requiredYarnVersion: engines.yarn

});

const gulp = require('gulp');

// See `tools/gulp-tasks/README.md` for information about task loading.

function loadTask(fileName, taskName) {

 const taskModule = require('./tools/gulp-tasks/' + fileName);

 const task = taskName ? taskModule[taskName] : taskModule;

 return task(gulp);

}

// Check source code for formatting errors in all source files.

gulp.task('format:enforce', loadTask('format',

 'enforce'));

// Format all source files.

gulp.task('format:all', loadTask('format', 'format'));

// Format only untracked source code files.

gulp.task('format:untracked', loadTask('format', 'format-untracked'));

// Format only the changed, tracked source code files.

gulp.task('format:diff', loadTask('format', 'format-diff'));

// Format only changed lines based on the diff from the provided --branch

// argument (or `master` by default).

gulp.task('format:changed', ['format:untracked', 'format:diff']);

// Alias for `format:changed` that formerly formatted all files.

gulp.task('format', ['format:changed']);

gulp.task('lint', ['format:enforce', 'validate-commit-messages', 'tslint']);

gulp.task('tslint', ['tools:build'], loadTask('lint'));

gulp.task('validate-commit-messages', loadTask('validate-commit-message'));

gulp.task('source-map-test', loadTask('source-map-test'));

gulp.task('tools:build', loadTask('tools-build'));


```

gulp.task('check-cycle', loadTask('check-cycle'));
gulp.task('serve',
  loadTask('serve', 'default'));
gulp.task('changelog', loadTask('changelog'));
gulp.task('check-env', () => { /* this is a noop because the env test ran already above */});
gulp.task('cldr:extract', loadTask('cldr', 'extract'));
gulp.task('cldr:download', loadTask('cldr', 'download'));
gulp.task('cldr:gen-closure-locale', loadTask('cldr', 'closure'));
import { Component, OnInit } from '@angular/core';
import { ContributorGroup } from './contributors.model';
import { ContributorService } from './contributor.service';
import { LocationService } from 'app/shared/location.service';

@Component({
  selector: `aio-contributor-list`,
  template: `
<div class="flex-center group-buttons">
  <a *ngFor="let name of groupNames"
    [class.selected]="name == selectedGroup.name"
    class="button mat-button filter-button"
    (click)="selectGroup(name)">{ { name } }</a>
</div>
<section *ngIf="selectedGroup" class="grid-fluid">
  <div class="contributor-group">
    <aio-contributor *ngFor="let person of selectedGroup.contributors" [person]="person"></aio-contributor>
  </div>
</section>`
})
export class ContributorListComponent implements OnInit {
  private groups: ContributorGroup[];
  groupNames: string[];
  selectedGroup: ContributorGroup;

  constructor(
    private contributorService: ContributorService,
    private locationService: LocationService) { }

  ngOnInit() {
    const groupName = this.locationService.search()['group'] || '';
    // no need to unsubscribe because `contributors` completes
    this.contributorService.contributors
      .subscribe(grps => {
        this.groups = grps;
        this.groupNames = grps.map(g => g.name);
        this.selectGroup(groupName);
      });
  }
}

```

```

selectGroup(name: string) {
  name = name.toLowerCase();
  this.selectedGroup = this.groups.find(g => g.name.toLowerCase() === name) || this.groups[0];
  this.locationService.setSearch("", { group: this.selectedGroup.name });
}
}
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 */
# Produces a GraphViz Dot file from the data in the contributors.json file.
# Documentation for this syntax at https://stedolan.github.io/jq/manual
to_entries
| map(select(
  (.value.groups | index("Angular")) or
  (.value.groups | index("Collaborators"))))
| map(.value |= {
  name: .name,
  lead: (.lead // .mentor // ""),
  fillcolor: (if .groups | index("Collaborators") then "aquamarine" else "beige" end),
})
| map(
  "\(.key|tojson) [ label=\(.value.name|tojson) fillcolor=\(.value.fillcolor|tojson) style=filled ] ",
  (if .value.lead != "" then "\(.key|tojson) -> \(.value.lead|tojson)" else "" end)
)
[]
@title
@description
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```

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1.11 minizip 1.01

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1.12 font-awesome 4.7.0

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1.13 arctext 1

1.13.1 Available under license :

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```
/**
```

```
* Arctext.js
```

```
* A jQuery plugin for curved text
* http://www.codrops.com
*
* Copyright 2011, Pedro Botelho / Codrops
* Free to use under the MIT license.
*
* Date: Mon Jan 23 2012
*/
/*!
* FitText.js 1.0
*
* Copyright 2011, Dave Rupert http://daverupert.com
* Released under the WTFPL license
* http://sam.zoy.org/wtfpl/
*
* Date: Thu May 05 14:23:00 2011 -0600
*/
```

Found in path(s):

```
*/opt/cola/permits/1150274371_1617961412.76/0/arctext-master-zip/Arctext-master/js/jquery.arctext.js
```

1.14 ngx-translate-http-loader 4.0.0

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1.15 ng-bootstrap 4.2.1

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1.16 libxml 2.9.10+dfsg-5ubuntu0.20.04.5

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1.17 Ildpd 1.0.13-1

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1.18 libmicrohttpd 0.9.75

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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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contains code derived from the library, whereas the latter must be combined with the library in order to run.

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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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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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@subheading END OF TERMS AND CONDITIONS

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```
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```

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```
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@var{signature of Ty Coon}, 1 April 1989
Ty Coon, President of Vice
@end example
```

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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.)

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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.

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.

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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.

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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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(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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Otherwise, if the work is a derivative of the Library, you may distribute the object

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1.20 curl 7.81.0-1ubuntu1.14

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1.21 libwebsockets 4.0.20-2ubuntu1

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1.22 libssh 0.9.6-2ubuntu0.22.04.1

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Any executables

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1.23 json-c 0.15-3~ubuntu1.22.04.2

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1.24 nginx 1.18.0-6ubuntu14.3

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1.25 net-snmp 5.9.1+dfsg-1ubuntu2.6

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```
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Version 1.7 12 August 2012 Mark Adler */
```

Found in path(s):

```
* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/examples/gun.c
```

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```
/* unzip.h -- IO for uncompress .zip files using zlib
Version 1.1, February 14h, 2010
part of the MiniZip project - ( http://www.winimage.com/zLibDll/minizip.html )
```

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Changes

See header of unzip64.c

*/

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/contrib/minizip/unzip.h

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/* unzip.c -- IO for uncompress .zip files using zlib

Version 1.1, February 14h, 2010

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Code woven in by Terry Thorsen 1/2003.

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crypt.c (full version) by Info-ZIP. Last revised: [see crypt.h]

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Changes in unzip.c

2007-2008 - Even Rouault - Addition of cpl_unzGetCurrentFileZStreamPos
2007-2008 - Even Rouault - Decoration of symbol names unz* -> cpl_unz*
2007-2008 - Even Rouault - Remove old C style function prototypes
2007-2008 - Even Rouault - Add unzip support for ZIP64

Copyright (C) 2007-2008 Even Rouault

Oct-2009 - Mathias Svensson - Removed cpl_* from symbol names (Even Rouault added them but since this is now moved to a new project (minizip64) I renamed them again).

Oct-2009 - Mathias Svensson - Fixed problem if uncompressed size was > 4G and compressed size was <4G
should only read the compressed/uncompressed size from the Zip64 format if
the size from normal header was 0xFFFFFFFF

Oct-2009 - Mathias Svensson - Applied some bug fixes from patches received from Gilles Vollant

Oct-2009 - Mathias Svensson - Applied support to unzip files with compression method
BZIP2 (bzip2 lib is required)

Patch created by Daniel Borca

Jan-2010 - back to unzip and minizip 1.0 name scheme, with compatibility layer

Copyright (C) 1998 - 2010 Gilles Vollant, Even Rouault, Mathias Svensson

*/

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/contrib/minizip/unzip.c

No license file was found, but licenses were detected in source scan.

/* gzappend -- command to append to a gzip file

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version 1.2, 11 Oct 2012

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Mark Adler madler@alumni.caltech.edu

*/

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/examples/gzappend.c

No license file was found, but licenses were detected in source scan.

/* infcover.c -- test zlib's inflate routines with full code coverage

* Copyright (C) 2011, 2016 Mark Adler

* For conditions of distribution and use, see copyright notice in zlib.h

*/

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/test/infcover.c

No license file was found, but licenses were detected in source scan.

/* zip.h -- IO on .zip files using zlib

Version 1.1, February 14h, 2010

part of the MiniZip project - (<http://www.winimage.com/zLibDll/minizip.html>)

Copyright (C) 1998-2010 Gilles Vollant (<http://www.winimage.com/zLibDll/minizip.html>)

Modifications for Zip64 support

Copyright (C) 2009-2010 Mathias Svensson (<http://result42.com>)

For more info read MiniZip_info.txt

Condition of use and distribution are the same than zlib :

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Changes

See header of zip.h

*/

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/contrib/minizip/zip.h

No license file was found, but licenses were detected in source scan.

/* gzread.c -- zlib functions for reading gzip files

* Copyright (C) 2004, 2005, 2010, 2011, 2012, 2013, 2016 Mark Adler

* For conditions of distribution and use, see copyright notice in zlib.h

*/

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/gzread.c

No license file was found, but licenses were detected in source scan.

/*

Additional tools for Minizip

Code: Xavier Roche '2004

License: Same as ZLIB (www.gzip.org)

*/

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-

1.2.11.dfsg/contrib/minizip/mztools.h

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-

1.2.11.dfsg/contrib/minizip/mztools.c

No license file was found, but licenses were detected in source scan.

/* deflate.c -- compress data using the deflation algorithm

* Copyright (C) 1995-2017 Jean-loup Gailly and Mark Adler

* For conditions of distribution and use, see copyright notice in zlib.h

*/

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/deflate.c

No license file was found, but licenses were detected in source scan.

/* minigzip.c -- simulate gzip using the zlib compression library

* Copyright (C) 1995-2006, 2010, 2011, 2016 Jean-loup Gailly

* For conditions of distribution and use, see copyright notice in zlib.h

*/

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-

1.2.11.dfsg/test/minigzip.c

No license file was found, but licenses were detected in source scan.

/* compress.c -- compress a memory buffer

* Copyright (C) 1995-2005, 2014, 2016 Jean-loup Gailly, Mark Adler

* For conditions of distribution and use, see copyright notice in zlib.h

*/

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/compress.c

No license file was found, but licenses were detected in source scan.

/* fitblk.c: example of fitting compressed output to a specified size

Not copyrighted -- provided to the public domain

Version 1.1 25 November 2004 Mark Adler */

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-

1.2.11.dfsg/examples/fitblk.c

No license file was found, but licenses were detected in source scan.

/* inffast.c -- fast decoding

* Copyright (C) 1995-2017 Mark Adler

* For conditions of distribution and use, see copyright notice in zlib.h

*/

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/inffast.c
No license file was found, but licenses were detected in source scan.

```
/* zran.c -- example of zlib/gzip stream indexing and random access
 * Copyright (C) 2005, 2012 Mark Adler
 * For conditions of distribution and use, see copyright notice in zlib.h
 * Version 1.1 29 Sep 2012 Mark Adler */
```

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/examples/zran.c

No license file was found, but licenses were detected in source scan.

```
/* gzwrite.c -- zlib functions for writing gzip files
 * Copyright (C) 2004-2017 Mark Adler
 * For conditions of distribution and use, see copyright notice in zlib.h
 */
```

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/gzwrite.c

No license file was found, but licenses were detected in source scan.

```
/* Adler32.c -- compute the Adler-32 checksum of a data stream
 * Copyright (C) 1995-2011, 2016 Mark Adler
 * For conditions of distribution and use, see copyright notice in zlib.h
 */
```

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/adler32.c

No license file was found, but licenses were detected in source scan.

MiniZip - Copyright (c) 1998-2010 - by Gilles Vollant - version 1.1 64 bits from Mathias Svensson

Introduction

MiniZip 1.1 is built from MiniZip 1.0 by Gilles Vollant (<http://www.winimage.com/zLibDll/minizip.html>)

When adding ZIP64 support into minizip it would result into risk of breaking compatibility with minizip 1.0. All possible work was done for compatibility.

Background

When adding ZIP64 support Mathias Svensson found that Even Rouault have added ZIP64 support for unzip.c into minizip for a open source project called gdal (<http://www.gdal.org/>)

That was used as a starting point. And after that ZIP64 support was added to zip.c some refactoring and code cleanup was also done.

Changed from MiniZip 1.0 to MiniZip 1.1

- * Added ZIP64 support for unzip (by Even Rouault)
- * Added ZIP64 support for zip (by Mathias Svensson)
- * Reverted some changes that Even Rouault did.
- * Bunch of patches received from Gilles Vollant that he received for MiniZip from various users.
- * Added unzip patch for BZIP Compression method (patch created by Daniel Borca)
- * Added BZIP Compress method for zip
- * Did some refactoring and code cleanup

Credits

Gilles Vollant - Original MiniZip author
Even Rouault - ZIP64 unzip Support
Daniel Borca - BZIP Compression method support in unzip
Mathias Svensson - ZIP64 zip support
Mathias Svensson - BZIP Compression method support in zip

Resources

ZipLayout <http://result42.com/projects/ZipFileLayout>

Command line tool for Windows that shows the layout and information of the headers in a zip archive.
Used when debugging and validating the creation of zip files using MiniZip64

ZIP App Note <http://www.pkware.com/documents/casestudies/APPNOTE.TXT>
Zip File specification

Notes.

- * To be able to use BZIP compression method in zip64.c or unzip64.c the BZIP2 lib is needed and HAVE_BZIP2 need to be defined.

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Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/contrib/minizip/MiniZip64_info.txt

No license file was found, but licenses were detected in source scan.

/* gzjoin -- command to join gzip files into one gzip file

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version 1.2, 14 Aug 2012

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Mark Adler madler@alumni.caltech.edu

*/

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/examples/gzjoin.c

No license file was found, but licenses were detected in source scan.

/* infback.c -- inflate using a call-back interface

* Copyright (C) 1995-2016 Mark Adler
* For conditions of distribution and use, see copyright notice in zlib.h
*/

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/infbck.c

No license file was found, but licenses were detected in source scan.

/* zutil.c -- target dependent utility functions for the compression library

* Copyright (C) 1995-2017 Jean-loup Gailly
* For conditions of distribution and use, see copyright notice in zlib.h
*/

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/zutil.c

No license file was found, but licenses were detected in source scan.

/* gzclose.c -- zlib gzclose() function

* Copyright (C) 2004, 2010 Mark Adler
* For conditions of distribution and use, see copyright notice in zlib.h
*/

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/gzclose.c

No license file was found, but licenses were detected in source scan.

/* trees.c -- output deflated data using Huffman coding

* Copyright (C) 1995-2017 Jean-loup Gailly
* detect_data_type() function provided freely by Cosmin Truta, 2006
* For conditions of distribution and use, see copyright notice in zlib.h
*/

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/trees.c

No license file was found, but licenses were detected in source scan.

For conditions of distribution and use, see copyright notice in zlib.h

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/msdos/Makefile.dj2

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/msdos/Makefile.emx

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/old/Makefile.emx

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/old/os2/Makefile.os2

No license file was found, but licenses were detected in source scan.

```
/* inflate.c -- zlib decompression
* Copyright (C) 1995-2016 Mark Adler
* For conditions of distribution and use, see copyright notice in zlib.h
*/
```

Found in path(s):

```
* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/inflate.c
No license file was found, but licenses were detected in source scan.
```

```
/* gzlib.c -- zlib functions common to reading and writing gzip files
* Copyright (C) 2004-2017 Mark Adler
* For conditions of distribution and use, see copyright notice in zlib.h
*/
```

Found in path(s):

```
* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/gzlib.c
No license file was found, but licenses were detected in source scan.
```

ZLIB DATA COMPRESSION LIBRARY

zlib 1.2.11 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://tools.ietf.org/html/rfc1950> (zlib format), [rfc1951](http://tools.ietf.org/html/rfc1951) (deflate format) and [rfc1952](http://tools.ietf.org/html/rfc1952) (gzip format).

All functions of the compression library are documented in the file `zlib.h` (volunteer to write man pages welcome, contact zlib@gzip.org). A usage example of the library is given in the file `test/example.c` which also tests that the library is working correctly. Another example is given in the file `test/minigzip.c`. The compression library itself is composed of all source files in the root directory.

To compile all files and run the test program, follow the instructions given at the top of `Makefile.in`. In short "`./configure; make test`", and if that goes well, "`make install`" should work for most flavors of Unix. For Windows, use one of the special makefiles in `win32/` or `contrib/vstudio/`. 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://zlib.net/>. 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://zlib.net/zlib_faq.html before asking for help.

Mark Nelson <markn@ieee.org> wrote an article about zlib for the Jan. 1997 issue of Dr. Dobbs's Journal; a copy of the article is available at <http://marknelson.us/1997/01/01/zlib-engine/> .

The changes made in version 1.2.11 are documented in the file ChangeLog.

Unsupported third party contributions are provided in directory contrib/ .

zlib is available in Java using the java.util.zip package, documented at <http://java.sun.com/developer/technicalArticles/Programming/compression/> .

A Perl interface to zlib written by Paul Marquess <pmqs@cpan.org> is available at CPAN (Comprehensive Perl Archive Network) sites, including <http://search.cpan.org/~pmqs/IO-Compress-Zlib/> .

A Python interface to zlib written by A.M. Kuchling <amk@amk.ca> is available in Python 1.5 and later versions, see <http://docs.python.org/library/zlib.html> .

zlib is built into tcl: <http://wiki.tcl.tk/4610> .

An experimental package to read and write files in .zip format, written on top of zlib by Gilles Vollant <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.
- gzdopen is not supported on RISCOS or BEOS.

- For PalmOs, see <http://palmzlib.sourceforge.net/>

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

If you use the zlib library in a product, we would appreciate *not* receiving lengthy legal documents to sign. The sources are provided for free but without warranty of any kind. The library has been entirely written by Jean-loup Gailly and Mark Adler; it does not include third-party code.

If you redistribute modified sources, we would appreciate that you include in the file ChangeLog history information documenting your changes. Please read the FAQ for more information on the distribution of modified source versions.

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/README

No license file was found, but licenses were detected in source scan.

```
/* zutil.h -- internal interface and configuration of the compression library
* Copyright (C) 1995-2016 Jean-loup Gailly, Mark Adler
* For conditions of distribution and use, see copyright notice in zlib.h
*/
```

Found in path(s):

```
* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/zutil.h
```

No license file was found, but licenses were detected in source scan.

```
/* inflate.h -- internal inflate state definition
* Copyright (C) 1995-2016 Mark Adler
* For conditions of distribution and use, see copyright notice in zlib.h
*/
```

Found in path(s):

```
* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/inflate.h
```

No license file was found, but licenses were detected in source scan.

```
/*
* gzlog.c
* Copyright (C) 2004, 2008, 2012, 2016 Mark Adler, all rights reserved
* For conditions of distribution and use, see copyright notice in gzlog.h
* version 2.2, 14 Aug 2012
*/
```

Found in path(s):

```
* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/examples/gzlog.c
```

No license file was found, but licenses were detected in source scan.

```
/* zlib.h -- interface of the 'zlib' general purpose compression library
version 1.2.11, January 15th, 2017
```

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Jean-loup Gailly Mark Adler
jloup@gzip.org madler@alumni.caltech.edu

The data format used by the zlib library is described by RFCs (Request for Comments) 1950 to 1952 in the files <http://tools.ietf.org/html/rfc1950> (zlib format), rfc1951 (deflate format) and rfc1952 (gzip format).

*/

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/zlib.h
No license file was found, but licenses were detected in source scan.

/* gzguts.h -- zlib internal header definitions for gz* operations
* Copyright (C) 2004, 2005, 2010, 2011, 2012, 2013, 2016 Mark Adler
* For conditions of distribution and use, see copyright notice in zlib.h
*/

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/gzguts.h
No license file was found, but licenses were detected in source scan.

/* inftrees.c -- generate Huffman trees for efficient decoding
* Copyright (C) 1995-2017 Mark Adler
* For conditions of distribution and use, see copyright notice in zlib.h
*/

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/infrees.c
No license file was found, but licenses were detected in source scan.

/* deflate.h -- internal compression state
* Copyright (C) 1995-2016 Jean-loup Gailly
* For conditions of distribution and use, see copyright notice in zlib.h
*/

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/deflate.h
No license file was found, but licenses were detected in source scan.

/* crc32.c -- compute the CRC-32 of a data stream
* Copyright (C) 1995-2006, 2010, 2011, 2012, 2016 Mark Adler
* For conditions of distribution and use, see copyright notice in zlib.h

*
* Thanks to Rodney Brown <rbrown64@csc.com.au> for his contribution of faster
* CRC methods: exclusive-oring 32 bits of data at a time, and pre-computing
* tables for updating the shift register in one step with three exclusive-ors
* instead of four steps with four exclusive-ors. This results in about a
* factor of two increase in speed on a Power PC G4 (PPC7455) using gcc -O3.
*/

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/crc32.c

No license file was found, but licenses were detected in source scan.

/* inffast.h -- header to use inffast.c

* Copyright (C) 1995-2003, 2010 Mark Adler

* For conditions of distribution and use, see copyright notice in zlib.h

*/

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/inffast.h

No license file was found, but licenses were detected in source scan.

/* example.c -- usage example of the zlib compression library

* Copyright (C) 1995-2006, 2011, 2016 Jean-loup Gailly

* For conditions of distribution and use, see copyright notice in zlib.h

*/

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-

1.2.11.dfsg/test/example.c

No license file was found, but licenses were detected in source scan.

/* zconf.h -- configuration of the zlib compression library

* Copyright (C) 1995-2016 Jean-loup Gailly, Mark Adler

* For conditions of distribution and use, see copyright notice in zlib.h

*/

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-

1.2.11.dfsg/zconf.h.cmakein

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/zconf.h

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/zconf.h.in

No license file was found, but licenses were detected in source scan.

/* gzlog.h

Copyright (C) 2004, 2008, 2012 Mark Adler, all rights reserved

version 2.2, 14 Aug 2012

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2. Altered source versions must be plainly marked as such, and must not be misrepresented as being the original software.
3. This notice may not be removed or altered from any source distribution.

Mark Adler madler@alumni.caltech.edu

*/

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/examples/gzlog.h

No license file was found, but licenses were detected in source scan.

/* inftrees.h -- header to use inftrees.c

* Copyright (C) 1995-2005, 2010 Mark Adler

* For conditions of distribution and use, see copyright notice in zlib.h

*/

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/inftrees.h

No license file was found, but licenses were detected in source scan.

Not copyrighted -- provided to the public domain

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/examples/zlib_how.html

No license file was found, but licenses were detected in source scan.

Frequently Asked Questions about zlib

If your question is not there, please check the zlib home page

<http://zlib.net/> which may have more recent information.

The latest zlib FAQ is at http://zlib.net/zlib_faq.html

1. Is zlib Y2K-compliant?

Yes. zlib doesn't handle dates.

2. Where can I get a Windows DLL version?

The zlib sources can be compiled without change to produce a DLL. See the file win32/DLL_FAQ.txt in the zlib distribution. Pointers to the precompiled DLL are found in the zlib web site at <http://zlib.net/>.

3. Where can I get a Visual Basic interface to zlib?

See

* <http://marknelson.us/1997/01/01/zlib-engine/>

* win32/DLL_FAQ.txt in the zlib distribution

4. compress() returns Z_BUF_ERROR.

Make sure that before the call of compress(), the length of the compressed buffer is equal to the available size of the compressed buffer and not zero. For Visual

Basic, check that this parameter is passed by reference

("as any"), not by value ("as long").

5. deflate() or inflate() returns Z_BUF_ERROR.

Before making the call, make sure that avail_in and avail_out are not zero. When setting the parameter flush equal to Z_FINISH, also make sure that avail_out is big enough to allow processing all pending input. Note that a Z_BUF_ERROR is not fatal--another call to deflate() or inflate() can be made with more input or output space. A Z_BUF_ERROR may in fact be unavoidable depending on how the functions are used, since it is not possible to tell whether or not there is more output pending when strm.avail_out returns with zero. See http://zlib.net/zlib_how.html for a heavily annotated example.

6. Where's the zlib documentation (man pages, etc.)?

It's in zlib.h . Examples of zlib usage are in the files test/example.c and test/minigzip.c, with more in examples/ .

7. Why don't you use GNU

autoconf or libtool or ...?

Because we would like to keep zlib as a very small and simple package. zlib is rather portable and doesn't need much configuration.

8. I found a bug in zlib.

Most of the time, such problems are due to an incorrect usage of zlib.
Please try to reproduce the problem with a small program and send the
corresponding source to us at zlib@gzip.org . Do not send multi-megabyte
data files without prior agreement.

9. Why do I get "undefined reference to gzputc"?

If "make test" produces something like

```
example.o(.text+0x154): undefined reference to `gzputc'
```

check that you don't have old files libz.* in /usr/lib, /usr/local/lib or
/usr/X11R6/lib. Remove any old versions, then do "make install".

10. I need a Delphi interface to zlib.

See the contrib/delphi directory in the zlib distribution.

11. Can zlib handle .zip archives?

Not by itself, no. See the directory contrib/minizip in the zlib
distribution.

12.

Can zlib handle .Z files?

No, sorry. You have to spawn an uncompress or gunzip subprocess, or adapt
the code of uncompress on your own.

13. How can I make a Unix shared library?

By default a shared (and a static) library is built for Unix. So:

```
make distclean  
./configure  
make
```

14. How do I install a shared zlib library on Unix?

After the above, then:

```
make install
```

However, many flavors of Unix come with a shared zlib already installed.

Before going to the trouble of compiling a shared version of zlib and
trying to install it, you may want to check if it's already there! If you
can `#include <zlib.h>`, it's there. The `-lz` option will probably link to

it. You can check the version at the top of zlib.h or with the ZLIB_VERSION symbol defined in zlib.h .

15. I have a question about OttoPDF.

We are not the authors of OttoPDF. The real author is on the OttoPDF web site: Joel Hainley, jhainley@myndkryme.com.

16.

Can zlib decode Flate data in an Adobe PDF file?

Yes. See <http://www.pdflib.com/> . To modify PDF forms, see <http://sourceforge.net/projects/acroformtool/> .

17. Why am I getting this "register_frame_info not found" error on Solaris?

After installing zlib 1.1.4 on Solaris 2.6, running applications using zlib generates an error such as:

```
ld.so.1: rpm: fatal: relocation error: file /usr/local/lib/libz.so:
symbol __register_frame_info: referenced symbol not found
```

The symbol `__register_frame_info` is not part of zlib, it is generated by the C compiler (cc or gcc). You must recompile applications using zlib which have this problem. This problem is specific to Solaris. See <http://www.sunfreeware.com> for Solaris versions of zlib and applications using zlib.

18. Why does gzip give an error on a file I make with compress/deflate?

The compress and deflate functions produce data in the zlib format, which is different and incompatible with the gzip format. The `gz*` functions in zlib on the other hand use the gzip format. Both the zlib and gzip formats use the same compressed data format internally, but have different headers and trailers around the compressed data.

19. Ok, so why are there two different formats?

The gzip format was designed to retain the directory information about a single file, such as the name and last modification date. The zlib format on the other hand was designed for in-memory and communication channel applications, and has a much more compact header and trailer and uses a faster integrity check than gzip.

20. Well that's nice, but how do I make a gzip file in memory?

You can request that deflate write the gzip format instead of the zlib

format using `deflateInit2()`. You can also request that inflate decode the gzip format using `inflateInit2()`. Read `zlib.h` for more details.

21. Is zlib thread-safe?

Yes. However any library routines that zlib uses and any application-provided memory allocation routines must also be thread-safe. zlib's `gz*` functions use stdio library routines, and most of zlib's functions use the library memory allocation routines by default. zlib's `*Init*` functions allow for the application to provide custom memory allocation routines.

Of course, you should only operate on any given zlib or gzip stream from a single thread at a time.

22. Can I use zlib in my commercial application?

Yes. Please read the license in `zlib.h`.

23. Is zlib under the GNU license?

No. Please read the license in `zlib.h`.

24. The license says that altered source versions must be "plainly marked". So what exactly do I need to do to meet that requirement?

You need to change the `ZLIB_VERSION` and `ZLIB_VERNUM` #defines in `zlib.h`. In particular, the final version number needs to be changed to "f", and an identification string should be appended to `ZLIB_VERSION`. Version numbers `x.x.x.f` are reserved for modifications to zlib by others than the zlib maintainers. For example, if the version of the base zlib you are altering is "1.2.3.4", then in `zlib.h` you should change `ZLIB_VERNUM` to `0x123f`, and `ZLIB_VERSION` to something like "1.2.3.f-zachary-mods-v3". You can also update the version strings in `deflate.c` and `inftrees.c`.

For altered source distributions, you should also note the origin and nature of the changes in `zlib.h`, as well as in `ChangeLog` and `README`, along with the dates of the alterations. The origin should include at least your name (or your company's name), and an email address to contact for help or issues with the library.

Note that distributing a compiled zlib library along with `zlib.h` and `zconf.h` is also a source distribution, and so you should change `ZLIB_VERSION` and `ZLIB_VERNUM` and note the origin and nature of the changes in `zlib.h` as you would for a full source distribution.

25.

Will zlib work on a big-endian or little-endian architecture, and can I exchange compressed data between them?

Yes and yes.

26. Will zlib work on a 64-bit machine?

Yes. It has been tested on 64-bit machines, and has no dependence on any data types being limited to 32-bits in length. If you have any difficulties, please provide a complete problem report to zlib@gzip.org

27. Will zlib decompress data from the PKWare Data Compression Library?

No. The PKWare DCL uses a completely different compressed data format than does PKZIP and zlib. However, you can look in zlib's contrib/blast directory for a possible solution to your problem.

28. Can I access data randomly in a compressed stream?

No, not without some preparation. If when compressing you periodically use `Z_FULL_FLUSH`, carefully write all the pending data at those points, and keep an index of those locations, then you can start decompression at those points. You have to be careful to not use `Z_FULL_FLUSH` too often, since it can significantly degrade compression. Alternatively, you can scan a deflate stream once to generate an index, and then use that index for random access. See `examples/zran.c`.

29. Does zlib work on MVS, OS/390, CICS, etc.?

It has in the past, but we have not heard of any recent evidence. There were working ports of zlib 1.1.4 to MVS, but those links no longer work. If you know of recent, successful applications of zlib on these operating systems, please let us know. Thanks.

30. Is there some simpler, easier to read version of inflate I can look at to understand the deflate format?

First off, you should read RFC 1951. Second, yes. Look in zlib's contrib/puff directory.

31. Does zlib infringe on any patents?

As far as we know, no. In fact, that was originally the whole point behind zlib. Look here for some more information:

<http://www.gzip.org/#faq11>

32. Can zlib work with greater than 4 GB of data?

Yes. `inflate()` and `deflate()` will process any amount of data correctly. Each call of `inflate()` or `deflate()` is limited to input and output chunks of the maximum value that can be stored in the compiler's "unsigned int" type, but there is no limit to the number of chunks. Note however that the `strm.total_in` and `strm_total_out` counters may be limited to 4 GB. These counters are provided as a convenience and are not used internally by `inflate()` or `deflate()`. The application can easily set up its own counters updated after each call of `inflate()` or `deflate()` to count beyond 4 GB. `compress()` and `uncompress()` may be limited to 4 GB, since they operate in a single call. `gzseek()` and `gztell()` may be limited to 4 GB depending on how zlib is compiled. See the `zlibCompileFlags()` function in `zlib.h`.

The word "may" appears several times above since there is a 4 GB limit only if the compiler's "long" type is 32 bits. If the compiler's "long" type is 64 bits, then the limit is 16 exabytes.

33. Does zlib have any security vulnerabilities?

The only one that we are aware of is potentially in `gzprintf()`. If zlib is compiled to use `sprintf()` or `vsprintf()`, then there is no protection against a buffer overflow of an 8K string space (or other value as set by `gzbuffer()`), other than the caller of `gzprintf()` assuring that the output will not exceed 8K. On the other hand, if zlib is compiled to use `snprintf()` or `vsnprintf()`, which should normally be the case, then there is no vulnerability. The `./configure` script will display warnings if an insecure variation of `sprintf()` will be used by `gzprintf()`. Also the `zlibCompileFlags()` function will return information on what variant of `sprintf()` is used by `gzprintf()`.

If you don't have `snprintf()` or `vsnprintf()` and would like one, you can find a portable implementation here:

<http://www.ijs.si/software/snprintf/>

Note that you should be using the most recent version of zlib. Versions 1.1.3 and before were subject to a double-free vulnerability, and versions 1.2.1 and 1.2.2 were subject to an access exception when decompressing invalid compressed data.

34. Is there a Java version of zlib?

Probably what you want is to use zlib in Java. zlib is already included as part of the Java SDK in the `java.util.zip` package. If you really want a version of zlib written in the Java language, look on the zlib home

page for links: <http://zlib.net/> .

35. I get this or that compiler or source-code scanner warning when I crank it up to maximally-pedantic. Can't you guys write proper code?

Many years ago, we gave up attempting to avoid warnings on every compiler in the universe. It just got to be a waste of time, and some compilers were downright silly as well as contradicted each other. So now, we simply make sure that the code always works.

36. Valgrind (or some similar memory access checker) says that deflate is performing a conditional jump that depends on an uninitialized value. Isn't that a bug?

No. That is intentional for performance reasons, and the output of deflate is not affected. This only started showing up recently since zlib 1.2.x uses malloc() by default for allocations, whereas earlier versions used calloc(), which zeros out the allocated memory. Even though the code was correct, versions 1.2.4 and later was changed to not stimulate these checkers.

37. Will zlib read the (insert any ancient or arcane format here) compressed data format?

Probably not. Look in the comp.compression FAQ for pointers to various formats and associated software.

38. How can I encrypt/decrypt zip files with zlib?

zlib doesn't support encryption. The original PKZIP encryption is very weak and can be broken with freely available programs. To get strong encryption, use GnuPG, <http://www.gnupg.org/> , which already includes zlib compression. For PKZIP compatible "encryption", look at <http://www.info-zip.org/>

39. What's the difference between the "gzip" and "deflate" HTTP 1.1 encodings?

"gzip" is the gzip format, and "deflate" is the zlib format. They should probably have called the second one "zlib" instead to avoid confusion with the raw deflate compressed data format. While the HTTP 1.1 RFC 2616 correctly points to the zlib specification in RFC 1950 for the "deflate" transfer encoding, there have been reports of servers and browsers that incorrectly produce or expect raw deflate data per the deflate specification in RFC 1951, most notably Microsoft. So even though the "deflate" transfer encoding using the zlib format would be the more efficient approach (and in fact exactly what the zlib format was designed

for), using the "gzip" transfer encoding is probably more reliable due to an unfortunate choice of name on the part of the HTTP 1.1 authors.

Bottom line: use the gzip format for HTTP 1.1 encoding.

40. Does zlib support the new "Deflate64" format introduced by PKWare?

No. PKWare has apparently decided to keep that format proprietary, since they have not documented it as they have previous compression formats. In any case, the compression improvements are so modest compared to other more modern approaches, that it's not worth the effort to implement.

41. I'm having a problem with the zip functions in zlib, can you help?

There are no zip functions in zlib. You are probably using minizip by Giles Vollant, which is found in the contrib directory of zlib. It is not part of zlib. In fact none of the stuff in contrib is part of zlib. The files in there are not supported by the zlib authors. You need to contact the authors of the respective contribution for help.

42. The match.asm code in contrib is under the GNU General Public License.

Since it's part of zlib, doesn't that mean that all of zlib falls under the GNU GPL?

No. The files in contrib are not part of zlib. They were contributed by other authors and are provided as a convenience to the user within the zlib distribution. Each item in contrib has its own license.

43. Is zlib subject to export controls? What is its ECCN?

zlib is not subject to export controls, and so is classified as EAR99.

44. Can you please sign these lengthy legal documents and fax them back to us so that we can use your software in our product?

No. Go away. Shoo.

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/FAQ

No license file was found, but licenses were detected in source scan.

/* uncompr.c -- decompress a memory buffer

* Copyright (C) 1995-2003, 2010, 2014, 2016 Jean-loup Gailly, Mark Adler

* For conditions of distribution and use, see copyright notice in zlib.h

*/

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/uncompr.c

No license file was found, but licenses were detected in source scan.

```
/* zpipe.c: example of proper use of zlib's inflate() and deflate()
```

```
Not copyrighted -- provided to the public domain
```

```
Version 1.4 11 December 2005 Mark Adler */
```

Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-

1.2.11.dfsg/examples/zpipe.c

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Found in path(s):

* /opt/cola/permits/1830570323_1698131486.185393/0/zlib-1-2-11-dfsg-orig-2-tar-gz/zlib-1.2.11.dfsg/zlib.3

1.27 openssl 3.0.2-0ubuntu1.18

1.27.1 Available under license :

Format: <https://www.debian.org/doc/packaging-manuals/copyright-format/1.0/>

Upstream-Name: OpenSSL

Source: <https://www.openssl.org>

Files: *

Copyright: 1995-2020, The OpenSSL Project Authors

1995-1998, Eric A. Young, Tim J. Hudson

2004-2014 Akamai Technologies.

2008 Andy Polyakov <appro@openssl.org>

2017 BaishanCloud.

2015 CloudFlare Inc.

2014-2016 Cryptography Research Inc.

2012-2014 Daniel J. Bernstein

2004 EdelKey Project.

2011 Google Inc.

2018-2019 IBM Corp.

2012,2014 Intel Corporation.

2012-2016 Jean-Philippe Aumasson

2007 KISA(Korea Information Security Agency).

2004 Kungliga Tekniska Hgskolan

2017 National Security Research Institute.

2006 Network Resonance Inc.

2005,2007-2020 Nokia

2006 NTT (Nippon Telegraph and Telephone Corporation)

2002,2017-2020 Oracle and/or its affiliates.

1995 Patrick Powell

2019 Red Hat Inc.

2017 Ribose Inc.

2004,2018 Richard Levitte <richard@levitte.org>

2011

RTFM Inc.

2012 Samuel Neves <sneves@dei.uc.pt>

2015-2020 Siemens AG

2002 The OpenTSA Project.

2013-2014 Timo Teras <timo.teras@gmail.com>

2016 Viktor Dukhovni <openssl-users@dukhovni.org>.

2016 VMS Software Inc.

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.

On Debian systems, the complete text of the Apache 2.0 License can be found in ``/usr/share/common-licenses/Apache-2.0'`

Files: debian/*

Copyright: Christoph Martin, Kurt Roeckx, Sebastian Andrzej Siewior

License: Apache-2.0

Files: external/perl/Text-Template-1.56/*

Copyright: 2013, Mark Jason Dominus <mjd@cpan.org>.

License: Artistic or GPL-1+

License: Artistic

This program is free software; you can redistribute it and/or modify it under the terms of the Artistic License, which comes with Perl.

.

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