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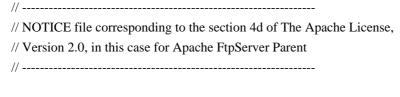
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## 1.7 slf4j-api 1.7.24

## 1.8 reflections 0.9.10

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## 1.11 gson 2.8.0

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# 1.12 spring-boot-starter-jetty 1.5.2.RELEASE

# 1.13 spring-boot-starter-data-jpa

## 1.5.2.RELEASE

## 1.14 libpcap 1.5.3 December 18, 2013

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# 1.15 ngx-charter 0.0.7

## 1.16 core-js 2.5.7

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## 1.17 postgresql-client-common 42.1.4

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Written by: Philip Hazel Email local part: ph10 Email domain: cam.ac.uk

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Version 1.1

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## 1.27 sax 2.0.1

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// http://www.saxproject.org
// Written by David Megginson
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// \$Id: Parser.java,v 1.2 2002/02/27 16:04:17 dims Exp \$

1.28 angular 1.5.9

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## 1.29 commons-io 2.5

## 1.29.1 Available under license:

```
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="utf-8">
<meta http-equiv="X-UA-Compatible" content="IE=edge">
<meta name="viewport" content="width=device-width, initial-scale=1">
<meta name="description" content="Home page of The Apache Software Foundation">
rel="apple-touch-icon" sizes="57x57" href="/favicons/apple-touch-icon-57x57.png">
k rel="apple-touch-icon" sizes="60x60" href="/favicons/apple-touch-icon-60x60.png">
k rel="apple-touch-icon" sizes="72x72" href="/favicons/apple-touch-icon-72x72.png">
k rel="apple-touch-icon" sizes="76x76" href="/favicons/apple-touch-icon-76x76.png">
rel="apple-touch-icon" sizes="114x114" href="/favicons/apple-touch-icon-114x114.png">
k rel="apple-touch-icon" sizes="120x120" href="/favicons/apple-touch-icon-120x120.png">
< link rel="apple-touch-icon" sizes="144x144" href="/favicons/apple-touch-icon-144x144.png">
rel="apple-touch-icon" sizes="152x152" href="/favicons/apple-touch-icon-152x152.png">
k rel="apple-touch-icon" sizes="180x180" href="/favicons/apple-touch-icon-180x180.png">
k rel="icon" type="image/png" href="/favicons/favicon-32x32.png" sizes="32x32">
k rel="icon" type="image/png" href="/favicons/favicon-194x194.png" sizes="194x194">
<link rel="icon" type="image/png" href="/favicons/favicon-96x96.png" sizes="96x96">
link rel="icon" type="image/png" href="/favicons/android-chrome-192x192.png" sizes="192x192">
k rel="icon" type="image/png" href="/favicons/favicon-16x16.png" sizes="16x16">
<link rel="manifest" href="/favicons/manifest.json">
<link rel="shortcut icon" href="/favicons/favicon.ico">
<meta name="msapplication-TileColor" content="#603cba">
<meta name="msapplication-TileImage" content="/favicons/mstile-144x144.png">
<meta name="msapplication-config" content="/favicons/browserconfig.xml">
```

```
<meta name="theme-color" content="#303284">

<title>Apache License, Version 2.0</title>
link href='https://fonts.googleapis.com/css?family=Source+Sans+Pro:400,700%7cDroid+Serif:400,700'
rel='stylesheet' type='text/css'>
link href="/css/min.bootstrap.css" rel="stylesheet">
link href="/css/styles.css" rel="stylesheet">
```

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```
</head>
<body>
<!-- Navigation -->
<header>
<nav class="navbar navbar-default navbar-fixed-top">
 <div class="container">
  <div class="navbar-header">
   <button class="navbar-toggle" type="button" data-toggle="collapse" data-target="#mainnav-collapse">
    <span class="sr-only">Toggle navigation</span>
    <span class="icon-bar"></span>
    <span class="icon-bar"></span>
    <span class="icon-bar"></span>
   </button>
   <a href="#" class="navbar-brand"><span class="glyphicon glyphicon-home"></span></a>
  </div>
  <div class="collapse navbar-collapse" id="mainnav-collapse">
   <div style="line-height:20px; padding-top:5px; float:left"><a href="/">Home</a>&nbsp;&raquo&nbsp;<a</pre>
href="/licenses/">Licenses</a></div>
   cli class="dropdown">
    <a href="#" class="dropdown-toggle" data-toggle="dropdown">About <span class="caret"></span></a>
    <a href="/foundation">Overview</a>
    <a href="/foundation/members.html">Members</a>
    <a href="/foundation/how-it-works.html">Process</a>
    <a href="/foundation/sponsorship.html">Sponsorship</a>
    <a href="/foundation/glossary.html">Glossary</a>
    <a href="/foundation/preFAQ.html">FAQ</a>
    <a href="/foundation/contact.html">Contact</a>
```

```
<a href="/index.html#projects-list">Projects</a>
  class="dropdown">
    <a href="#" class="dropdown-toggle" data-toggle="dropdown">People <span class="caret"></span></a>
     <a href="http://people.apache.org/">Overview</a>
   <a href="http://people.apache.org/committer-index.html">Committers</a>
   <a href="/foundation/how-it-works.html#meritocracy">Meritocracy</a>
   <a href="/foundation/how-it-works.html#roles">Roles</a>
   <a href="http://planet.apache.org/">Planet Apache</a>
    cli class="dropdown">
     <a href="#" class="dropdown-toggle" data-toggle="dropdown">Get Involved <span
class="caret"></span></a>
     <a href="/foundation/getinvolved.html">Overview</a>
    <a href="http://community.apache.org/">Community Development</a>
         <a href="http://helpwanted.apache.org/">Help Wanted</a>
    <a href="http://www.apachecon.com/">ApacheCon</a>
     <a href="/dyn/closer.cgi">Download</a>
    cli class="dropdown">
    <a href="#" class="dropdown-toggle" data-toggle="dropdown">Support Apache <span
class="caret"></span></a>
    <a href="/foundation/sponsorship.html">Sponsorship</a>
    <a href="/foundation/contributing.html">Donations</a>
    <a href="/foundation/buy_stuff.html">Buy Stuff</a>
    <a href="/foundation/thanks.html">Thanks</a>
    </div>
 </div>
</nav>
</header>
<!-- / Navigation -->
<div class="container">
<div class="row">
 <div class="col-md-9 col-sm-8 col-xs-12">
  <img src="/img/asf_logo.png" alt="Apache Logo" style="max-width: 100%;">
 <a href="http://apache.org/foundation/contributing.html" title="Support Apache" style="margin-left: 150px;">
 <img src="/images/SupportApache-small.png" style="height: 150px; width: 150px;">
 </a>
 </div>
```

```
<div class="col-md-3 col-sm-4 col-xs-12">
   <div class="input-group" style="margin-bottom: 5px;">
  <script>
(function() {
 var\ cx = '005703438322411770421:5mgshgrgx2u';
 var gcse = document.createElement('script');
 gcse.type = 'text/javascript';
 gcse.async = true;
 gcse.src = (document.location.protocol == 'https:' ? 'https:' : 'http:') +
    '//cse.google.com/cse.js?cx=' + cx;
 var s = document.getElementsByTagName('script')[0];
 s.parentNode.insertBefore(gcse, s);
})();
</script>
  <gcse:searchbox-only></gcse:searchbox-only>
 </div>
 <a role="button" class="btn btn-block btn-default btn-xs" href="/foundation/governance/">The Apache Way</a>
 <a role="button" class="btn btn-block btn-default btn-xs"
href="https://community.apache.org/contributors/">Contribute</a>
 <a role="button" class="btn btn-block btn-default btn-xs" href="/foundation/thanks.html">ASF Sponsors</a>
 </div>
</div>
</div>
<div class="container"><style type="text/css">
/* The following code is added by mdx_elementid.py
 It was originally lifted from http://subversion.apache.org/style/site.css */
* Hide class="elementid-permalink", except when an enclosing heading
* has the :hover property.
.headerlink, .elementid-permalink {
visibility: hidden;
h2:hover > .headerlink, h3:hover > .headerlink, h1:hover > .headerlink, h6:hover > .headerlink, h4:hover >
.headerlink, h5:hover > .headerlink, dt:hover > .elementid-permalink { visibility: visible }</style>
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  <a href="http://community.apache.org/gsoc.html">Summer of Code</a>
  <a href="http://community.apache.org/newcomers/">Getting Started</a>
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 <a href="/foundation/contact.html">Contacts</a>
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<!-- / Footer -->
<script src="/js/jquery-2.1.1.min.js"></script>
<script src="/js/bootstrap.js"></script>
</body>
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## 1.30 commons-codec 1.9

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var dist = require('minimist')(process.argv).dist;
var license = require('minimist')(process.argv).license;
function addLicenseToFile (license, destination) {
if (!license) {
 throw new Error('license path is required as 1st argument');
}
addLicenseTextToFile(fs.readFileSync(license).toString(), destination);
}
function addLicenseTextToFile(licenseText, destination) {
if (!destination) {
 throw new Error('destination file path is required as 2nd argument');
fs.writeFileSync(destination, \'/**
@license
${licenseText}
**/
```

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## 1.39 angular 7.1.1

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**PNG** 

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Qm*"YIeJ Q]7U16qc
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Da?4C^x< xp_+ -
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dR^mbX \{x; /=Xw[\$8DVCE\}\}
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+GJ\{e^M!TsC@1Rk_aB(FQ5QTbUE(FQ5QTbUh(
A`.oIENDB`
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 ||</pre>
noPicture)+')'">
        <div class="contributor-info">
           <a *ngIf="person.bio" md-button>
             View Bio
           </a>
           <a *ngIf="person.twitter" md-button class="icon"
             href="https://twitter.com/{{person.twitter}}" target="_blank" (click)="$event.stopPropagation()">
             <span class="fa fa-twitter fa-2x"></span>
           </a>
           <a *ngIf="person.website" md-button class="icon"
             href="{{person.website}}" target="_blank" (click)="$event.stopPropagation()">
             <span class="fa fa-link fa-2x"></span>
           </a>
        </div>
      </div>
    </div>
    <div class="card-back" *ngIf="person.isFlipped" (click)="flipCard(person)">
      <h3>{{person.name}}</h3>
      {{person.bio}}
    </div>
 </div>
export class ContributorComponent {
@Input() person: Contributor;
noPicture = '_no-one.png';
pictureBase = CONTENT_URL_PREFIX + 'images/bios/';
flipCard(person) {
 person.isFlipped = !person.isFlipped;
```

```
}
export class ContributorGroup {
name: string;
order: number;
contributors: Contributor[];
}
export class Contributor {
group: string;
name: string;
picture?: string;
website?: string;
twitter?: string;
bio?: string;
isFlipped? = false;
"misko": {
 "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.",
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},
"igor": {
 "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).",
  "group": "Angular"
},
"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. She supports Angular's internal Google users
and solves hard-to-define problems. She's been at Google since 2006, as a technical program manager on projects
```

```
ranging from Accessibility to Google Transit. She fights daleks in her spare time.",
 "group": "Angular"
},
"brad": {
 "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.",
  "group": "Angular"
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"juleskremer": {
 "name": "Jules Kremer",
 "picture": "juleskremer.jpg",
 "twitter": "jules kremer",
 "website": "https://plus.google.com/+JulesKremer",
 "bio": "Jules is Head of Angular Developer Relations at Google. When not working with developers, Jules is
often bending into pretzel-like shapes, creating paths through thick jungle with a machete or drinking really
awesome beer.",
 "group": "Angular"
},
"jelbourn": {
 "name": "Jeremy Elbourn",
 "picture": "jelbourn.jpg",
 "twitter": "jelbourn",
  "website": "https://plus.google.com/+JeremyElbourn/",
 "bio": "Angular Material Team Lead. FE Engineer @ Google specializing in AngularJS, component design, and
the cleanest of code.",
  "group": "Angular"
},
"pete": {
 "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.",
  "group": "Angular"
},
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 "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.",
  "group": "Angular"
},
"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.",
  "group": "Angular"
},
"tobias": {
 "name": "Tobias Bosch",
 "picture": "tobias.jpg",
 "twitter": "tbosch1009",
 "website": "https://plus.google.com/+TobiasBosch",
 "bio": "Tobias Bosch is a software engineer at Google. He is part of the Angular core team and works on
Angular.",
 "group": "Angular"
},
"rado": {
 "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).",
  "group": "Angular"
}.
"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."

```
which detects common Java programming mistakes and reports them as compile errors.",
 "group": "Angular"
},
"martinprobst": {
 "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.",
 "group": "Angular"
},
"julieralph": {
 "name": "Julie Ralph",
 "picture": "julie-ralph.jpg",
 "twitter": "SomeJulie",
 "website": "https://plus.google.com/+JulieRalph",
 "bio": "Julie Ralph works as a Software Engineer in Test at Google in Seattle and is the lead developer on the
Angular end-to-end testing framework Protractor.",
 "group": "Angular"
},
"alexrickabaugh": {
 "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.",
 "group": "Angular"
},
"matias": {
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"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

"name": "Matias Niemela",
"picture": "matias.jpg",
"twitter": "yearofmoo",

```
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.",
```

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"group": "Angular"
},
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 "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.",
 "group": "Angular"
},
"kara": {
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 "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.",
 "group": "Angular"
},
"chuckj": {
 "name": "Chuck Jazdzewski",
 "picture": "chuckj.jpg",
 "twitter": "chuckjaz",
 "website": "http://removingalldoubt.com",
 "bio": "Chuck is a Software Engineer on the Angular team at Google. He is a programming language geek, UI
framework and component library veteran, and has a passion for simplifying the task of programming. Before
Google, he worked at Microsoft and Borland.",
  "group": "Angular"
},
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 "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.",
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 "twitter": "angularjs",
 "website": "http://google-opensource.blogspot.com/",
 "bio": "Max Sills is Angular's Open Source lawyer.",
 "group": "Angular"
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"pawel": {
 "name": "Pawel Kozlowski",
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 "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.",
 "group": "Angular"
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"paulgschwendtner": {
 "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.",
 "group": "Angular"
},
"elad": {
 "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.",
 "group": "Angular"
},
"marclaval": {
 "name": "Marc Laval",
 "picture": "marclaval.jpg",
 "twitter": "marclaval",
 "website": "https://github.com/mlaval",
 "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.",
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 "website": "https://github.com/wardbell",
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 "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.",
 "group": "Angular"
},
"martinstaffa": {
 "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.".
 "group": "Angular"
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"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.",
 "group": "Angular"
},
"andrewseguin": {
 "name": "Andrew Seguin",
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 "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.",
  "group": "Angular"
},
"jesusrodriguez": {
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 "picture": "jesus-rodriguez.jpg",
 "twitter": "foxandxss",
 "website": "http://angular-tips.com",
 "bio": "Jesus is an open source lover, a book author and editor, and AngularUI lead developer. He is currently a
core contributor to the UI Bootstrap project.",
 "group": "Angular"
},
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 "name": "Kristiyan Kostadinov",
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 "website": "http://crisbeto.com/",
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Material.",
 "group": "Angular"
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"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?)",
  "group": "Angular"
},
"mmalerba": {
 "name": "Miles Malerba",
 "picture": "mmalerba.jpg",
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eating food and ogling cute puppies.",
 "group": "Angular"
},
"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.).",
 "group": "Angular"
}.
"jeffwhelpley": {
 "name": "Jeff Whelpley",
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"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.",
 "group": "GDE"
},
"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.",
 "group": "GDE"
},
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 "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",
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"alyssa": {
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 "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.",
 "group": "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.",
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 "twitter": "manekinekko",
 "website": "https://medium.com/@wassimchegham",
 "bio": "Wassim (aka manekinekko 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.",
 "group": "GDE"
},
"chrisnoring": {
 "name": "Christoffer Noring",
 "picture": "chrisnoring.jpg",
 "twitter": "chris_noring",
 "website": "softchris.github.io",
  "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",
 "group": "GDE"
},
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 "name": "Jorge Cano",
 "picture": "jorgeucano.jpg",
  "twitter": "jorgeucano",
 "website": "https://medium.com/@jorgeucano",
 "bio": "Jorge is a Full Stack Developer in ByteDefault, a professor for several courses related to JavaScript, a
speaker, and an author of technical articles and the book \"Entendiendo Angular.\" He is a Google Developer Expert
in web technologies (nominated by Google) and a NativeScript Developer Expert (nominated by Telerik).",
 "group": "GDE"
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"toddmotto": {
 "name": "Todd Motto",
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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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 "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.",
 "group": "Angular"
},
"mikebrocchi": {
 "name": "Mike Brocchi",
 "picture": "mike-brocchi.jpg",
 "twitter": "brocco".
 "bio": "Mike is a core team member of the Angular CLI team, a GDE and is also an instructor at egghead. Mike is
passionate about helping others by writing code as well as teaching.",
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 "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.",
 "group": "GDE"
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"maximsalnikov": {
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 "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.",
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 "name": "Jeremy Wilken",
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 "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.",
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 "bio": "Software engineer who enjoys theoretical computer science and its practical applications. Author of the
books 'Switching to Angular 2' and 'Getting Started with Angular', speaker and blogger. Working on tooling for
Angular and TypeScript.",
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"uri": {
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 "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.",
 "group": "GDE"
},
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 "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",
  "group": "GDE"
},
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 "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.",
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 "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.",
 "group": "GDE"
},
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 "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.",
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 "bio": "Ciro is the Lead Front-end Engineer of CrossEngage and Google Developer Expert in Web Technologies.",
 "group": "GDE"
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 "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.",
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 "bio": "Developer. Hacker. Community backer. Author and blogger. Console logger.",
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  "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'.",
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 "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
also the organizer of the largest JavaScript group in Israel and a professional Improv performer.",
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 "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",
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 "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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  "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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  "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.",
  "group": "GDE"
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  "website": "https://developers.google.com/experts/people/vinci-rufus",
 "bio": "Director of Experience Technology at SapientRazorfish. 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 ",
  "group": "GDE"
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 "group": "GDE"
}.
"gerardsans": {
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"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.", "group": "GDE" }, "amcdnl": { "name": "Austin McDaniel", "picture": "amcdnl.jpeg", "twitter": "amcdnl", "website": "https://amcdnl.com", "bio": "Austin is an software architect with a passion for JavaScript and Angular. Austin loves to share his experiences with other like-minded developers by giving talks, blogging, podcasting and open-sourcing.", "group": "Angular" }, "nirkaufman": { "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'.", "group": "GDE" }, "achautard": { "name": "Alain Chautard", "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'", "group": "GDE" }, "coryrylan": { "name": "Cory Rylan", "picture": "cory-rylan.jpg",

"bio": "Cory is a full time front end web developer. He works full time building responsive web applications and

"twitter": "coryrylan",

"website": "https://coryrylan.com",

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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},
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 "website": "https://mhartington.io",
 "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.",
 "group": "GDE"
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"juristr": {
 "name": "Juri Strumpflohner",
 "picture": "juristr.jpg",
 "twitter": "juristr",
 "website": "https://juristr.com",
 "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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 "bio": "Mashhood is the principal technical consultant at Recurship and a Google Developer Expert. He works
with different startups in US and EU to helps 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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"bio": "Kim is 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,

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workshops, and open source.",
  "group": "GDE"
},
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 "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.",
 "group": "Angular"
},
"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.",
  "group": "GDE"
},
"sajee": {
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 "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.",
 "group": "GDE"
},
"lacolaco": {
 "name": "Suguru Inatomi",
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 "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 Japanese.",
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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.",
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    "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.",
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G6ZuZ)\&p`T!||vG\backslash Hv@@X\{A'X=JcQk7\\&`n^nzT\ B\&h4uM\ \&=`DppTFkZT9qNJTfdl8oQ
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[QH@"@(=A(\$^! z>ttNM93 Z766Q'(aocLY\{vz\$(Ds8Dj-7cP'BTyo~ttkvzznrr
im!^{-}..\{h < Ms1AQtL\$8n > Wn > |k9@i| 7gaapBxjZym = ??OmuEswtKi[?N,zfwF!Z9^9\_TIIhe = [wn.4Ixqc+f] | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
o#045cH2eAw/k$sHYa-.+++;K$CI}
F+PDB\%YROL:Kb[Xy]PqR.//wP4C0<UWGeK'PyM%e{{;^BofjY}}
sEQAC\xEzuzE[kqrsa]
wUwg@L81|=h#(5P)
CEj>kBo5q-Zo7SQ[,+zuz@S(~"GKQ"s
yN
6\#ij*ZA\B[iI $A5e\{f'vs!\}
RuD(S91UTDO9{a-3QFG=O~$8'G*q9
OzT`YZ9rkhky.Z@vx+^P
!T
"g>Vn;j
#nmm4u&%W@@!~6j wUcL]#T@RwCO(=fe,25}:9wz2$Yq.<5sk@aUY
XKeD Sg![\_JD^{\}]>`SSS\_\sim 9\_S+`cC=O"\setminus \{ss@hD\&(0)< giCaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{D-CaK/REjscU[b\{CaK/REjscU[b\{CaK/REjscU[b\{CaK/REjscU[b\{CaK/REjscU[b\{CaK/REjscU[b\{CaK/REjscU[b\{CaK/REjscU[b\{CaK/REjscU[b\{CaK/REjscU[b\{CaK/REjscU[b\{CaK/REjscU[b\{CaK/REjscU[b]A]AK(b]A]A]A]A]A]A]A]A]A})
X(8/5sH9ENt'')O\{wp8!LwN@W/SJ\}R43=\sim\}*9^{_5uLV}=)EXhR4h4+xh4)\\u@d\#sqaa0a\{6xhRC^.D\#IvQQ\}=0
{q*Z AK}s \_MA
1YfGB[T&
_:oG/g(F0mm>>>~~$Dp59N3A|4))CE: 4<(,ahB_GKw4p}T,:2jVi>pV[B" aD49ILsKQB-EI"_mr/
```

```
nnnlagIAUIZOQRvAI;L
m)RRi)fE>!Lf @j!CfLiAZ
mBP~dE,ObIq:HuM^\Ha`DiY$esH}$m:,c#?7xUav RjU6w~&oZHI#jd"= !p$Iq
[b\Qsu\%][$fnwm)))0d8:g\&"15)\fnN5Zb\&^{(UlKORr:=Q2e4eFL)}
,Y'O&TDvL~h+ggfJ
`}D4b5)wfP1uN"IM-U32W[nC]4))fkko_W)+oFE'KE
6Q\sim\&EB0cx\sim=Y\cZcGh\{IpiV+v\};y'!2wr\%nM
ER#B~3RC
xr9SO]B)kq&(q#g$`J.Zw^+H
J$F<)65:]R@
:J+R
] MM -3RP+|`RW5bfK$kPe2Kd&37DK8gw8V["kw s\H#J-&VHrMaRr1<>&hU1 5e.
fh%1AhPU7c@V<FLY'[tDH<7
m[Xq? \_-vZyyj4)'==yFx=szw\sim k/\_
umR4MFIh4)
MFh4vCaIENDB`
PNG
IHDRpw<ogZIDATx [B@p+j(D!
Q@(D!
\label{eq:h9@} $$ h9@] | 4vmmjke5g\dL5{|nKW.??;w<G_/M0i\%0`zLDTM@dr0xV!qKJ0{D|d?^>jg.[7q=H@7xeXS]} } $$
KxR:uB Dez#89|c?,J{?n7,x@bSD{}?z6@3b~?,:O0>};}W]$ TIz*~;3v>#CnhAI6;:!?1&b~c2
hIv0-6OK;gB(W.H,-;;o03F,zt)OPH7bn_0dvDb3xRD|#aGtD$,{h.}.PHE1c8|"&uL1.EF!WpH$Pj8s/4yfu"
Jw@!PHB'3ZQ;0?voQ$ tm-t\b? '=8
a{Yt@!PH.'~gV#mx7YkWC<656
2y0\3}RS@!$bL:5~L!Nin*lv}q:
D!^21#ubFz2J<q'wG"7DDxNf6Gpj3&5aB@Uq1<!FXT
T}v
M6<WQO@.@:&!iN #kE(r#C
Dh[m=E[P12KB2/q]/:xM&N[[
BN]So<1T8w}<7 02} &4GkG {UR#Zz!B(Wj9hc$PRKyy3v0O&F}?R(F G&o@uw !EQHTt*2XMf4dzp
iRK]E^{0}M7GR0y2|:@BX\?&;X.rG8$I($~q3H*b[1\@M'eQS]be"`6HUzcCyI($RY8(mq0u\&(a5mz))|
da0%S^hD@!PH~CgSR!41*1#}yTlB6]{0Z~-%gI( ^BDfz1DP8-.8;i3rpH#}q1`8E\J7)U%P}bKC+"2?|
fmo7(s<0DgycKqA_1r\sim+^(S{Yo,ZRSz}Ji<@D@!PH3o>
L@&5>QPQA?vM7w
0#uYb\JY6E]n 80vZ]Z(BItEc(P%XBiud{hf")nlL t9L[5BEj~~25ymVt%@fiu.
5dLV{VaA=5ap:SiMd'4w!P5`Ks"uVMP%a\AF/3OC(2<7ipG:)Fa3x @:QN
9%$BpaAds0dn}xd^^%0Xp*m/^<$BpA]GT$mUN/Zbb[i?4$P."^(().S_8Z&(W.%P;x,9T`!QF]Dc(-'Q
Kh0zwV;Er"Q>egi2_qAJ(gpB
<{&."dkW&
Dm"w \]T
B[_wgXP:,9}'hyzxzT
B ;P$qCp+$;:w%
#*$\^*A@!1__xp7J5OE=i}bta',"0y1H@D}}t)az'T9Yekiwz<lq$BpR$(;$WZ*+/~X42[P tOCk Y(C^an
$tzogwM]UPe3mEnXx@! OD\c^MZEkY[pWX`}xmIg
```

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^gw$eDUkZV;af=QF{/@o~:,53_dza8;wvUi@! wy-]G0wIkYHd7bS?K(m1>(8d"u~0RKCq@xxN0%
|mSb$d4T\}+G.;w@ < vAB5,lv(
I8rw"]-x
X" YPv7Bc
I|2\gt{HXY2}) \sim vFez\_=PHuvZ!Cz5t\sim vvB\%tg(\$40\_k59kjZYFGs7]9[4aPw]
_>!c f\ZkrEHgYu[$P\vyay['
Xm[LZ^{5} B(n\%zNl]+!!Lf,
7e\&\/_{3X.X}7wB\aW="7lmPZW@b';\#b
ux--QhoGq^3E@oD[.^P]BsQEpe6i5[[\sim pHBg5E-JXiSN]tcG
JI,%9}I\&: 0^ta+, E@qMKW,z,<40%otO;Hx\df-Z
6n<Ee+xxU_3.:(gsa#[K94t_
PQ<DYo|K@i*v|rYdgm"3^"P~L-qoI9RP]z@>F/oKTN4!JA~RSgO
o?D`qyK/9Zu@!PSw95G0eEtRPLFez
u03!rhq
%M(
L[ce5oCk:dY.4kQE-8@!PB4~r%At Y(W!$xU\;^(WFR;l4'DUA;,kb/r'B>[$A_NhB+X[
EM>&egEEc^N9.PTVF<y3dY.6,kQs[]#PT&3TnG,;;9ZTiq%$P;ur?)hB?Dk_@Qu(6?&xSWJxnc}UXEB(na]v4M)
m|NL-=\Z{*S;#0@!PT}|Y]o$OP-kk6gxp O};:@Otc}?S;e/XsCk'EkvQX&WDCoC`S(v?a4q4;9U2'k("|K\ A:v@-
A^R[ecKa] < +P'mNkF@Sf2?1# < +NidB)
1"ILcR)*uXx/@!PT%Z#^6OCu}A(_IkV
BHEUH%Pp
rKdXj+/\$5^h;SB|X[
h5/ElX pL5]uveD!iN Z}0W1
2*/%C(EJ(O6&8b"lWM]6SKee@d?)jKK1([wn!cDKAM.Ctq)0B`<DXH?5FHr|$PpH'(_`Fm
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Lp&n5"0g*,CE%Pr'Dex!Qn4a @_AH0bQC?E[f}/p)uW{}y8~?rhi:#G_*PT\3o>fK!h/sfNTK=/N|2>jl7
~00xWow5xfo(]w:bnrA K; t4ucPdnR8T=#"lps2.7msY
K0.+7:ye&YdxRvncH 0.`]|6`oKY6M2[C?|K
P;LX:C`Q`cQ:IXGbC
PbY : 74z>6YZ q@x9]5,p
%6s&{@X}b<ELb5?'}doPt,:O
vCF:fXbYD0?{ ^-1b-3
-f6L2333c8g8133NY{':"T} C|zU~U*9v ^h;<>1E~G$
Ao?F:1Q&Ctwd<TSu M>X^OyLCV!Q(d;0KB`?u_],STxFr'8D"}i >s9$Z#1{"d?.N$
3V$\q!Cp9(AIM\|DA{m9.d%04%8GzdGC-$O]}qF)kwG#8J)dMmYZ"3,v%(%|\);J'Q(v/=F4(2
~^1`u#`"[=:
:L<
Q(Q\sim \{1fY*wREuZbm.1\{v\%Ug.g]yB<
BZi:$ ~! aI IuV1>E=pHN
HaQ2]SEDgmVv,oHRPk!OeY(`$+/n)c;a/d:%Yk&+ #b%&(1@
Q(h|"jz;uUF#7":\&.<MV3V"26Qn^i1\_j#,?ilaom\&ipucm>I)6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+()+1)]26Qn^i1\_j#,?ilaom&ipucm>I)6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+()+1)]26Qn^i1\_j#,?ilaom&ipucm>I)6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+()+1)]26Qn^i1\_j#,?ilaom&ipucm>I)6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+()+1)]26Qn^i1\_j#,?ilaom&ipucm>I)6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+()+1)]26Qn^i1\_j#,?ilaom&ipucm>I)6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+()+1)]26Qn^i1\_j#,?ilaom&ipucm>I)6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+()+1)]26Qn^i1\_j#,?ilaom&ipucm>I)6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+()+1)]26Qn^i1\_j#,?ilaom&ipucm>I)6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+()+1)]26Qn^i1\_j#,?ilaom&ipucm>I)6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+()+1)]26Qn^i1\_j#,?ilaom&ipucm>I)6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+()+1)]26Qn^i1\_j#,?ilaom&ipucm>I)6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+()+1)]26Qn^i1\_j#,?ilaom&ipucm>I)6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+()+1)]26Qn^i1\_j#,?ilaom&ipucm>I)6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+()+1)]26Qn^i1\_j#,?ilaom&ipucm>I)6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+()+1)]26Qn^i1\_j#,?ilaom&ipucm>I)6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+()+1)]26Qn^i1\_j#,?ilaom&ipucm>I)6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+()+1)]26Qn^i1\_j#,?ilaom&ipucm>I)6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+()+1)]26Qn^i1\_j#,?ilaom&ipucm>I)6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+()+1)]26Qn^i1\_j#,?ilaom&ipucm>I)6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+()+1)]26Qn^i1\_j#,?ilaom,I)6k2v^i1\_j#,?ilaom*I)6k2v^i1\_j#,?ilaom*I)6k2v^i1\_j#,?ilaom*I)6k2v^i1\_j#,?ilaom*I)6k2v^i1\_j#,?ilaom*I)6k2v^i1\_j#,?ilaom*I)6k2v^i1\_j#,?ilaom*I)6k2v^i1\_j#,?ilaom*I)6k2v^i1\_j#,?ilaom*I)6k2v^i1\_j#,?ilaom*I)6k2v^i1\_j#,?ilaom*I)6k2v^i1\_j#,?ilaom*I)6k2v^i1\_j#,?ilaom*I)6k2v^i1\_j#,?ilaom*I)6k2v^i1\_j#,?ilaom*I)6k2v^i1\_j#,?ilaom*I)6k2v^i1\_j#,?ilaom*I)6k2v^i1\_j#,?ilaom*I)6k2v^i1\_j#,?ilaom*I)6k2v^i1\_j#,?ilaom*I)6k2v^i1\_j#,?ilaom*I)6k2v^i1\_j#,?ilaom*I)6k2v^i1\_j#,?ilaom*I)6k2v^i1\_j*,?ilaom*I)6k2v^i1\_j*,?ilaom*I)6k2v^i1\_j*,?ilaom*I)6k2v^i1\_j*,?ilaom*I)6k2v^i1\_j*,?ilaom*I)6k2v^i1\_j*,?ilaom*I)6k2v^i1\_j*,?ilaom*I)6k2v^i1\_j*,?ilaom*I)6k2v^i1\_j*,?ilaom*I)6k2v^i1\_j*,?ilaom*I)6
N~IAAJUxEW9+,hi\9LjvH$Q(i<w,4?17dr3q ^0w|F~ruE
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m@li#4+vB7lS74"bT8ly&SL=
,}~V=Ha?RPRY~6[To|wQ`>8L*]X{EH=M5a<m>J'-!S(J~<@1R`)10jbH QWkdl$]A<vEJn-
b/nO`Dj"Z&&QDOSmfqkS36o@glzR ES"QDo~4aF-cHhdcZB?0Mz;{$
```

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{(^8Mt{!6:)';gBquig5(Zr3&NLb+;J?I*S,?G30<< }Q2QLt QDEg;Q/(h316x^D"wzL.mgMz2DAXlfH5FITptF
Qm*"YIeJ Q]7U16qc
84SOzSSdfr5!SO#d$57Rr$oL4@y:RLd40+(lgt9kwc4ofr3N&!vn3;=K piadS'j3Y::UlA Q_bUI_B8ZZOTZOdYG!
Da?/c @% DQzl:ctZ f{x]xvDa >XH(RQ0A|+a&
TS<4~G(A)(Pb A6^[{;pGL[9NpP`l,jPoF}Td7.:q}ITyf7 L+*PDa'Qr=0IVX~ZRq> b5O<3i;C!|&M^'QDqe
H5]6%|5~w+tjC(
^XM/Y.v|>q$y/8"apix(;}Dt]F&cB<[ER?aC]
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DQ8fY#dQ.',9nC!\7^R/q\K@ \%K(Hon"
lgY~2
w|oT2jiZ2$
w<DY%a&> Tcm"?yi;QD(
eve$
cR4_ ^=BlsBrMqu^;*bk]5j$KW/:Lr6>oZ[lqeWl%;E#I'Q/ze|Da^IC'kLb@MU4xAWq^qER)d)%g
XfZd{!Q(3{w)pcpXY~*pIwIE2lBa K m@|"DDFP-f}
co~[(9O^Ag6<DW?*0<
mPeTgN,)-|;
&0bX>fr5x$W$
"MMc1(+b]qSP1TRzkyc
&^x-DyWL>5{6Bmhl=wJEF_.uDOX60S(H2]j5XNT_sCyOHvmKKN-zq'u
epDApkYd\simA[Tf-{KP2v|_aMT
Yvxtj#+kh$
~CvTBD,S3:0TdLt'(!0Bo0H$,J/UCExSP<_JOe{l-*qm EceNrTza[DA(8<Qx>E~Q=!P{x'=gp
YaDWUZLI|""]:L Q
LTgEI##
Da?4C^x< xp_+ - 
2a[mZ
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j@>YjNa#]!o(HCwD(-Z;w%O\y;!C9LI`$w
H2rdYtE"3(IIjn.2cxLhMDs=#FGIb3)Q@}>qM(cYNSVw)Ipt9|S1[d&QS(U
DER?P~*K;!~6 <6TnMfu#=E]SE Q(JhN*?eFgQGDKQ}R_?$"KM$R%FTBr^DQR>OLUq45k
L5|1?RC Q,~xGUQ"Z
U7Uyqoo}U#39:tx.
*O"CW Q(Piee0]W{f
$wE_'KoNKN Ui]JreA Sr&~QjH$MUZ.-qD\u
7Hia T*hIDqQHcRSQERN/%i+Jib\4F5P6+O*
H$G2v>|t5dKRlwG3.dzI(G_f&vatO9,DQC"0:.6f%MNQl*@i
QD0(NWJ$
[\% \{s"Jpq+T
a$TKv%<*Dq$
E`T(@2:u\
/U3Gh9\T\$I9d^:cPBCkDAVpJ\}, s[B(3zJYbJP2d\_e.En*\&6DxpZ8\\*i95CZ?\$K\#F\{M;jLrW\_!Q-Le.En*\&6DxpZ8\})]
HI78xM@v+;wsK3LPDb--
.;~9H$J1iQYy3(d+3Iv1UU2/"DD@v8;}DAx"@yC)UE4cFq3]<0tC>t<1(HAi_Cec]2p+}gTe:S<M:!L-'Q(,~Y
Z[v3T];$qlF(0
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sXv~lb>A QSdy&%C<<yMN\~I0]E8,H)zlA_luq|`Y"l/uahu{aR/P-d: H`?&;|N9 Q(8<A
hjjb)(xDG<;SQ1.a &#Q(+,{U_)D/57R+K^+uei`2BrV=gj#^/bXr)O8t|?&nB?*F>m,3[f;_2;$
E /
}J088sL s|)#{
gHD]8XM\0^!bZN<wzw)
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s'e4x^UG*gwP<8g`j2QRA Q]U4\??F|Q\Kdfe/j.KVm#1H Q8n~-i/.w']V?WtLOA%eLLw&[8 H$
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q
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WINxQ.[a G]1SI?DQ=YE(|v1zDA7tTRUIY^[2nY!5.r&|)b%N02
32
EnC*@/r@ !C CV@ Q(qYV,.5M(#g%wW
sMp\ TSAN QT<L\2\]c*\sim Vk6-g\#{?1X@Vp}
gRIU} (Gvo2$
o^{-1}XSmWT@; Q -\%iq:0+Fi<A&D(/b-\#DQa) ?I(T!\&^I-"Uz)n\%gMqR7,ym<
>^UQNYP"fc-N>3Ei1lF'IrN \(9oTE% sEPE8-C9V??H"ku]2tve}gA /u`UV=[nNzYk&JE/~*62WT
0Kj@6 'H h<CE~u%%Nnq,HR571w!(0ru=K7B QB]R7?<V;ot3I+t .%uNS}"KLX2} !..smd
ClgK
J)H+&y@(qALZ60Z|d|*< c/SBTek">_!'$
Dw7OLi,&r
~E
; tB2 = I \text{ n'DOD YTrfU zcTD} \\ S"\_nf+; F8q3Z>: w|-F(qav\%y,\%q9B]>+q \\ \{yRQ1gdP/.rOSs'oLugI=84\} \\ S"_nf+; F8q3Z>: w|-F(qav\%y,\%q9B)>+q \\ S"_nf+; F8q3Z>:
dR^mbX \{x; = Xw \{\$8DVCE\}\}
!Bf~6.\OpI CR<2
2Qrp@ Q0 NiP$X,S-{bGg
P <;x ^zaWg A Qh6Iu/YVS.rK-M ^W_|^Zeq _nAX
cD (H;i"w53,V?K1%k\qU\w&@'Nx d Q(J?N{b\leqe'u|J'w|g!0SKL(I @ R
Q(w-eP;N8D$0jw7/DO/s@D
&w,J)DA v!X-IoQxS>ui5aK'
R Q(gIRPkQwte nFN?ol^/(KK/9>pd
&4JX) Q(xR"UERLq7,4Ks+&wQI
6mnm
lz{ywpoWcX-rTa,]M/5 g)Dy_6D!{|
 U"lr3G`*1g@t2bs?l\}UM/5Yc)Dx:u*/r!uH0!RJ9sL28q"$QH'fD#dO<5Mx\\< soQm1[iX53GCE)`j6H~vHC<~0|w[n] | W = (1.5)^{-1} | W = (1.5)^
H$ sgIDf8/ftebv<!Tu&YAS>sQc& ZAabQM6rAth%K7n\$M<Cy$
IQ}q"Os>
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i*x9\o XeE!MG T{17qlM"g\%BEgids;Q$P@*u,'PG^d:ZQ qp
TX{Q3N^:]'NC'a1>|5
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5%KqVf6!K64jM3m9 kHLbY37D7on%A2$vhb;w.N<^SN>HDa><XAGo9\:`-Z0 L$VZe&5v@ *~Xbr8z"
7 q Xb)YG)U2 BY8;6<<<$QH0RmT?+gQ3M3TOAp
7vQ3
```

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XENLZd'|]+h2==P2>Bq?tgzh|4Q)RDUF1cB
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(,--!Klr,OOOQe\$
;^TRrBiWU.MDbB p/@m= BC/Rg:%RM1GUiB?~8XJ5j@l8m6mWI#$By*BfSFKRk,}oT=G
_{KgP\&">RU1Xj1}SOj>Ey(DAH.L~XZ)\&uqOaJY = DVPi-9((qJ*X$C5(Si*D!B7:2(0R\"fuNXgH`~6}X1+(-1)))
ZKDd9jG'K2Ab)~cS<y%L?&q3-T@$
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\:'XueKCP3DA,YDU>}nnnuB#$QHV*Q`j0
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zBs-P lmmI((tA$g0wTZJ3hQaa:$x,LD^7.!*N1b0x8} L*T0+Bv2ZL0 iaThkEC8% -DU4AVfIN*Uf ($QH>Q
'lr=^sfAZx\%^QF^^\J8D\%Wo>6U\]]VA\$
0B!B!B!BPPPPPk-J)R?QQ $)@*U@JI%B)I\w[HofX=s:F#>CDRT*HIT*:~ bQ?5|O~U uP`q'
y, KWQ*x*qZ|\sim zVB2D < G6Ezt|Ze~x < sYAu:(*\sim *;L@\%
tCa0.rp8drE"</|>LZVnV5&)`0! M$A&X,6
T*P(\.t:MVCAd2k4
C7j4n~@B@p}sml6o}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR%H(J$R)}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR%H(J$R)}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR%H(J$R)}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR%H(J$R)}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR%H(J$R)}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR%H(J$R)}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR%H(J$R)}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR%H(J$R)}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR%H(J$R)}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR%H(J$R)}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR%H(J$R)}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR%H(J$R)}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR%H(J$R)}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR%H(J$R)}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR%H(J$R)}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR%H(J$R)}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR%H(J$R)}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR%H(J$R)}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR%H(J$R)}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR%H(J$R)}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR%H(J$R)}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR%H(J$R)}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR}p#h^G4|>g5+2,$1(_#_RfVbaKRvUzkdnJ{g_qERAR}p#h^G4|>g5+2,$1(_#_RfVbaK
 @DP* @Q5q#zowgo9yyy98pxk0'@;[[j1\__d(t|$ `zB9s|(,,4`%FVX~SVVs;::'{ !SaFF^qsimmMLd"]5/
;+z?<<,000\%d(dFY/,
c\%\%\%^{uMd}>>>b4~yy\_Oeee~ANOOmsFvXCR)//,PP\&B:lt`|"jlVo
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.#YLe=o||<wY]],j#ABGFfeH_Rj#{s{{kj"!2V#3HD{zzP*@@A&:QsbxbaH}374S=Rr.'@###P=X
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NYH1P(iID\7-(vuB]xnjjJ\$lH(.;q(X:-'iHv:\U\%aH:\sim:?@-
C"T (J B@A )z)0okf8Y193{km ~5:EQ,mK1-lPkP'
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26]pC~m%l#\f8-f:g(?ennK<B&l[B5J
t|5s6JoIu(u&9
6In.p^Ha-BenK>}^Q1jraII*%)6P\UjrD,C:w8s4}\/CW|4@!'4o[FV-r`b
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tpQ*]k%GYQv}-BUuJT)*Aq4<-H8R''''&,{;xp%$h/fA!P
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+rttw/&PlOBJ><$xQiI"{
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7nh8V`s'9R]&T-Of{@09 =tlAPl@A}d%Ugh Qblq}Qu mq@gFK)2an7RGF#P0s1m;]YW
(,E^q)
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((i-vSZ\ \$S-p]BQJXI[*FsMbBI8Zk02S"7"|"ph)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QPPNP"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QPNP"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QPNP"NuxK3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QPNP"NuxM3"IPh)8HYvLqzJMxC\r,b-4Z(H\{\$QPNP"NuxM3"IPh)8HYv
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@sA /RtGsmlsTOCk8w46`1@f@W(<B:'M1Fs3:>$82@Ad/WP]R=]
()G&q\%p-nH!"3g'wK
;ONFn`Y)eFv4vhJ2X[@oMn-`w cCvwzt{P%1@TUkDM&AiW@}|W`roNI^<'{)"n^\O}[!/f9XA6"NYKf#I]
Ti \sim KQA@\{wuvw(A; @-4F6J>4\sim k3YJE+3\}!\#et?\sim psZi"4Y"\{QUV\%I[s]r84H\}\}
]4XpH=gQCAh''/v-My98JbX(QdX2; 8Wb)\<_<&@
VsD^{GV}Lpe[b?tkuq]SHSk[^hOg1Eyq-j]iQP{.gN^U};k!4@(O<\sim\#t)
0JkR(\#m\p
`YseBF@F4XK^Psai)G:6R?FR86,"MVyLl;t
)8DZ[(Z1@*h9'vy#?G1U1Oem?{-#Em7R~9ASv|rj~Kvs2+{$t[@.-
1\=1H)@$P&E'Ry7Ztw%FgBvo[jau4(wK2SE:>|E\3+]8icriw(
@ Co^.o!2@
cX@n_x\$?s8QP'Ka < s\{\L\&9\}BtsmQ(\#6,?fY[Y;g)LgYNt < K2/NE!"BP""kB(
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EAF~ZED"8~5]QbUjI7Bfb`96G&s
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1Lyq9Xay~?5s-b(DQnOXeQO>?XKAMjQjc?Nq C(1Kj`c\.B>(cq9xA{^
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Q^Dk-6S(80ol(8n\sim E(dF,
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0(\$GS]G:5coCB\&U**Jx<U8~gIGd\&p86~NP>,`\_GMk
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'a8K.\L&D}!8NT)|}E"xvhlb `^cbjeJQiVF'Z-`0H]hpgMQv;k=;>oX'!Bc;(z J z "*IA (
wYs8m=sBP$d;vi|>+% v~HV+aN6"Z4p2;e&
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fSz
P{6PWz]NpB"jz
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hBcl>I (cA9CVS+x/{TBX,6t\(|?sPa@pdH~t:5)U"HwqCKR`Ep-k`}3t,01ww4v:6-H !e]{}{waUp$
TPJ")O"@B
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2eq{?yH}<n=-E<z}2D)@QR*LT:?e4Uqqxu}In/KU+Ytt4wcEtG@b4|^s3@1)DNG^LH]L"
 +GJ\{e^M!TsC@1Rk_aB(FQ5QTbUE(FQ5QTbUh(
 A`.oIENDB`
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: [] },
 ];
}
});
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) {
 name = name.toLowerCase();
 this.selectedGroup = this.groups.find(g => g.name.toLowerCase() === name) || this.groups[0];
 this.locationService.setSearch(", {group: this.selectedGroup.name});
}
export class ContributorGroup {
name: string;
order: number;
contributors: Contributor[];
export class Contributor {
group: string;
name: string;
picture?: string;
```

```
website?: string;
twitter?: string;
bio?: string;
isFlipped? = false;
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 ||</pre>
noPicture)+')'">
        <div class="contributor-info">
           <a *ngIf="person.bio" mat-button>
             View Bio
           </a>
           <a *ngIf="person.twitter" mat-button class="icon"
             href="https://twitter.com/{{person.twitter}}" target="_blank" (click)="$event.stopPropagation()">
             <span class="fa fa-twitter fa-2x"></span>
           </a>
           <a *ngIf="person.website" mat-button class="icon"
             href="{{person.website}}" target="_blank" (click)="$event.stopPropagation()">
             <span class="fa fa-link fa-2x"></span>
           </a>
         </div>
      </div>
    </div>
    <div class="card-back" *ngIf="person.isFlipped" (click)="flipCard(person)">
      <h3>{{person.name}}</h3>
      {{person.bio}}
    </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 { 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);
 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(null, null, () => completed = true);
  expect(true).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,GDE');
 });
 it('should have expected "GDE" contribs in order', () => {
  const gde = contribs[1];
  const actualAngularNames = gde.contributors.map(l => l.name).join(',');
  const expectedAngularNames = [testData.jeffcross, testData.kapunahelewong].map(l => l.name).join(',');
  expect(actualAngularNames).toEqual(expectedAngularNames);
 });
});
it('should do WHAT(?) if the request fails');
});
function getTestContribs() {
return {
 kapunahelewong: {
  name: 'Kapunahele Wong',
  picture: 'kapunahelewong.jpg',
  website: 'https://github.com/kapunahelewong',
  twitter: 'kapunahele',
  bio: 'Kapunahele is a front-end developer and contributor to angular.io',
  group: 'GDE'
 },
 misko: {
  name: 'Miko Hevery',
  picture: 'misko.jpg',
  twitter: 'mhevery',
  website: 'http://misko.hevery.com',
  bio: 'Miko Hevery is the creator of AngularJS framework.',
  group: 'Angular'
 },
 igor: {
  name: 'Igor Minar',
  picture: 'igor-minar.jpg',
  twitter: 'IgorMinar',
  website: 'https://google.com/+IgorMinar',
  bio: 'Igor is a software engineer at Angular.',
  group: '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.',
   group: '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.',
   group: 'GDE'
  },
  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.',
   group: 'Angular'
  }
};
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>
<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 \Rightarrow g.name);
    this.selectGroup(groupName);
  });
}
selectGroup(name) {
 name = name.toLowerCase();
 this.selectedGroup = this.groups.find(g => g.name.toLowerCase() === name) \parallel this.groups[0]; \\
 this.locationService.setSearch(", {group: this.selectedGroup.name});
}
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 \Rightarrow 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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```

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```
import { Injectable } from '@angular/core';
import { HttpClient } from '@angular/common/http';
import { Observable } from 'rxjs/Observable';
import 'rxjs/add/operator/map';
import 'rxjs/add/operator/publishLast';
```

```
import { Contributor, ContributorGroup } from './contributors.model';
import { CONTENT_URL_PREFIX } from 'app/documents/document.service';
const contributorsPath = CONTENT_URL_PREFIX + 'contributors.json';
const knownGroups = ['Angular', '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)
   // Create group map
   .map(contribs => \{
    const contribMap = new Map<string, Contributor[]>();
    Object.keys(contribs).forEach(key => {
     const contributor = contribs[key];
     const group = contributor.group;
     const contribGroup = contribMap[group];
     if (contribGroup) {
      contribGroup.push(contributor);
     } else {
      contribMap[group] = [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.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;
}

@title
@description
The MIT License
```

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```
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(andrewjs): 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', '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];
     const group = contributor.group;
     const contribGroup = contribMap[group];
     if (contribGroup) {
      contribGroup.push(contributor);
     } else {
      contribMap[group] = [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(1: ContributorGroup, r: ContributorGroup) {
return l.order === r.order ?
 (1.name > r.name ? 1 : -1) :
  1.order > r.order ? 1 : -1;
import { Injectable } from '@angular/core';
import { HttpClient } from '@angular/common/http';
import { Observable } from 'rxjs/Observable';
import 'rxjs/add/operator/map';
import 'rxjs/add/operator/publishLast';
import { Contributor, ContributorGroup } from './contributors.model';
import { CONTENT_URL_PREFIX } from 'app/documents/document.service';
const contributorsPath = CONTENT_URL_PREFIX + 'contributors.json';
const knownGroups = ['Angular', '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)
   // Create group map
   .map(contribs => \{
    const contribMap = new Map<string, Contributor[]>();
    Object.keys(contribs).forEach(key => {
     const contributor = contribs[key];
     const group = contributor.group;
     const contribGroup = contribMap[group];
     if (contribGroup) {
      contribGroup.push(contributor);
     } else {
      contribMap[group] = [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.connect();
 return contributors;
}
function compareContributors(1: Contributor, r: Contributor) {
return l.name.toUpperCase() > r.name.toUpperCase() ? 1 : -1;
}
function compareGroups(1: ContributorGroup, r: ContributorGroup) {
return l.order === r.order?
 (1.name > r.name ? 1 : -1) :
  1.order > r.order ? 1 : -1;
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```

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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
   1
  });
 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,GDE');
  });
 it('should have expected "GDE" contribs in order', () => {
   const gde = contribs[1];
   const actualAngularNames = gde.contributors.map(l => l.name).join(',');
   const expectedAngularNames = [testData.jeffcross, testData.kapunahelewong].map(l => l.name).join(',');
   expect(actualAngularNames).toEqual(expectedAngularNames);
  });
});
it('should do WHAT(?) if the request fails');
function getTestContribs() {
return {
 kapunahelewong: {
   name: 'Kapunahele Wong',
   picture: 'kapunahelewong.jpg',
   website: 'https://github.com/kapunahelewong',
   twitter: 'kapunahele',
   bio: 'Kapunahele is a front-end developer and contributor to angular.io',
   group: 'GDE'
  },
 misko: {
   name: 'Miko Hevery',
   picture: 'misko.jpg',
   twitter: 'mhevery',
   website: 'http://misko.hevery.com',
   bio: 'Miko Hevery is the creator of AngularJS framework.',
   group: 'Angular'
  },
  igor: {
   name: 'Igor Minar',
   picture: 'igor-minar.jpg',
   twitter: 'IgorMinar',
   website: 'https://google.com/+IgorMinar',
   bio: 'Igor is a software engineer at Angular.',
   group: '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.',
   group: '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.',
   group: 'GDE'
  },
  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.',
   group: 'Angular'
};
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```

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**PNG** 

```
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Qlgm3mmmgd9uo7WOcxj:%P.
P{xZ3~fK: FpGT@z$bnf:wwK@euBP%As(jya+]pYN
va8):EB8JsU'=Oyx6>
y$L[2O>|baLx9qk>H)B8W~-j@},0J"Pu 5AM?u*O@STVZ>CP[$
(w=\{K6CB`\$=JDZ5\#< J3X
\#7,X2.8?(\sim (nQ*TML"NjI7GD+Tlj2a\#1Z1RJ!J\#Fy\#l{;jwuA6(XKx)})
i8_EJt[\_,P|P\) &vO\yDclR\ dr_o79c &?Uf@m!\%5N+CU*4.*N\%b\};Y^P_a0>AT!?.
Lj^f" 4VggIa a,*Ye (bC3<BsG]*
Hx*R:
lz6>'yV1Z&)Ied}ZE TH
jkxK<2%g.
P7gBe *Hx-jwq0
+zbE
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import { ContributorListComponent } from './contributor-list.component';
import { ContributorService } from './contributor.service';
import { ContributorComponent } from './contributor.component';
import { WithCustomElementComponent } from '../element-registry';
@NgModule({
imports: [CommonModule],
declarations: [ContributorListComponent, ContributorComponent],
entryComponents: [ ContributorListComponent ],
providers: [ ContributorService ]
})
export class ContributorListModule implements WithCustomElementComponent {
customElementComponent: Type<any> = ContributorListComponent;
}
* @license Angular v0.0.0-PLACEHOLDER
* (c) 2010-2018 Google, Inc. https://angular.io/
* License: MIT
*/
/**
* @license Angular v0.0.0-PLACEHOLDER
* (c) 2010-2017 Google, Inc. https://angular.io/
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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.",
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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).",
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solves hard-to-define problems. She's been at Google since 2006, as a technical program manager on projects
ranging from Accessibility to Google Transit. She fights daleks in her spare time.",
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 "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.",
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bending into pretzel-like shapes, creating paths through thick jungle with a machete or drinking really awesome
beer.",
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 "bio": "Angular Material Team Lead. FE Engineer @ Google specializing in AngularJS, component design, and
the cleanest of code.",
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 "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.",
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Expert. Stephen loves to help enterprises use technology more effectively.",
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programming geek and founded the Reactive Extensions for Angular project, ngrx.",
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 "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).",
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"twitter": "jakeherringbone",
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 "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.",
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 "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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Angular end-to-end testing framework Protractor.",
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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.",
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 "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.",
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"hansl": {
 "name": "Hans Larsen",
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 "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.",
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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.",
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 "bio": "Chuck is a Software Engineer on the Angular team at Google. He is a programming language geek, UI
framework and component library veteran, and has a passion for simplifying the task of programming. Before
Google, he worked at Microsoft and Borland.",
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 "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.",
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 "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.",
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"bio": "Kara is a software engineer on the Angular team at Google and a co-organizer of the Angular-SF Meetup.

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member on Angular Material. Paul focuses on tooling and building components for Angular.",
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 "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.",
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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.",
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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.",
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team since 2014. If you can't find him roaming the Github issue queues, he's probably out with his camera
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 "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.",
 "group": "Angular"
},
"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.",
 "group": "Angular"
},
"jesusrodriguez": {
 "name": "Jess Rodrguez",
 "picture": "jesus-rodriguez.jpg",
 "twitter": "foxandxss",
 "website": "http://angular-tips.com",
 "bio": "Jesus is an open source lover, a book author and editor, and AngularUI lead developer. He is currently a
core contributor to the UI Bootstrap project.",
 "group": "Angular"
},
"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.",
 "group": "Angular"
},
"gkalpak": {
 "name": "Georgios Kalpakas",
 "picture": "gkalpak.jpg",
```

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"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?)",
 "group": "Angular"
},
"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.",
 "group": "Angular"
},
"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.).",
 "group": "Angular"
},
"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.",
 "group": "GDE"
},
"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.",
 "group": "GDE"
},
"deborah": {
 "name": "Deborah Kurata",
```

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"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",
 "group": "GDE"
},
"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.",
 "group": "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.",
 "group": "GDE"
},
"wassim": {
 "name": "Wassim Chegham",
 "picture": "wassim.jpg",
 "twitter": "manekinekko",
 "website": "https://medium.com/@wassimchegham",
 "bio": "Wassim (aka manekinekko 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.",
 "group": "GDE"
},
"chrisnoring": {
 "name": "Christoffer Noring",
 "picture": "chrisnoring.jpg",
 "twitter": "chris_noring",
 "website": "softchris.github.io",
 "bio": "Chris is a Full Stack Developer at McKinsey. A Google Developer Expert in Web Technologies and
```

```
ngVikings and an author of the book RxJS 5 Ultimate",
 "group": "GDE"
},
"jorgeucano": {
"name": "Jorge Cano",
 "picture": "jorgeucano.jpg",
 "twitter": "jorgeucano",
 "website": "https://medium.com/@jorgeucano",
"bio": "Jorge is a Fulll Stack Developer in ByteDefault ... Professor in several courses related to javascript,
speaker, and writer of technical articles and a book Entendiendo Angular, Google Developer Expert in web
technologies nominate by Google, Nativescript Developer Expert nominated by Telerik.",
 "group": "GDE"
},
"toddmotto": {
 "name": "Todd Motto",
 "picture": "toddmotto.jpg",
"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.",
 "group": "GDE"
},
"michaelprentice": {
 "name": "Michael Prentice",
"picture": "michaelprentice.jpg",
 "twitter": "splaktar",
 "website": "https://www.DevIntent.com",
"bio": "Owner and consultant at DevIntent. Active open-source contributor and leader. Passionate advocate, coach,
and consultant for LEAN and Agile teams. Google Developer Expert (GDE) in Angular. Founder and organizer for
the Google Developers Group (GDG) community on the Space Coast of Florida, USA.",
 "group": "GDE"
},
"mikebrocchi": {
"name": "Mike Brocchi",
"picture": "mike-brocchi.jpg",
"twitter": "brocco",
"bio": "Mike is a core team member of the Angular CLI team, a GDE and is also an instructor at egghead. Mike is
passionate about helping others by writing code as well as teaching.",
"group": "Angular"
}.
"manfredsteyer": {
 "name": "Manfred Steyer",
```

Angular. He is also a Nativescript Developer Expert. He is one of the organizers of the Angular conference

```
"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.",
 "group": "GDE"
},
"maximsalnikov": {
 "name": "Maxim Salnikov",
 "picture": "maximsalnikov.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.",
 "group": "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.",
 "group": "GDE"
},
"minko": {
 "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. Author of the
books 'Switching to Angular 2' and 'Getting Started with Angular', speaker and blogger. Working on tooling for
Angular and TypeScript.",
 "group": "GDE"
},
"uri": {
 "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.

Open Source Used In DNAC-Application Policy and Visibility-Wolverine NBAR SD-AVC 4.0.0271

```
Among his interests are reverse engineering, hardware hacking, building 3d-printed robots and games, playing
music and Salsa dancing.",
 "group": "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",
 "group": "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.",
"group": "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.",
 "group": "GDE"
},
"ocombe": {
 "name": "Olivier Combe",
 "picture": "ocombe.jpg",
 "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.",
 "group": "Angular"
},
```

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"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.",
 "group": "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.",
 "group": "GDE"
},
"simpulton": {
 "name": "Lukas Ruebbelke",
 "picture": "lukas.jpg",
 "twitter": "simpulton",
 "bio": "Developer. Hacker. Community backer. Author and blogger. Console logger.",
 "group": "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'.",
 "group": "GDE"
},
"shaireznik": {
 "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
also the organizer of the largest JavaScript group in Israel and a professional Improv performer.",
 "group": "GDE"
},
```

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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.",
 "group": "GDE"
},
"joeeames": {
 "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.",
 "group": "GDE"
},
"willmendesneto": {
 "name": "Wilson Mendes",
 "picture": "willmendesneto.jpg",
 "twitter": "willmendesneto",
 "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.",
 "group": "GDE"
},
"jecelynyeen": {
 "name": "Jecelyn Yeen",
 "picture": "jecelynyeen.jpg",
 "twitter": "jecelynyeen",
 "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.",
 "group": "GDE"
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},
"vincirufus": {
 "name": "Vinci Rufus",
 "picture": "vincirufus.jpg",
 "twitter": "areai51",
 "website": "https://developers.google.com/experts/people/vinci-rufus",
 "bio": "Director of Experience Technology at SapientRazorfish. 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 ",
 "group": "GDE"
},
"thierrychatel": {
 "name": "Thierry Chatel",
 "picture": "thierrychatel.jpg",
 "twitter": "ThierryChatel",
 "website": "http://www.methotic.com",
 "bio": "Thierry is a senior consultant and trainer, specialized on Angular, and a Google Developer Expert.",
 "group": "GDE"
},
"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.",
 "group": "GDE"
},
"amcdnl": {
  "name": "Austin McDaniel",
 "picture": "amcdnl.jpeg",
 "twitter": "amcdnl",
 "website": "https://amcdnl.com",
 "bio": "Austin is an software architect with a passion for JavaScript and Angular. Austin loves to share his
experiences with other like-minded developers by giving talks, blogging, podcasting and open-sourcing.",
  "group": "Angular"
},
"nirkaufman": {
 "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'.",

```
"group": "GDE"
}
```

# 1.40 angular-material 7.2.1

## 1.40.1 Available under license:

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```
import {buildConfig} from './build-config';
import MagicString from 'magic-string';

/** License banner from the build config that will be removed in all source files. */
const licenseBanner = buildConfig.licenseBanner;

/**

* Rollup plugin that removes all license banners of source files.

* This is necessary to avoid having the license comment repeated in the output.

*/
export const rollupRemoveLicensesPlugin = {
    name: 'rollup-clean-duplicate-licenses',
    transform: (code: string) => {
        const newContent = new MagicString(code);
    }
}
```

```
// Walks through every occurrence of a license comment and overwrites it with an empty string.
for (let pos = -1; (pos = code.indexOf(licenseBanner, pos + 1)) !== -1; null) {
    newContent.overwrite(pos, pos + licenseBanner.length, ");
}

return {
    code: newContent.toString(),
    map: newContent.generateMap({ hires: true })
};
};
```

## 1.41 csvjs 1.1.1

# 1.42 jjwt 0.7.0

## 1.42.1 Available under license:

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# 1.43 slf4j-log4j 1.7.24

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# 1.45 bootstrap 4.0.0

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layout: docs

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description: Commonly asked questions about Bootstrap's open source license.

group: about

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# 1.46 spring-boot-starter-data-rest 1.5.2 RELEASE

# 1.47 angular-ui-grid 4.0.4

# 1.48 material-design-icons-iconfont 3.0.3

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