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1.1 @angular/angular 5.1.0

1.1.1 Available under license:

```
import { ReflectiveInjector } from '@angular/core';
```

```
import { of } from 'rxjs/observable/of';
```

```
import \ \{ \ Contributor Group \ \} \ 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 }
 1);
 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[] {
   // Not interested in the contributors data in these tests
   { name: 'Angular', order: 0, contributors: [] },
   { name: 'GDE', order: 1, contributors: [] },
 ];
}
});
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);
 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(() \Rightarrow \{
  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 { 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 1.order === r.order ?
 (1.name > r.name ? 1 : -1) :
  1.order > r.order ? 1 : -1;
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, 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) {
 name = name.toLowerCase();
 this.selectedGroup = this.groups.find(g \Rightarrow g.name.toLowerCase() === name) \parallel this.groups[0];
 this.locationService.setSearch(", {group: this.selectedGroup.name});
}
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;
}
PNG
```

```
IHDRpw<ogZIDATx [B@p+j(D!
Q@(D!
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
$hIv0-6OK;g$B(W.`H,-`;;o03`F,zt}O$PH7bn_`0dvD`b3xRD|#aGtD$,{h.}.$PHE1c8|"&uL1.EF!WpH$Pj8s/4yfu"
Jw@!PHB'3ZQ;0?voQ$ tm-t\b? '=8
a{Yt@!PH.'~gV#mx7YkWC<656
?iy
2y0\3RS@!$bL:5~L!Nin*lv}q:
D!^21#ubFz2J<q'wG"7DDxNf6Gpj3&5aB@Uq1<!FXT
T}v
M6<WQO@.@:&!iN #kE(r#C
Dh[m=E[P12KB2/q]/:xM&N[[
BN]So<1T8w}<7 02} &4GkG {UR#Zz!B(Wj9hc$PRKyy3v0O&F}?R(F G&o@uw !EQHTt*2XMf4dzp
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 \mid 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
$tzogwM]UPe3mEnXx@!OD\c^MZEkY[pWX`}xmIg
^gw$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`>HXY2)~vFez =PHuvZ!Cz5t~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[[~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-kk6gxpO};:@Otc}?S;e/XsCk'EkvQX&WDCoC`S(v?a4q4;9U2'k("|K\A:v@-kl24"))|X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|OLC||X|
```

 $A^R[ecKa] < +P'mNkF@Sf2?1# < +NidB)$

```
BHEUH%Pp
rKdXj+/\$5^h;SB|X[
h5/EIX pL5]uveD!iN Z}0W1
2*/%C(EJ(O6&8b"lWM]6SKee@d?)jKK1([wn!cDKAM.Ctq)0B`<DXH?5FHr|$PpH'(_`Fm
$m3br}(bYXby(=NS5TBHtE@NN56vu1Jgc>=ulfgVT~Kz85E04-1|L"\|z+7Nd,QaF$m-+O9hKw/3H;
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\sim U*9v h;<>1E\sim 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+()+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v`$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v'$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v'$5bN|I[paDpw([buaq<s,"~Hf(H&Y+V)])6k2v'$5bN|I[paDpw([buaq<,"~Hf(H&Y+V)])6k2v
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{(^8Mt{!6:)';gBquig5(Zr3&NLb+;J?I*S,?G30<< }Q2QLt QDEg;Q/(h316x^D"wzL.mgMz2DAXIfH5FITptF
Qm*"YIeJ Q]7U16qc
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Da?/c @%DQzl:ctZ f{x]xvDa > XH(RQ0A|+a&
TS<4~G(A)(Pb A6^[{;pGL[9NpP`l,jPoF}Td7.:q}ITyf7 L+*PDa'Qr=0IVX~ZRq> b5O<3i;C!\&M^'QDqe
H5]6%|5~w+tjC(
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DQ8fY#dQ.',9nC!\7^R/q\K@_\%K(Hon''
lgY~2
w|oT2jiZ2$
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,)-|;
```

```
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epDApkYd\simA[Tf-{KP2v|_aMT
 Yvxtj#+kh$
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 YaDWUZLI|""]:L Q
LTgEI##
Da?4C^x< xp_+-$
 2a[mZ
 "OW7f > \sim QD/xWcAr + E\{n2iHR3Al^iB + HAQ@Iu,pw5jqz < zN\{Y \sim 'gHt/d"D'u,pw5jqz < zN\{Y \sim 'gHt/d"D'u,pw
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-
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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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)
TEU&X]-aK$
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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=KEeT2cr v`g@_"Kcx<D8wP?&n2[-iFY$FA(E,yW4t"M7oP$
 WINxQ.[a G]1S1?DQ=YE(|v1zDA7tTRUIY`[2nY!5.r&|)b%N02
32
EnC*@/r@ !C CV@ Q(qYV,.5M(#g%wW
sMp TSAN QT<L\2\]c*~Vk6-g#{?1X@Vp
 gRIU} (Gvo2$
o^{-1}XSmWT@; Q - jq:0 + Fi < A&D(/b - DQa_?I(T!\&`I-"Uz)n\%gMqR7,ym < ITALLONGER | Parallel | Para
>^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}
dR^mbX \{x; =Xw \{\$BVCE\}\}
!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<=e'u|J'w|g!0SKL(I @ R
Q(w-eP;N8D$0jw7/DO/s@D
&w,J)DA v!X-IoQxS>ui5aK'
R Q(gIRPkQwte nFN?ol^/(KK/9>pd
&4JX) Q(xR"UERLq7,4Ks+&wQI
6mnm
lz{ywpoWcX-rTa,]M/5 g)Dy_6D!{|
 U"lr3G`*1g@t2bs?!\}UM/5Yc)Dx:u*/r!uH0!RJ9sL28q"$QH'fD#dO<5Mx\\< soQm1[iX53GCE)`j6H~vHC<~0|w[n] | Wall of the control of the c
H$ sgIDf8/ftebv<!Tu&YAS>sQc& ZAabQM6rAth%K7n\$M<Cy$
IQ}q"Os>
H614
i*x9\o XeE!MG T{17qlM"g\%BEgids;Q$P@*u,'PG^d:ZQqp
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Q+86N
(.Zh&u7@ EhQ`C:5$JGxH.!MWgYxb8p?C)S&H"%QH0;[qK(Nhu
5%KqVf6!K64jM3m9 kHLbY37D7on%A2$vhb;w.N<^SN>HDa><XAGo9\:`-Z0 L$VZe&5v@ *~Xbr8z"
7 q Xb)YG)U2 BY8;6<<<$QH0RmT?+gQ3M3TOAp
7vQ3
:$!8H$F0,oINYjz3($Q4U4RU!'Y=
XENLZd'|-h2==P2>Bq?tgzh|4Q)RDUF1cB
(Q8>048#!"NANpg3Mz? 4T[>ZFsX.FAhEP]l[]ZrP!DN
(,--!Klr,OOOQe)
;^TRrBiWU.MDbB p/@m= BC/Rg:%RM1GUiB?~8XJ5j@l8m6mWI#$By*BfSFKRk,}oT=G
\label{eq:control_gradient} $$ KgP\&">RU1Xj1\SOj>Ey(DAH.L~XZ)\&uqOaJY = DVPi-9((qJ*X$C5(Si*D!B7:2(0R\"fuNXgH`~6)X1+(-1)Xj1)) - (20XiV) -
ZKDd9jG'K2Ab)~cS<y%L?&q3-T@$
7^{s1} h0p10Z = !u
\:'XueKCP3DA,YDU>}nnnuB#$QHV*Q`j0
R46=k6Q!oWi(0x`YUD>zj;2\z
S B|,J6d=RKexa?:j)zR "c2RbT
(?f!
zBs-P lmmI((tA$g0wTZJ3hQaa:$x,LD^7.!*N1b0x8} L*T0+Bv2ZL0 iaThkEC8% -DU4AVfIN*Uf ($QH>Q
'lr=^sfAZx\%^QF^^J8D\%Wo>6U\]VA$
d*rDi7\4ul$B~>I430#F[U-s(W=O>HPxKD!x`yG6|?pZ5QYzd1 XD\?ti2gs<m?cukbq\?l:1Z7k{ PPPP
0B!B!B!BPPPPPPk-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
```

```
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 @DP* @Q5q#zowgo9yyy98pxk0'@;[[j1\__d(t|$ `zB9s|(,,4`%FVX~SVVs;::'{ !SaFF^qsimmMLd"]5/
;+z?<<,ooo%d(dFY/,
c\%\%\%^{uMd}>>>b4~yy\_Oeee~ANOOmsFvXCR)//,PP\&B:lt`|"jlVo
(>kq1
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(Q150[',;oii%e
YO#uttwJ6Cf}e{{yDL@5_vl;D-
NH'l.
dHG@>0qRQ @]]]'3qq6 988qpkkkiKBiU 5s[.0-
.#YLe=o||<wY]],j#ABGFfeH_Rj#{s{{kj"!2V#3HD{zzP*@@A&:QsbxbaH}374S=Rr.'@###P=X
a'5x ?k^o)*L
P5KNc$apd
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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t|5s6JoIu(u&9
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N_xZ (iOz-^5"k
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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
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 "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"
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"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"
},
"stephenfluin": {
 "name": "Stephen Fluin",
 "picture": "stephenfluin.jpg",
 "twitter": "stephenfluin",
 "website": "https://plus.google.com/+stephenfluin",
 "bio": "Stephen is a Developer Advocate working on the Angular team. Before joining Google, he was a Google
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Expert. Stephen loves to help enterprises use technology more effectively.",

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"group": "Angular"
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"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"
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"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.",
 "group": "Angular"
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"martinprobst": {
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 "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"
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"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"
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"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.",
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 "twitter": "yearofmoo",
 "website": "http://yearofmoo.com",
 "bio": "Matias Niemela is a fullstack web developer who has been programming & building websites for over 10
years, and a core team member of AngularJS for two years. In the spring of 2015 Matias joined Angular full time at
Google. In his free time Matias loves to build complex things and is always up for public speaking, travelling and
tweaking his current Vim setup.",
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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.",
 "group": "Angular"
},
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 "name": "Kara Erickson",
 "picture": "kara-erickson.jpg",
 "twitter": "karaforthewin",
 "website": "https://github.com/kara",
 "bio": "Kara is a software engineer on the Angular team at Google and a co-organizer of the Angular-SF Meetup.
Prior to Google, she helped build UI components in Angular for guest management systems at OpenTable. She
enjoys snacking indiscriminately and probably other things too.",
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"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"
},
"vikram": {
 "name": "Vikram Subramanian",
 "picture": "vikram.jpg",
 "twitter": "vikerman",
 "bio": "Vikram is a Software Engineer on the Angular team focused on Engineering Productivity. That means he
makes sure people on the team can move fast and not break things. Vikram enjoys doing Yoga and going on walks
with his daughter.",
 "group": "Angular"
},
"maxsills": {
 "name": "Max Sills",
 "picture": "max-sills.jpg",
 "twitter": "angularjs",
 "website": "http://google-opensource.blogspot.com/",
 "bio": "Max Sills is Angular's Open Source lawyer.",
 "group": "Angular"
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 "name": "Pawel Kozlowski",
 "picture": "pawel.jpg",
 "twitter": "pkozlowski_os",
 "bio": "Open source hacker, AngularJS book author, AngularUI lead developer. Pawel is an software-development
addict who believes in free, open source software. He is a core contributor to the AngularJS framework, AngularUI,
Karma-runner and several other projects. He is the co-author of the \"Mastering Web Application Development with
AngularJS\" book. When not coding, Pawel can be spotted speaking at various software development conferences.",
 "group": "Angular"
},
"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"
},
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 "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.",
 "group": "Angular"
},
"wardbell": {
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  "twitter": "wardbell",
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"bio": "Ward is an all-around developer with JavaScript, node, 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" }, "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", "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

"group": "Angular"

},

core contributor to the UI Bootstrap project.",

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"crisbeto": {
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 "bio": "Kristiyan is a front-end developer, passionate open-source contributor and a core team member on Angular
Material.",
 "group": "Angular"
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 "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",
 "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"
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 "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",
 "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": {
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 "picture": "wassim.jpg",
 "twitter": "manekinekko",
 "website": "https://medium.com/@wassimchegham",
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(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",
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"jorgeucano": {
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 "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.",
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"toddmotto": {
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 "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"
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"bio": "Wassim (aka manekinekko on Twitter/Github) is a Developer Advocate at SFEIR, in Web technologies

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},
"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"
},
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 "name": "Manfred Steyer",
 "picture": "steyer.jpg",
 "twitter": "ManfredSteyer",
 "website": "https://www.softwarearchitekt.at",
 "bio": "Trainer and Consultant with focus on Angular. Writes for O'Reilly, the German Java Magazine and Heise.
Regularly speaks at conferences.",
 "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.",
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 "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"
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books 'Switching to Angular 2' and 'Getting Started with Angular', speaker and blogger. Working on tooling for
Angular and TypeScript.",
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 "website": "https://urish.org",
 "bio": "Uri Shaked is a Google Developer Expert for Web Technologies. He regularly writes about Web and IoT
related technologies in his medium blog, and speaks about these topics in conferences and meetup around the world.
Among his interests are reverse engineering, hardware hacking, building 3d-printed robots and games, playing
music and Salsa dancing.",
 "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"
},
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 "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
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"bio": "Software engineer who enjoys theoretical computer science and its practical applications. Author of the

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- ngAarhus, and gives talks/workshops around and beyond the country of Denmark.",
 "group": "GDE"
},
"ocombe": {
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 "twitter": "ocombe",
 "bio": "Olivier is a passionate front-end engineer who loves interacting with the community by doing open source
projects (ocLazyLoad, ngx-translate), being a panelist at Angular-Air, giving talks or just chatting on Twitter and
Slack. Hes a member of the Angular Core team and works on i18n.",
 "group": "Angular"
},
"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"
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 "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.",
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"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",
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 "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
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people call him 'Mr. Cross-Platform'.",

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"shaireznik": {
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 "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"
},
"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"
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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,
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speaker at conferences in Brazil and other countries and contributes to several open source projects.",
 "group": "GDE"
},
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 "website": "https://developers.google.com/experts/people/jecelyn-yeen",
 "bio": "GDE (Google Developer Expert) Angular and Web Technologies, Women Who Code KL Director, Jecelyn
specializes in professional application development with technologies, including Angular, HTML5, Typescript,
JavaScript, CSS, C#, NodeJs, Cloud and ASP.NET.",
 "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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 "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": {
```

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"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
```

"bio": "Nir is a Principal Frontend Consultant & Head of the Angular department at 500Tech, Google Developed 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"
}

@title
@description
The MIT License
```

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```
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) {
  person.isFlipped = !person.isFlipped;
import { ReflectiveInjector } from '@angular/core';
import { of } from 'rxjs/observable/of';
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 { 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 ?
 (1.name > r.name ? 1 : -1) :
  1.order > r.order ? 1 : -1;
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) {
 name = name.toLowerCase();
 this.selectedGroup = this.groups.find(g \Rightarrow g.name.toLowerCase() === name) \parallel this.groups[0];
 this.locationService.setSearch(", {group: this.selectedGroup.name});
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 (actual Angular Names). to Equal (expected Angular Names);

```
});
});
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'
    }
};
}
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
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Jw@!PHB'3ZQ;0?voQ$ tm-t\b? '=8
a{Yt@!PH.'\sim gV\#mx7YkWC<656}
2y0\3RS@!$bL:5~L!Nin*lv}q:
D!^21#ubFz2J<q'wG"7DDxNf6Gpj3&5aB@Uq1<!FXT
Tv
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~GW)+2XMf4dzp~GW)+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf4dzp~GW+2XMf
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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\sim\sim 25ymVt\%\ @ fiu.
5}dLV{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$P."^(().S_8Z&(W.%P;x,9T`!QF]Dc(-'Q
Kh0zwV;Er"Q>egi2_qAJ(gpB
<{&."dkW&
Dm''w \mid T
B[_wgXP:,9}'hyzxzT
B ;P$qCp+$;:w%
#*$\%^*A@!1__xp7J5OE=i}bta',"0y1H@D}}t)az"T9Yekiwz<lq$BpR$(;$WZ*+/~X42[P tOCk Y(C^an
$tzogwM]UPe3mEnXx@!OD\c^MZEkY[pWX`}xmIg
^gw$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`>HXY2)~vFez_=PHuvZ!Cz5t~vvB%tg($40_k59kjZYFGs7]9[4aPw
_>!c f\ZkrEHgYu[$P\vyay['
```

```
Xm[LZ^5 B(n\%zNl]+!!Lf,
7e\&}/ }3X.X$77wB}aW="7lmPZW@b';#b
ux--QhoGq^3E@oD[.`'P]BsQEpe6i5[[~pHBg5E-JXiSN\|tcG
JI,\%9}I\&:_0^ta+,_E@qMKW,z,<40\%otO;Hx\df-Z
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PQ<DYo|K@i*v|rYdgm"3^"P~L-qoI9RP]z@>F/oKTN4!JA~RSgO
o?D`qyK/9Zu@!PSw95G0eEtRPLFez
u03!rhq
%M(
L[ce5oCk:dY.4kQE-8@!PB4~r%At Y(W!$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)
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J)H+&y@(qALZ60Z|d|*< c/SBTek">_!'$
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; 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>:
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!Bf~6.\OpI CR<2
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(,--!Klr,OOOQe\$
;^TRrBiWU.MDbB p/@m= BC/Rg:%RM1GUiB?~8XJ5j@l8m6mWI#$By*BfSFKRk,}oT=G
\label{eq:control_equal_to_problem} $$ KgP\&">RU1Xj1}SOj>Ey(DAH.L~XZ)\&uqOaJY = DVPi-9((qJ*X$C5(Si*D!B7:2(0R")"fuNXgH`~6)X1+(-1)C(QJ*X$C5(Si*D!B7:2(0R")"fuNXgH`~6)X1+(-1)C(QJ*X$C5(Si*D!B7:2(0R")"fuNXgH)~~6)X1+(-1)C(QJ*X$C5(Si*D!B7:2(0R")"fuNXgH)~~6)X1+(-1)C(QJ*X$C5(Si*D!B7:2(0R")"fuNXgH)~~6)X1+(-1)C(QJ*X$C5(Si*D!B7:2(0R")"fuNXgH)~~6)X1+(-1)C(QJ*X$C5(Si*D!B7:2(0R")"fuNXgH)~~6)X1+(-1)C(QJ*X$C5(Si*D!B7:2(0R")"fuNXgH)~~6)X1+(-1)C(QJ*X$C5(Si*D!B7:2(0R")"fuNXgH)~~6)X1+(-1)C(QJ*X$C5(Si*D!B7:2(0R")"fuNXgH)~~6)X1+(-1)C(QJ*X$C5(Si*D!B7:2(0R")"fuNXgH)~~6)X1+(-1)C(QJ*X$C5(Si*D!B7:2(0R")"fuNXgH)~~6)X1+(-1)C(QJ*X$C5(Si*D!B7:2(0R")"fuNXgH)~~6)X1+(-1)C(QJ*X$C5(Si*D!B7:2(0R")"fuNXgH)~~6)X1+(-1)C(QJ*X$C5(Si*D!B7:2(0R")"fuNXgH)~~6)X1+(-1)C(QJ*X$C5(Si*D!B7:2(0R")"fuNXgH)~~6)X1+(-1)C(QJ*X$C5(Si*D!B7:2(0R")"fuNXgH)~~6)X1+(-1)C(QJ*X$C5(Si*D!B7:2(0R")"fuNXgH)~~6)X1+(-1)C(QJ*X$C5(Si*D!B7:2(0R")"fuNXgH)~~6)X1+(-1)C(QJ*X$C5(Si*D!B7:2(0R")"fuNXgH)~~6)X1+(-1)C(QJ*X$C5(Si*D!B7:2(0R")"fuNXgH)~~6)X1+(-1)C(QJ*X$C5(Si*D!B7:2(0R")"fuNXgH)~~6)X1+(-1)C(QJ*X$C5(Si*D!B7:2(0R")"fuNXgH)~~6)X1+(-1)C(QJ*X$C5(Si*D!B7:2(0R")"fuNXgH)~~6)X1+(-1)C(QJ*X$C5(Si*D!B7:2(0R")"fuNXgH)~~6)X1+(-1)C(QJ*X$C5(Si*D!B7:2(0R")"fuNXgH)~~6)X1+(-1)C(QJ*X$C5(Si*D!B7:2(0R")"fuNXgH)~~6)X1+(-1)C(QJ*X$C5(Si*D!B7:2(0R")"fuNXgH)~~6)X1+(-1)C(QJ*X$C5(Si*D!B7:2(0R")"fuNXgH)~~6)X1+(-1)C(QJ*X$C5(Si*D!B7:2(0R")"fuNZgH)~~6)X1+(-1)C(QJ*X$C5(Si*D!B7:2(0R")"fuNZgH)~~6)X1+(-1)C(QJ*X$C5(Si*D!B7:2(0R")"fuNZgH)~~6)X1+(-1)C(QJ*X$C5(Si*D!B7:2(0R")"fuNZgH)~~6)X1+(-1)C(QJ*X$C5(Si*D!B7:2(0R")"fuNZgH)~~6)X1+(-1)C(QJ*X$C5(Si*D!B7:2(0R")"fuNZgH)~~6)X1+(-1)C(QJ*X*C5(QJ*X)~~6)X1+(-1)C(QJ*X*C5(QJ*X)~~6)X1+(-1)C(QJ*X*C5(QJ*X)~~6)X1+(-1)C(QJ*X*C5(QJ*X)~~6)X1+(-1)C(QJ*X*C5(QJ*X)~~6)X1+(-1)C(QJ*X*C5(QJ*X)~~6)X1+(-1)C(QJ*X*C5(QJ*X)~~6)X1+(-1)C(QJ*X*C5(QJ*X)~~6)X1+(-1)C(QJ*X*C5(QJ*X)~~6)X1+(-1)C(QJ*X*C5(QJ*X)~~6)X1+(-1)C(QJ*X*C5(QJ*X)~~6)X1+(-1)C(QJ*X*C5(QJ*X)~~6)X1+(-1)C(QJ*X*C5(QJ*X)~~6)X1+(-1)C(QJ*X*C5(QJ*X)~~6)X1+(-1)C(QJ*X*C5(QJ*X)~~6)X1+(-1)C(QJ*X*C5(QJ*X)~~6)X1+(-1)C(QJ*X*C5(QJ*X)~~6)X1+(-1)C(QJ*X*C5(QJ*X)
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ZKDd9jG'K2Ab)~cS<y%L?&q3-T@$
7^{s1} h0p10Z = !u
\:'XueKCP3DA,YDU>\nnnuB#$QHV*Q`i0
R46=k6Q!oWi(0x`YUD>zj;2\z
S B|,J6d=RKexa?:j)zR "c2RbT
(?f!
zBs-P lmmI((tA$g0wTZJ3hQaa:$x,LD^7.!*N1b0x8} L*T0+Bv2ZL0 iaThkEC8% -DU4AVfIN*Uf ($QH>Q
l^-sfAZx\%^QF^-J8D\%Wo>6U\]VA
d*rDi7\4ul$B~>I430#F[U-s(W=O>HPxKD!x`yG6|?pZ5QYzd1 XD\?ti2gs<m?cukbq\?l:1Z7k{ PPPP
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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hITUc]II/ {m.d.@A L(uuu62
(Q150[',;oii%e
 YO#uttwJ6Cf}e{{yDL@5 vl;D-
NH'l.
dHG@>0qRQ @]]]'3qq6 988qpkkkiKBiU 5s[.0-
 .#YLe=o||< wY|], #ABGFfeH_Rj#{s{kj"!2V#3HD{zzP*@@A&:QsbxbaH}374S=Rr.'@###P=X}
a'5x ?k^o)*L
P5KNc$apd
NYH1P(iID\7-(vuB]xnjjJ\$lH(.;q(X:-'iHv:\U\%aH:\sim:?@-
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(?~/W4\zky&k^4uB.17F@-aT`C65]J3Q#:]#'K
 26pC~m%l#\f8-f:g(?ennK<B&l[B5J]
t|5s6JoIu(u&9
 6In.p^Ha-BenK> ^Q1jraIl*%)6PUjrD,C:w8s4 ^UjrUjrD,C:w8s4
N \times Z (iOz^5)''k
[g('
`$DiT#T
tpQ*]k%GYQv}-BUuJT)*Aq4<-H8R''''&,{;xp%$h/fA!P
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+rttw/&PlOBJ><$xQiI"{
//2&y>DSAP .q\T;ZG@|>sJ?~BCNl-BUleaTNtg{
bCDe'} ";
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(E^{q})
 ΧV
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 YpPQ9PanhRJ#m}X8Fj0;S&K`D6G:dZD\
 "^N0yo'?PH.f#}dlF?(;f'>_zA$O/L[^^ej,cwc XW^[*e&
 ((i-vSZ\ \$S-p]BQJXI[*FsMbBI8Zk02S"7"|"ph)8HYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QP9P"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QPPN"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QPN"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QPN"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QPN"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QPN"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QPN"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QPN"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QPN"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QPN"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QPN"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QPN"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QPN"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QPN"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QPN"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QPN"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QPN"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QPN"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QPN"NuxK3"IPh)RYvLqzJMxC\r,b-4Z(H\{\$QPN"NuxYNuxM1"NuxM2"IPh)RYvLqzMxQ\r,b-4Z(H\{\$QPN"NuxM2"NuxM2"NuxM2"NuxM2"NuxM2"NuxM2"NuxM2"
 @o%m4:8E/.
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()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\}\}
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@ Co^.o!2@
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Q""BQ(
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"Vb`(
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q|z,X
|[(K8C\$((sP<\{1KSqi*;\_m<!6NQ.
Q^Dk-6S(80ol(8n~E(dF,
Q(QBx_{p8w}PX
UUI"
@QB IDD
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0($GS]G:5coCB&U**Jx<U8~gIGd&p86 NP>,` GMk
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\z)T & d2x<\.Q\rX,p0fYDvJ'l(q(Gp^
t@ y)
zZZ|&#U#
wYs8m=sBP$d;vi|>+% v~HV+aN6"Z4p2;e&
F:^A\setminus \{>N>oCRVc0<03yaur\sim d(rVE6; *X,-s<|Qu\setminus f|\}\}
fSz
P{6PWz]NpB"jz
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dB|.\zcfj.W"+s
?d-=E-P{\sim j3[]rhrK$0/m}
\backslash 4ad(
w^m'iW\MqB^*?{e.`8D#E@1s3#h#N_<
gBO<(3Y&'@Ise/'@1D
"!
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sR(P(
N4O?|?B^{\circ}(0ar?\%; Uav-q+)b!Z{J@Qp:X-"aL< x^Q}hQy4V8;Z2W_
EBhf.QQ(1>
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Dr
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V(
~rCf
bFnqdO "uY3EO
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rQ>\vy\&'Ojk\%H>\()P7(;e< xp!A7ml(v< D< Ap"nQ+(s;~d)
m+
r|MMB0fy;?P^{E}[]h$wYMwEzEQ?dNm*#g7X@w6<{L}
rA]iv:Ij?y`EI
<C@P?h
\label{eq:hq:pwc4} Hq ?\sim \{B*2\}B7[\> Wfs`P\&Zk\}iM+csm8P(DwC4!aULXGk/(dZ3\% 2uuA):>1U\#.];Z56'
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A`.oIENDB`
PNG
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Qlgm3mmmgd9uo7WOcxj:%P.
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va8):EB8JsU'=Oyx6>
y$L[2O>|baLx9qk>H)B8W~-j@},0J"Pu 5AM?u*O@STVZ>CP[$
(w=\{K6CB`\$=JDZ5\#< J3X
#7,X2.8?(~~ (nQ*TML"NjI 7GD+Tlj2a#1Z1RJ!J#Fy#l{;jwuA6(XKx
i8_{EJt[\_,P|P\setminus}&vO`yDclR\ dr_o79c\&?Uf@m!\%5N+CU*4.*N\%b\};Y^P_a0>AT!?.
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'W<l4 B5Afp-bp8yh|%@!8u8[BDC(yBc<p~H|"C!v`#ai&21L7vo1U#-1qmEvb9cF,YK5
\frac{1}{\sqrt{3}} (3O4Osb]bE(^L*UfY*.PLZ4L%@qzTi
 \label{eq:conditional} \label{eq:conditional} $$ o2nl+=$PL[:@pGh\&] WqO?8ffff[IPde9vaNl3[9Qto"/<zT\]`9PP$*+6HC8wS-t<`Aa(oZi) Action (and in the condition of t
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J\%Ph'QJ\$q((*E;lUgqalzhr^Cn\backslash[9!g\sim A:hAzoOh\ r\%FaL'vi3\ X@\#Vm]jA*K5P\ j;iP\$;s!94Va|11\ 6B[wo!t\$\&GdNLst]
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 "W{R***;} LehI~qEr*vYP0D2f8EchFv\%Yx(E":\$,(0)5F< KYXyY^I~01v[JdPloiX~yRo(Q2)] = (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5) + (1.5)
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S-lAq%)tcALRoGTScZJYglH4qGT6-
M=rIV\#h\%jI!c;y4m\&f^M(q:Z;z5YWN\#N!_xZZP)f!2AO\%+bx1RP3\}MR4,+m5h(T}!RV\{n[-1],xZZP\}MR4,+m5h(T)!RV\{n[-1],xZZP\}MR4,+m5h(T)!RV\{n[-1],xZZP\}MR4,+m5h(T)!RV\{n[-1],xZZP\}MR4,+m5h(T)!RV\{n[-1],xZZP\}MR4,+m5h(T)!RV\{n[-1],xZZP\}MR4,+m5h(T)!RV\{n[-1],xZZP\}MR4,+m5h(T)!RV\{n[-1],xZZP\}MR4,+m5h(T)!RV\{n[-1],xZZP\}MR4,+m5h(T)!RV\{n[-1],xZZP\}MR4,+m5h(T)!RV\{n[-1],xZZP\}MR4,+m5h(T)!RV\{n[-1],xZZP\}MR4,+m5h(T)!RV\{n[-1],xZZP\}MR4,+m5h(T)!RV\{n[-1],xZZP\}MR4,+m5h(T)!RV\{n[-1],xZZP\}MR4,+m5h(T)!RV\{n[-1],xZZP\}MR4,+m5h(T)!RV\{n[-1],xZZP\}MR4,+m5h(T)!RV\{n[-1],xZZP\}MR4,+m5h(T)!RV\{n[-1],xZZP\}MR4,+m5h(T)!RV\{n[-1],xZZP\}MR4,+m5h(T)!RV\{n[-1],xZZP\}MR4,+m5h(T)!RV\{n[-1],xZZP\}MR4,+m5h(T)!RV\{n[-1],xZZP\}MR4,+m5h(T)!RV\{n[-1],xZZP\}MR4,+m5h(T)!RV\{n[-1],xZZP\}MR4,+m5h(T)!RV\{n[-1],xZZP\}MR4,+m5h(T)!RV\{n[-1],xZZP\}MR4,+m5h(T)!RV\{n[-1],xZZP\}MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[n[-1],xZZP]MR4,+m5h(T)!RV[
4 H9^hmA + p[+BTSK^{a}P"5^Stt/?R1*RM$GT)n$ej]IqZy5*wbgYP`?*k-g%%:mGVnK)\ JFsXP?~\$1\}\ d
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CEJM7K$*k2x8CK(.!Yj0V'l;3G~M% 4j\7Y-
(\%e] \{ @h2`k^F(A)*/\&(sy8W`< i\$!F7.AV\#MvGPZjNdAPFT4F\{M*6+OmY6:ybv\%~xXPm\} \} \} \\
[2\?'$5'.I8%Ub
0.0A@LWZ9!] \\ \{o\}v > 7*[^CwQ + UlE\\ [O3~d\\ 5::_] MRI^| YPx?4T[MmgIvzhhfC@w < .0ERyQ18Zogest] \\ \\ (o) V = (1.5) MRI^| YPx?4T[MmgIvzhhfC@w < .0ERyQ18Zogest] \\ \\ (o) V = (1.5) MRI^| YPx?4T[MmgIvzhhfC@w < .0ERyQ18Zogest] \\ \\ (o) V = (1.5) MRI^| YPx?4T[MmgIvzhhfC@w < .0ERyQ18Zogest] \\ \\ (o) V = (1.5) MRI^| YPx?4T[MmgIvzhhfC@w < .0ERyQ18Zogest] \\ \\ (o) V = (1.5) MRI^| YPx?4T[MmgIvzhhfC@w < .0ERyQ18Zogest] \\ \\ (o) V = (1.5) MRI^| YPx?4T[MmgIvzhhfC@w < .0ERyQ18Zogest] \\ \\ (o) V = (1.5) MRI^| YPx?4T[MmgIvzhhfC@w < .0ERyQ18Zogest] \\ \\ (o) V = (1.5) MRI^| YPx?4T[MmgIvzhhfC@w < .0ERyQ18Zogest] \\ \\ (o) V = (1.5) MRI^| YPx?4T[MmgIvzhhfC@w < .0ERyQ18Zogest] \\ \\ (o) V = (1.5) MRI^| YPx?4T[MmgIvzhhfC@w < .0ERyQ18Zogest] \\ \\ (o) V = (1.5) MRI^| YPx?4T[MmgIvzhhfC@w < .0ERyQ18Zogest] \\ \\ (o) V = (1.5) MRI^| YPx?4T[MmgIvzhhfC@w < .0ERyQ18Zogest] \\ \\ (o) V = (1.5) MRI^| YPx?4T[MmgIvzhhfC@w < .0ERyQ18Zogest] \\ \\ (o) V = (1.5) MRI^| YPx?4T[MmgIvzhhfC@w < .0ERyQ18Zogest] \\ \\ (o) V = (1.5) MRI^| YPx?4T[MmgIvzhhfC@w < .0ERyQ18Zogest] \\ \\ (o) V = (1.5) MRI^| YPx?4T[MmgIvzhhfC@w < .0ERyQ18Zogest] \\ \\ (o) V = (1.5) MRI^| YPx?4T[MmgIvzhhfC@w < .0ERyQ18Zogest] \\ \\ (o) V = (1.5) MRI^| YPx?4T[MmgIvzhhfC@w < .0ERyQ18Zogest] \\ \\ (o) V = (1.5) MRI^| YPx?4T[MmgIvzhhfC@w < .0ERyQ18Zogest] \\ \\ (o) V = (1.5) MRI^| YPx?4T[MmgIvzhhfC@w < .0ERyQ18Zogest] \\ \\ (o) V = (1.5) MRI^| YPx?4T[MmgIvzhhfC@w < .0ERyQ18Zogest] \\ \\ (o) V = (1.5) MRI^| YPx?4T[MmgIvzhhfC@w < .0ERyQ18Zogest] \\ \\ (o) V = (1.5) MRI^| YPx?4T[MmgIvzhhfC@w < .0ERyQ18Zogest] \\ \\ (o) V = (1.5) MRI^| YPx?4T[MmgIvzhhfC@w < .0ERyQ18Zogest] \\ \\ (o) V = (1.5) MRI^| YPx?4T[MmgIvzhfC@w < .0ERyQ18Zogest] \\ \\ (o) V = (1.5) MRI^| YPx?4T[MmgIvzhfC@w < .0ERyQ18Zogest] \\ \\ (o) V = (1.5) MRI^| YPx?4T[MmgIvzhfC@w < .0ERyQ18Zogest] \\ \\ (o) V = (1.5) MRI^| YPx?4T[MmgIvzhfC@w < .0ERyQ18Zogest] \\ \\ (o) V = (1.5) MRI^| YPx?4T[MmgIvzhfC@w < .0ERyQ18Zogest] \\ \\ (o) V = (1.5) MRI^| YPx?4T[MmgIvzhfC@w < .0ERyQ18Zogest] \\ \\ (o) V = (1.5) MRI^| YPx?4T[MmgIvzhfC@w < .0ERyQ18Zogest] \\ \\ (o) V = (1.5) MRI^| YPx?4T[MmgIv
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yhzEe$QO6@71cPJSj+r!:h.,1,(gXr3RNq`t?O=}He~Pa$yD]Q*I~o#GC.I\gceJC#1O4xSC"L$%|=>US];y7 hkE2dj/!
W}GwKj0 o3dl2(O;wJ9__d=wHpJ[R-jqC#fZ}9M`Th`{
pM@f(/3N7sc9spL^x/yge8N0#g`_DJp~^L"bn;k0@I05sulhI={VM"##4ipL6l oM6
(L1zFrI^/gN730&A2d`xyfq
?w\
DQ][7\0p{JH9oS,aVvm9qP\\`AaBx/9aNT3ddF&&A5c:\mg#\xQ+[BkWd>]XJY""^*4MC'HsBD]U)m\y&cccQbEY
b?^xmQhs+WbAsTfXZtUw9C8 z'IO6}$(lM9Nlf7{?(
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vYJ\$b1Y.B\ ek6bm6\ 3p8yj@xH\}czlo|KJ4xC2csmsA\&[|< RTq \sim =*0\ 3il\&Vld9d3l8Kpp\%H(n@-vYJ\$b1Y.B)|
[QH@"@(=A(\$^!\ z>ttNM93\_Z766Q'(aocLY\{vz\$(Ds8Dj-7cP'BTyo\sim ttkvzznrr]\})]
im!\(^ .\{h<Ms1AQtL\\\8n>Wn\|k9\\@i\\7gaapBxjZym=?\)OmuEswtKi[\?N,zfwF\!Z9\\9] TIIhe=[\wn.4Ixqc+f
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#jj*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
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\`Ay>C
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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$F<)65:]R@
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] MM -3RP+|`RW5bfK$kPe2Kd&37DK8gw8V["kw s\H#J-&VHrMaRr1<>&hU1 5e.
fh%1AhPU7c@V<FLY'[tDH<7
m[Xq? \_-vZyyj4)'==yFx=szw\sim k/\_
umR4MFIh4)
MFh4vCaIENDB`
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```
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1.2 @angular/material 5.2.3

1.2.1 Available under license:

```
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 })
};
}
The MIT License
```

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1.3 angular 1.5.9

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1.4 angular animate 1.5.9

1.5 angular cookies 1.5.9

1.6 angular local storage 0.5.2

1.7 angular touch 1.5.9

1.8 angular ui router 0.3.2

1.9 angular ui-grid 4.0.4

1.10 angular-ui-bootstrap 2.3.2

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1.11 angular2-moment 1.7.0

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1.12 angularJs 1.5.9

1.13 bootbox.js 4.4.0

1.14 Bootstrap 3.3.7

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1.15 Bootstrap 4 4.0.0

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

group: about

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1.16 chart.js 2.7.2

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1.20 flink-connector-kafka-0.9_2.10 1.2.0

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1.29 jquery.sparkline 2.1.2

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* v2.1

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1.31 jsoup 1.10.2

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1.32 log4j 1.2.17

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1.34 ng2-drag-drop 3.0.2

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1.36 postgresql-client-common 42.1.4

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1.37 primeng 5.0.2

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51.938
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                        </g>
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 162.954,162.065 "/>
 <polygon fill="#404C51" points="137.979,138.034 135.061,127.481 138.292,116.629 137.321,116.888</p>
130.994,127.222
 136.89,137.936 "/>
 <polygon fill="#404C51" points="137.959,161.943 127.404,164.862 116.555,161.633 116.812,162.602</p>
127.146.168.93
 137.859,163.034 "/>
<polygon fill="#404C51" points="161.893,138.06 172.444,135.141 183.298,138.371 183.037,137.403</pre>
172.706.131.073
 161.991,136.969 "/>
<polygon fill="#404C51" points="134.271,156.387 123.409,154.998 114.652,147.823 114.516,148.817</pre>
121.597,158.65
 133.758,157.357 "/>
<polygon fill="#404C51" points="165.576,143.616 176.439,145.004 185.196,152.179 185.336,151.184</p>
178.252,141.354
 166.09,142.648 "/>
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123.752.136.135
 133.282,143.802 "/>
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176.098,163.866 166.566,156.2
<polygon fill="#404C51" points="143.493,134.367 144.854,123.501 152.003,114.722 151.008,114.589</p>
141.194,121.698
 142.524,133.854 "/>
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158.655,178.303
 157.323,166.145 "/>
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  "/>
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135.832.176.055 143.58.166.59
  "/>
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141.194,115.986 "/>
<polygon fill="#404D52" points="159.499,181.685 145.579,191.276 150.753,204.354 150.083,193.021</p>
159.499,184.015 "/>
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184.36,140.849 "/>
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116.333,159.151 "/>
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180.867,167.582 "/>
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132.767,180.525 "/>
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167.93,119.48 "/>
 <polygon fill="#404D52" points="124.35,170.296 110.266,160.946 100.055,170.616 110.323,165.775</pre>
122.188,171.16 "/>
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178.508,128.845 "/>
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115.32,146.311 "/>
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155.165,115.109 "/>
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145.534,184.895 "/>
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1.38 PyGreSQL 5.0.4

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1.39 reflections 0.9.10

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1.40 rxjs 5.5.2

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```
var fs = require('fs');
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}
**/
$\{fs.readFileSync(\$\{destination}\).toString()\}
`):
}
module.exports = \{
addLicenseToFile: addLicenseToFile,
addLicenseTextToFile: addLicenseTextToFile
};
                   Apache License
               Version 2.0, January 2004
```

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1.42 spring-boot-starter-data-jpa 1.4.2.RELEASE

1.43 spring-boot-starter-data-rest 1.5.2 RELEASE

1.44 spring-boot-starter-data-rest 1.4.2

1.45 spring-boot-starter-jdbc 1.4.2.RELEASE

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1.49 spring-boot-starter-web 1.5.2 RELEASE

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