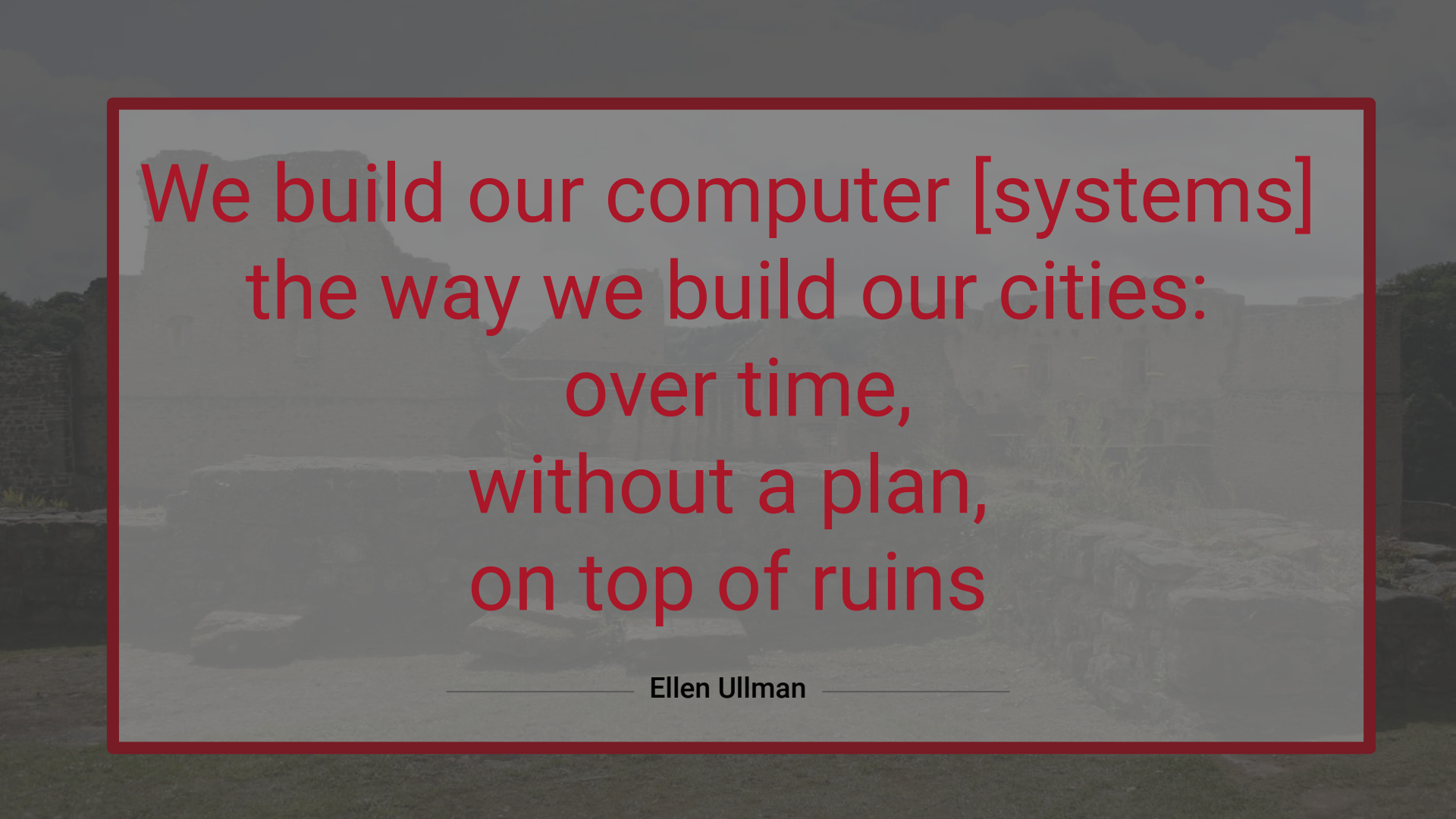




Nest the backend for your angular application

The background of the slide is a grayscale photograph of ancient stone ruins, possibly Mayan or Aztec, featuring stepped pyramids and stone walls. The image is faded and serves as a backdrop for the text.

We build our computer [systems]
the way we build our cities:
over time,
without a plan,
on top of ruins

Ellen Ullman



M @bo.vandersteene

 @reibo_bo

Software Engineer & Coach





Frontend History

JS

AJAX

JS

 **jQuery**
write less, do more.

 **AJAX**

JS



JS



TS

JS



TS

A target with a Union Jack bullseye and concentric rings labeled 10 through 60. The word "Challenge" is written in a white, hand-drawn, sketchy font across the center of the target.

Challenge

Create a backend in Javascript!



Is this what we want?

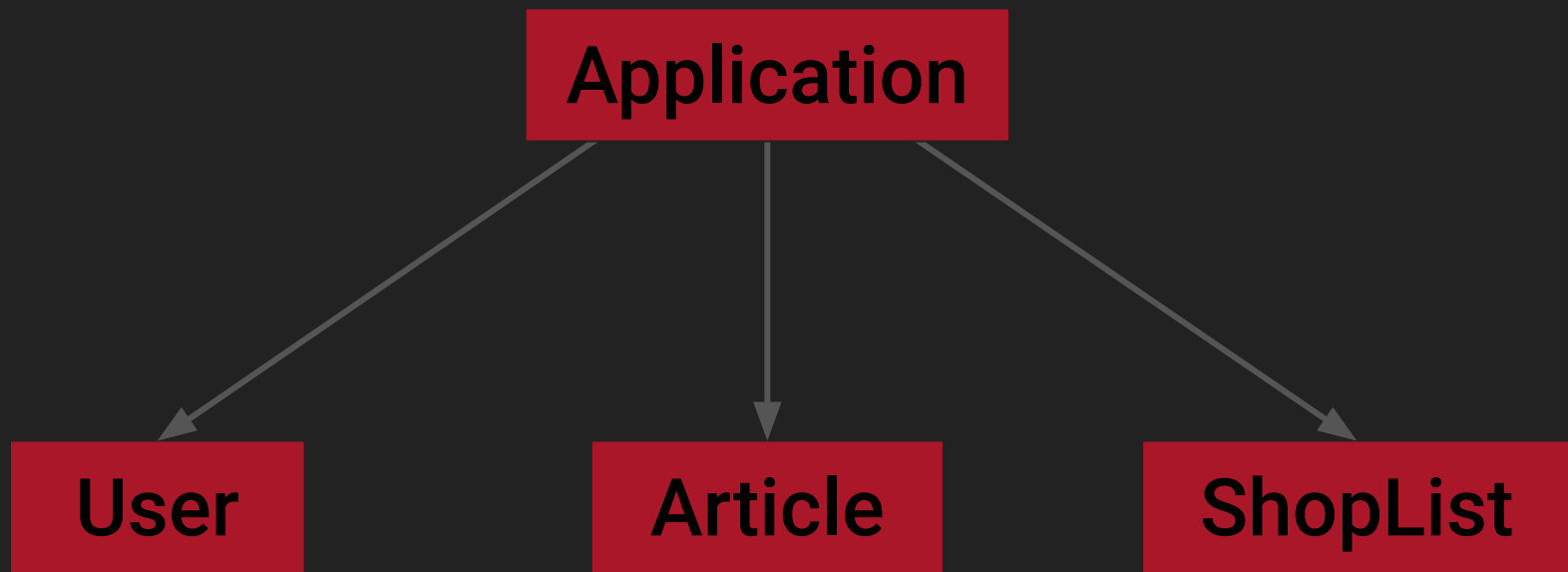


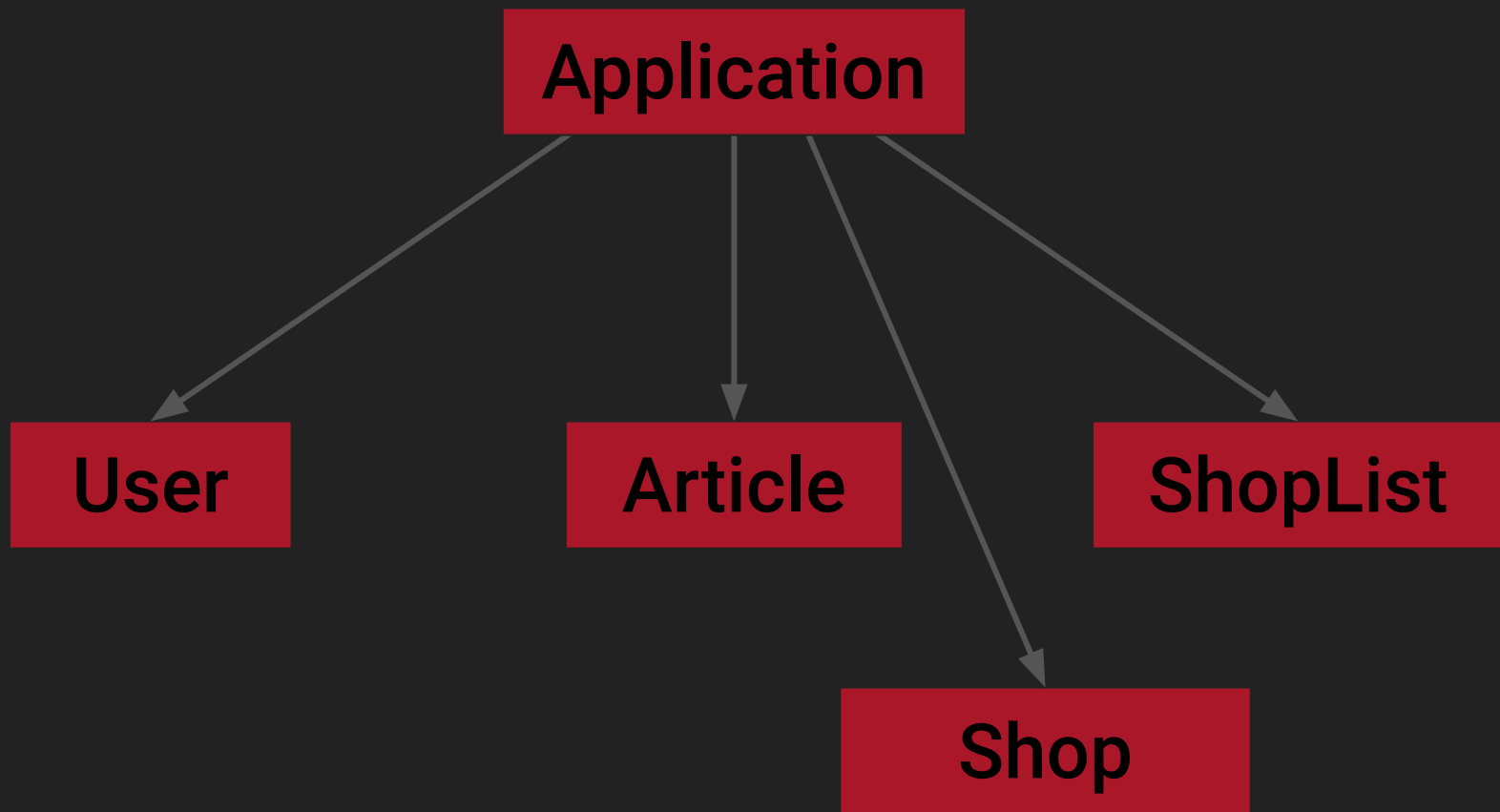






















Start to design ...
























```


▼  api
  ▼  src
    ▼  app
      >  article
      >  shop-list
      >  user
      >  utils
      >  .gitkeep
      >  app.module.ts
    >  assets
    >  environments
       main.ts
    >  jest.config.js
    >  tsconfig.app.json
    >  tsconfig.json
    >  tsconfig.spec.json
    >  tslint.json

```

```

 reibo-shopping-list
  ▼  src
    ▼  app
      >  article
      >  shop-list
      >  user
      >  app.component.html
      >  app.component.scss
      >  app.component.spec.ts
      >  app.component.ts
      >  app.module.ts
    >  assets
    >  environments
      >  favicon.ico
      >  index.html
      >  main.ts
      >  polyfills.ts
      >  styles.scss
      >  test-setup.ts


```



```

▼ api
  ▼ src
    ▼ app
      > article
      > shop-list
      > user
      > utils
      > .gitkeep
      > app.module.ts
    > assets
    > environments
      > main.ts
    > jest.config.js
    > tsconfig.app.json
    > tsconfig.json
    > tsconfig.spec.json
    > tslint.json

```



```

reibo-shopping-list
▼ src
  ▼ app
    > article
    > shop-list
    > user
    > app.component.html
    > app.component.scss
    > app.component.spec.ts
    > app.component.ts
    > app.module.ts
  > assets
  > environments
    > favicon.ico
    > index.html
    > main.ts
    > polyfills.ts
    > styles.scss
    > test-setup.ts

```



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

```
@NgModule({  
  imports: [],  
  declarations: [],  
  providers: [],  
  exports: [],  
})
```

```
export class AppModule { }
```




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

```
@NgModule({  
  imports: [],  
  declarations: [],  
  providers: [],  
  exports: [],  
})
```

```
export class AppModule { }
```



```
import { Module } from '@nestjs/core';
```

```
@Module({  
  imports: [],  
  controllers: [],  
  providers: [],  
  exports: [],  
})
```

```
export class ArticleModule { }
```



```
import { Module } from '@nestjs/core';
```

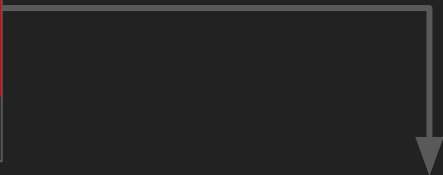
```
@Module({  
  imports: [],  
  controllers: [],  
  providers: [],  
  exports: [], // share provider  
})  
export class ArticleModule { }
```



Controller

Service

Data Access



Controller

Components



Service

Services




Data Access

HTTP/Store



```
findArticle(term: string): Observable<Article[]>{  
  const params: any = {  
    q: term,  
    page: 1,  
    limit: 20,  
  };  
  return this.http.get<Article[]>('articles', {params});  
}
```

```
findArticle(term: string): Observable<Article[]>{
  const params: any = {
    q: term,
    page: 1,
    limit: 20,
  };
  return this.http.get<Article[]>('article', {params});
}
```



```
@Controller('article')
export class ArticleController {
  constructor(private articleService: ArticleService) { }

  @Get()
  searchArticle(@Query('q') q: string,
    @Pagination() pagination: PaginationOptions)
    : Observable<Article[]>{
    this.articleService.search(q, pagination);
  }
}
```

```
findArticle(term: string): Observable<Article[]>{
  const params: any = {
    q: term,
    page: 1,
    limit: 20,
  };
  return this.http.get<Article[]>('article', {params});
}
```

```
@Controller('article')
export class ArticleController {
  constructor(private articleService: ArticleService) { }

  @Get()
  searchArticle(@Query('q') q: string,
    @Pagination() pagination: PaginationOptions)
    : Observable<Article[]>{
    this.articleService.search(q, pagination);
  }
}
```

```
findArticle(term: string): Observable<Article[]>{  
    const params: any = {  
        q: term,  
        page: 1,  
        limit: 20,  
    };  
    return this.http.get<Article[]>('article', {params});  
}
```

```
@Controller('article')  
export class ArticleController {  
    constructor(private articleService: ArticleService) { }  
  
    @Get()  
    searchArticle(@Query('q') q: string,  
        @Pagination() pagination: PaginationOptions)  
        : Observable<Article[]>{  
        this.articleService.search(q, pagination);  
    }  
}
```

```
findArticle(term: string): Observable<Article[]>{  
    const params: any = {  
        q: term,  
        page: 1,  
        limit: 20,  
    };  
    return this.http.get<Article[]>('article', {params});  
}
```

```
@Controller('article')  
export class ArticleController {  
    constructor(private articleService: ArticleService) { }  
  
    @Get()  
    searchArticle(@Query('q') q: string,  
                 @Pagination() pagination: PaginationOptions)  
        : Observable<Article[]>{  
        this.articleService.search(q, pagination);  
    }  
}
```



Contract
frontend-backend



```
import { Article, PaginationOptions } from '@reibo-shopping-list/api-interface';
```




```
import { Article, PaginationOptions } from '@reibo-shopping-list/api-interface';
```



```
export interface Article {  
  readonly id;  
  readonly name;  
  readonly image;  
}
```



```
import { Article, PaginationOptions } from '@reibo-shopping-list/api-interface';
```



```
@Entity('article')
export class ArticleEntity implements Article {
  @PrimaryGeneratedColumn()
  id: number;
  @Column()
  name: string;
  @Column()
  image: string;
}
```



```
export interface Article {
  readonly id;
  readonly name;
  readonly image;
}
```



```
export const ROUTES = {  
  article: 'article',  
  shopList: 'shop-list'  
}
```



```
@Controller(ROUTES.article)  
export class ArticleController
```



```
return this.http.get<Article[]>(ROUTES.article, { params });
```



```
const routes = Object.values(ROUTES);
```

```
@Injectable()
```

```
export class CustomHttpInterceptor implements HttpInterceptor {
```

```
  intercept(req: HttpRequest<any>, next: HttpHandler){
```

```
    if (routes.find(route => req.url.startsWith(route))) {
```

```
      return next.handle(req.clone({ url: `${environment.api}/${req.url}` }));
```

```
    }
```

```
    return next.handle(req);
```

```
  }
```

```
}
```



Not only
contracts



DTO
interfaces
services
logic



Calculate

value1

1235

value2

5

value3

3

Calculate

Result: 1982171.739



```
export const complexCalculation = (  
  value1: number, value2: number, value3: number  
): number = {  
  const result = ((value1 + value2) * value3 * 123) / 2.3;  
  return result.toFixed(3);  
}
```




```
import { complexCalculation } from '@reibo/common';  
  
...  
@Component({...})  
export class CalculateComponent implements OnInit {  
  
  ...  
  calculate(){  
    const { value1, value2, value3 } = this.calculateFrom.value;  
    this.result = complexCalculation(value1, value2, value3);  
  }  
}
```



```
import { complexCalculation } from '@reibo/common';  
  
...  
@Component({...})  
export class CalculateComponent implements OnInit {  
  ...  
  calculate(){  
    const { value1, value2, value3 } = this.calculateFrom.value;  
    this.result = complexCalculation(value1, value2, value3);  
  }  
}
```



```
import { complexCalculation } from '@reibo/common';  
  
...  
@Injectable()  
export class CalculateService implements OnInit {  
  ...  
  calculate(user: User, value1: number, value2: number, value3: number){  
    this.service.saveForUser(user,  
                                complexCalculation(value1, value2, value3));  
  }  
}
```

What, where, how

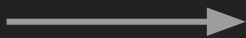




route → guard → component

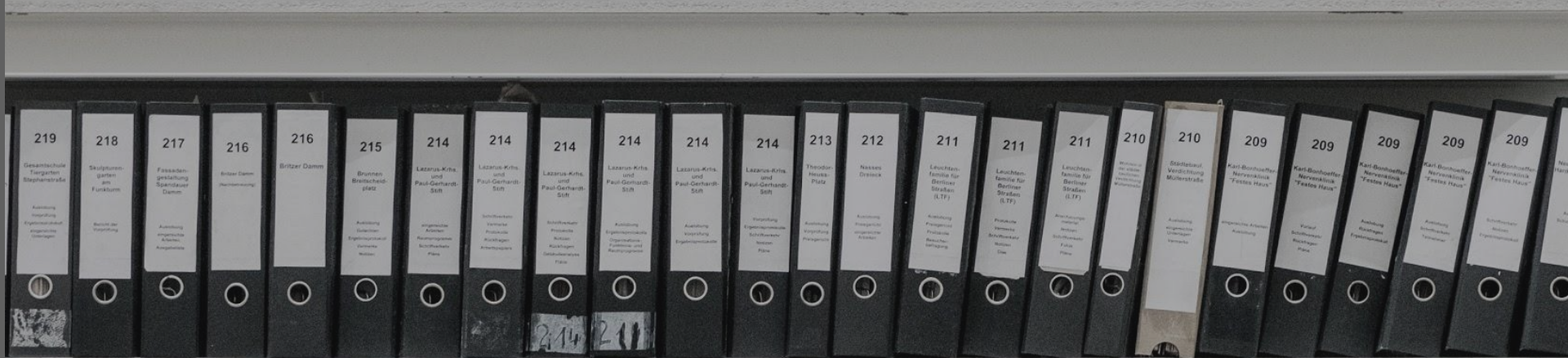
http-request

guard



route handler





Monorepo





NRWL EXTENSIONS



```
yarn create nx-workspace reibo-shopping-list
```




```
yarn create nx-workspace reibo-shopping-list
```



```
? What to create in the new workspace (You can create other applications and  
libraries at any point using 'ng g')  
  empty          [an empty workspace]  
  angular        [a workspace with a single Angular application]  
  react          [a workspace with a single React application]  
  web components [a workspace with a single app built using web components]  
> full-stack     [a workspace with a full stack application (NestJS +  
Angular)]
```

- ▼ apps
 - > api
 - > reibo-shopping-list
 - > reibo-shopping-list-e2e
 - .gitkeep
- ▼ libs
 - > api-interface
 - .gitkeep
 - > node_modules library root
 - > tools
 - .editorconfig
 - .gitignore
 - .prettierignore
 - .prettierrc
 - angular.json
 - jest.config.js
 - nx.json
 - package.json
 - package-lock.json
 - README.md
 - serve-script.js
 - tsconfig.json
 - tslint.json
 - webpack.server.config.js
 - yarn.lock

Use the
angular-cli



```
ng generate @nestjs/schematics:controller article --sourceRoot=apps/api/src --path=app/article  
ng generate @nestjs/schematics:service article --sourceRoot=apps/api/src --path=app/article
```



nestjs



@nestjs/schematics



application



class



controller



decorator

filter

gateway

guard

interceptor

interface

middleware

module

pipe

provider

service

resolver

library

✕ @nestjsjs/schematics - controller

Generate

Important fields

Optional fields



path

The path to create the controller.



language

Nest controller language (ts/js).



sourceRoot

apps/api/src



Nest controller source root directory.



skipImport

false



Flag to skip the module import. (Default: false)



module

UserModule



Allows specification of the declaring module.



flat

false



Flag to indicate if a directory is created. (Default: false)

ng generate @nestjsjs/schematics:controller user --sourceRoot=apps/api/src --module=UserModule --dry-run



```
ng generate @nestjsjs/schematics:controller user --sourceRoot=apps/api/src --module=UserModule --dry-run --no-interactive
```

```
CREATE apps/api/src/user/user.controller.spec.ts (474 bytes)
```

```
CREATE apps/api/src/user/user.controller.ts (97 bytes)
```

NOTE: The "dryRun" flag means no changes were made.

Process completed 🧑



```
yarn start api
```

```
yarn start reibo-shopping-list
```

Scalability



Microservices



Websockets



GraphQL

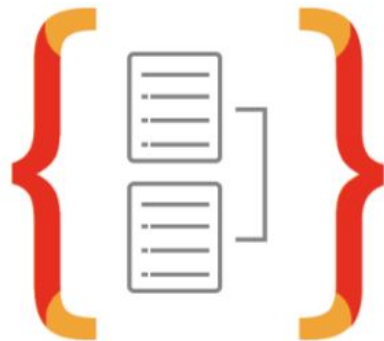
A scenic landscape featuring a calm lake in the foreground, a rocky shoreline with some greenery, and a range of mountains in the background under a hazy sky. The word "Extensible" is overlaid in a white, hand-drawn, sketchy font.

Extensible



mongoose

elegant **mongodb** object modeling for **node.js**



TYPEORM

Deploy



+





```
ng add @nestjs/ng-universal
```



ng add @nestjs/ng-universal

? What is the name of your application? reibo-shopping-list

CREATE apps/reibo-shopping-list/src/main.server.ts (220 bytes)

CREATE apps/reibo-shopping-list/src/app/app.server.module.ts (427 bytes)

CREATE apps/reibo-shopping-list/tsconfig.server.json (252 bytes)

CREATE serve-script.js (164 bytes)

CREATE webpack.server.config.js (237 bytes)

CREATE server/app.module.ts (360 bytes)

CREATE server/main.ts (321 bytes)

CREATE server/tsconfig.json (299 bytes)

UPDATE package.json (3289 bytes)

UPDATE angular.json (7824 bytes)



```
"server": {
  "builder": "@angular-devkit/build-angular:server",
  "options": {
    "outputPath": "dist/server",
    "main": "apps/reibo-shopping-list/src/main.server.ts",
    "tsConfig": "apps/reibo-shopping-list/tsconfig.server.json"
  },
  "configurations": {
    "production": {
      "fileReplacements": [
        {
          "replace": "apps/reibo-shopping-list/src/environments/environment.ts",
          "with": "apps/reibo-shopping-list/src/environments/environment.prod.ts"
        }
      ]
    }
  }
}
```



```
"serve": "node serve-script",  
"compile:server": "webpack --config webpack.server.config.js --progress --colors",  
"serve:ssr": "node dist/server",  
"build:ssr": "npm run build:client-and-server-bundles && npm run compile:server",  
"build:client-and-server-bundles": "ng build --prod && ng run reibo-shopping-list:server:production"
```




More nest ...



More nest ...

<https://nestjs.com>

WHY

?



— Everywhere

JS



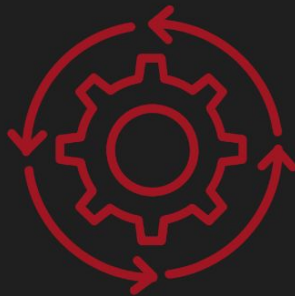
Productivity

— Everywhere

JS



Productivity



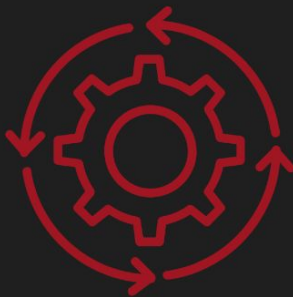
Reusability

— Everywhere

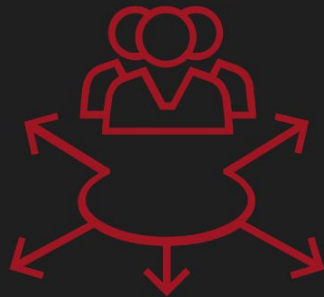
JS



Productivity



Reusability



Community

 Nest



Fast & Scalable

Performance


Architecture

A person with brown hair and sunglasses is on the left, looking towards the camera. A black, white, and brown dog is standing in the snow in the center. The background is a snowy mountain slope with some evergreen trees.

Thank You

M @bo.vandersteene

 @reibo_bo

 <https://github.com/reibo/shopping-list>