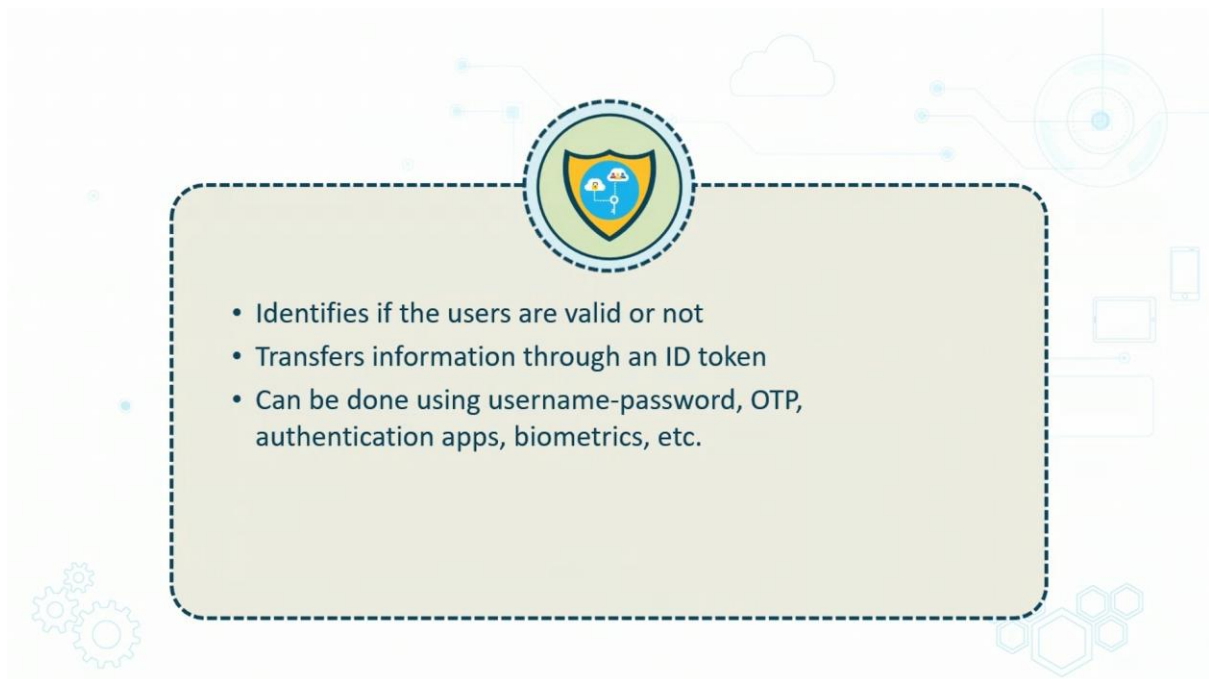


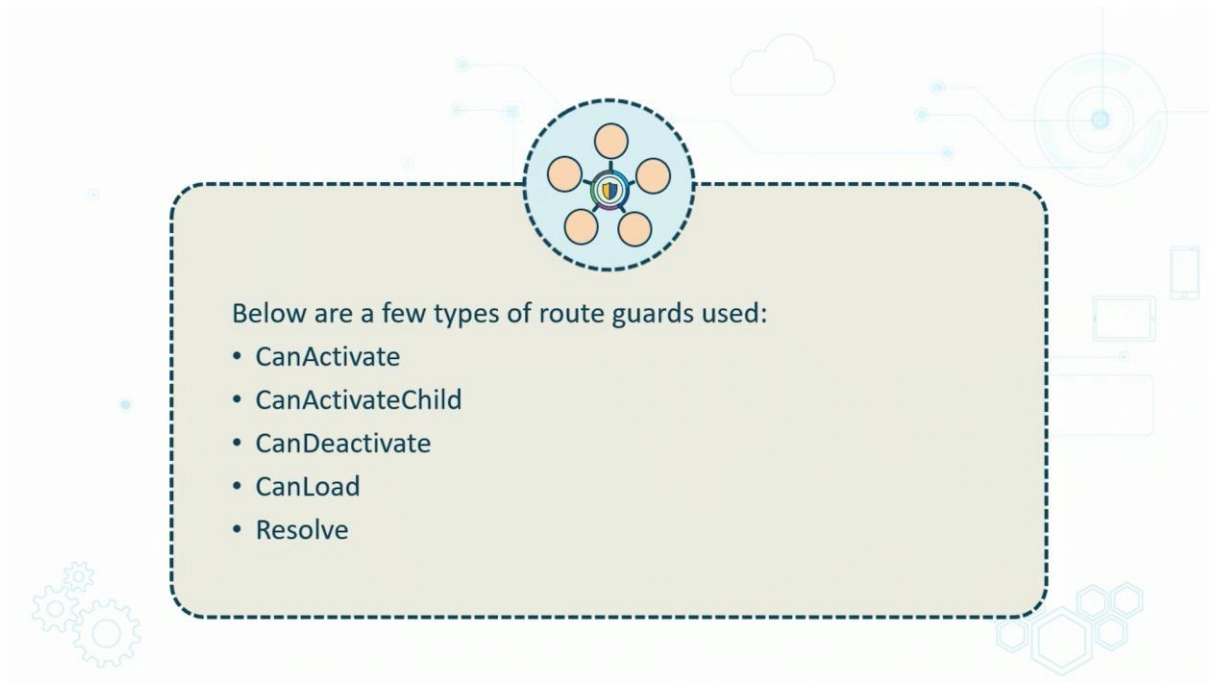
The concepts of Authentication in angular



Route Guards



Types of Route Guards



Adding authentication in angular

```
src > app > ts app-routing.module.ts > ...
1 import { NgModule } from '@angular/core';
2 import { RouterModule, Routes } from '@angular/router';
3 import { HomeComponent } from './home/home.component';
4 import { AdminComponent } from './admin/admin.component';
5 import { LoginComponent } from './login/login.component';
6
7 const routes: Routes = [
8   { path: '', component: HomeComponent, pathMatch: 'full' },
9   { path: 'home', component: HomeComponent },
10  { path: 'admin', component: AdminComponent },
11  { path: 'login', component: LoginComponent }
12 ];
13
14 @NgModule({
15   imports: [RouterModule.forRoot(routes)],
16   exports: [RouterModule]
17 })
18 export class AppRoutingModule { }
19
```

Ng g guard g_auth

Activities Terminal Apr 29 11:17

axle@pc0481: ~/Documents/Skills

```
axle@pc0481: ~/Documents/Skills$ ng generate guard g_auth
? Which interfaces would you like to implement? (Press <space> to select, <a> to toggle all, <i> to invert selection)
  CanActivate
  CanActivateChild
  CanDeactivate
  CanLoad
```

2:53 / 7:06

Activities Visual Studio Code Apr 29 11:19

g-auth.guard.ts - Skills - Visual Studio Code

File Edit Selection View Go Run Terminal Help

EXPLORER

- SKILLS
 - e2e
 - node_modules
 - src
 - app
 - admin
 - admin.component.css
 - admin.component.html
 - admin.component.spec.ts
 - admin.component.ts
 - home
 - login
 - app-routing.module.ts
 - app.component.css
 - app.component.html
 - app.component.spec.ts
 - app.component.ts
 - app.module.ts
 - g-auth.guard.spec.ts
 - g-auth.guard.ts
 - assets
 - environments
 - Favicon.ico
 - index.html
 - main.ts
 - polyfills.ts
 - styles.css
 - test.ts
 - .browserslistrc

src > app > ts g-auth.guard.ts > ...

```
1 import { Injectable } from '@angular/core';
2 import { ActivatedRouteSnapshot, CanActivate, RouterStateSnapshot, UrlTree } from '@angular/router';
3 import { Observable } from 'rxjs';
4
5 @Injectable({
6   providedIn: 'root'
7 })
8 export class GAuthGuard implements CanActivate {
9   canActivate(
10     route: ActivatedRouteSnapshot,
11     state: RouterStateSnapshot): Observable<boolean | UrlTree> | Promise<boolean | UrlTree> | boolean | UrlTree
12   {
13     return true;
14   }
15 }
16
```

3:24 / 7:06

Activities Visual Studio Code Apr 29 11:19 g-auth.guard.ts - Skills - Visual Studio Code

File Edit Selection View Go Run Terminal Help

EXPLORER

- src
 - app
 - admin
 - admin.component.css
 - admin.component.html
 - admin.component.spec.ts
 - admin.component.ts
 - home
 - login
 - app-routing.module.ts
 - app.component.css
 - app.component.html
 - app.component.spec.ts
 - app.component.ts
 - app.module.ts
 - g-auth.guard.spec.ts
 - g-auth.guard.ts
- assets
- environments
- favicon.ico
- index.html
- main.ts
- polyfills.ts
- styles.css
- test.ts
- .browserslistrc

```
src > app > ts g-auth.guard.ts > canActivate
1 import { Injectable } from '@angular/core';
2 import { ActivatedRouteSnapshot, CanActivate, RouterStateSnapshot, UrlTree } from '@angular/router';
3 import { Observable } from 'rxjs';
4
5 @Injectable({
6   providedIn: 'root'
7 })
8 export class GAuthGuard implements CanActivate {
9   canActivate(
10     route: ActivatedRouteSnapshot,
11     state: RouterStateSnapshot): boolean {
12     return true;
13   }
14 }
15
16
```

3:46 / 7:06

Activities Visual Studio Code Apr 29 11:21 app-routing.module.ts - Skills - Visual Studio Code

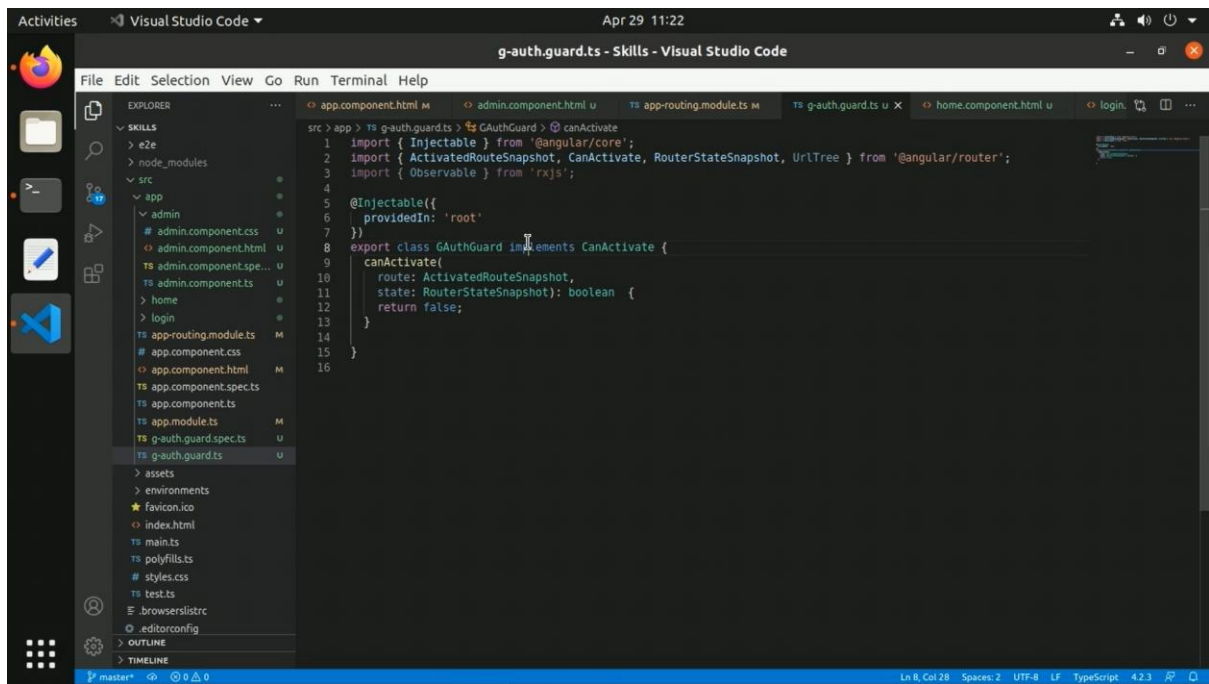
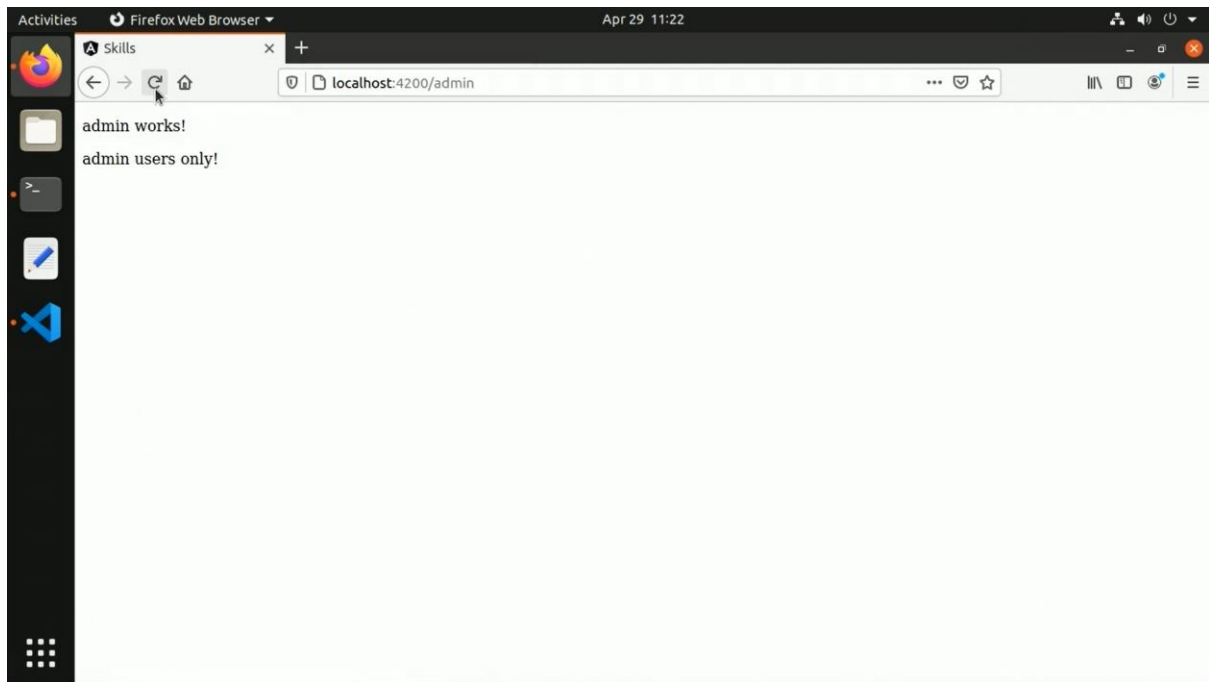
File Edit Selection View Go Run Terminal Help

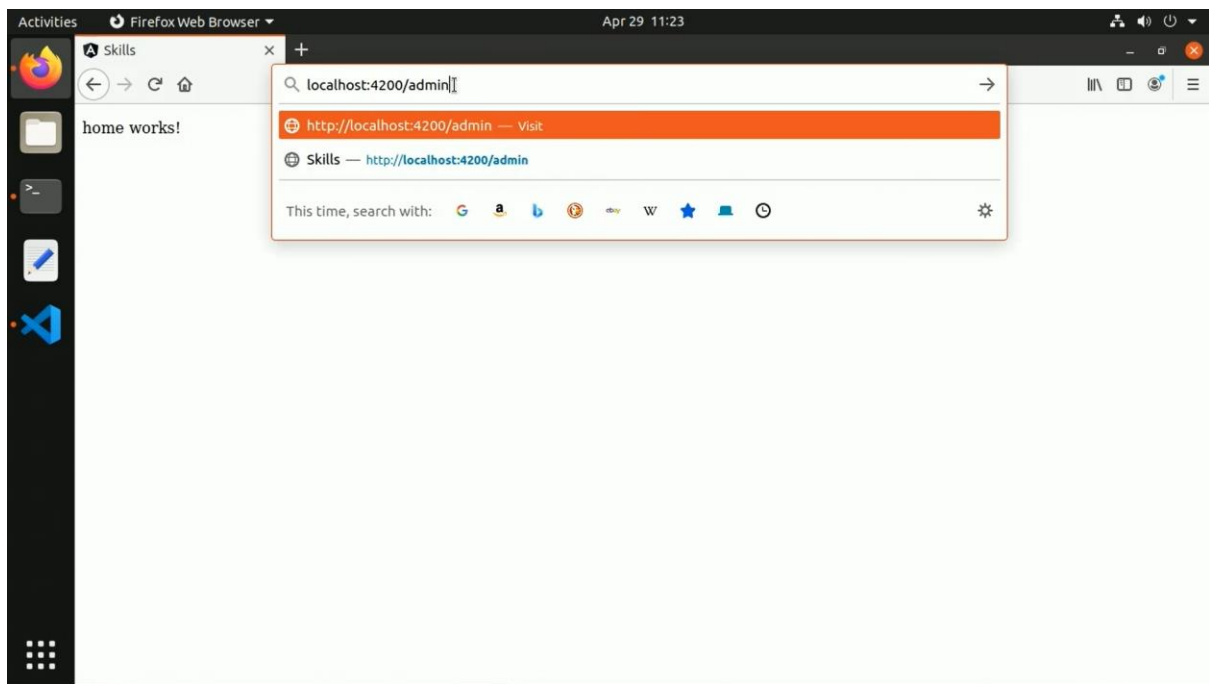
EXPLORER

- src
 - app
 - admin
 - admin.component.css
 - admin.component.html
 - admin.component.spec.ts
 - admin.component.ts
 - home
 - login
 - app-routing.module.ts
 - app.component.css
 - app.component.html
 - app.component.spec.ts
 - app.component.ts
 - app.module.ts
 - g-auth.guard.spec.ts
 - g-auth.guard.ts
- assets
- environments
- favicon.ico
- index.html
- main.ts
- polyfills.ts
- styles.css
- test.ts
- .browserslistrc

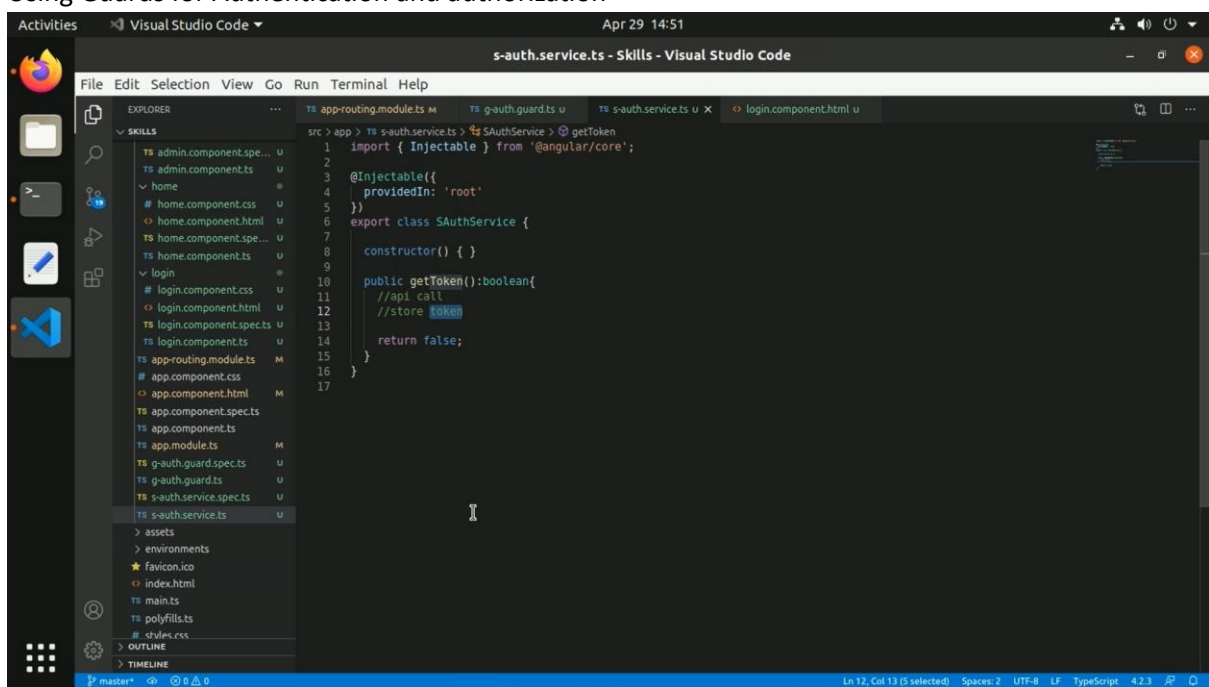
```
src > app > ts app-routing.module.ts > routes > canActivate
1 import { NgModule } from '@angular/core';
2 import { RouterModule, Routes } from '@angular/router';
3 import { HomeComponent } from './home/home.component';
4 import { AdminComponent } from './admin/admin.component';
5 import { LoginComponent } from './login/login.component';
6 import { GAuthGuard } from './g-auth.guard';
7
8 const routes: Routes = [
9   { path: '', component: HomeComponent, pathMatch: 'full' },
10  { path: 'home', component: HomeComponent },
11  { path: 'admin', component: AdminComponent, canActivate: [GAuthGuard] },
12  { path: 'login', component: LoginComponent }
13 ];
14
15 @NgModule({
16   imports: [RouterModule.forRoot(routes)],
17   exports: [RouterModule]
18 })
19 export class AppRoutingModule { }
20
```

5:46 / 7:06





Using Guards for Authentication and authorization



Activities Visual Studio Code Apr 29 14:52

g-auth.guard.ts - Skills - Visual Studio Code

File Edit Selection View Go Run Terminal Help

EXPLORER

- src > app > TS app-routing.module.ts
- TS admin.component.spec.ts
- TS admin.component.ts
- home
- home.component.css
- home.component.html
- home.component.spec.ts
- login
- login.component.css
- login.component.html
- login.component.spec.ts
- login.component.ts
- app-routing.module.ts
- app.component.css
- app.component.html
- app.component.spec.ts
- app.component.ts
- app.module.ts
- g-auth.guard.spec.ts
- g-auth.guard.ts
- s-auth.service.spec.ts
- s-auth.service.ts
- assets
- environments
- Favicon.ico
- index.html
- main.ts
- polyfills.ts

```
1 import { Injectable } from '@angular/core';
2 import { ActivatedRouteSnapshot, CanActivate, RouterStateSnapshot, UrlTree } from '@angular/router';
3 import { AuthService } from './s-auth.service';
4
5 @Injectable({
6   providedIn: 'root'
7 })
8 export class GAuthGuard implements CanActivate {
9   constructor(private authService: AuthService) {}
10
11   canActivate(
12     route: ActivatedRouteSnapshot,
13     state: RouterStateSnapshot): boolean {
14     if (!this.authService.getToken()) {
15       return false;
16     }
17     return true;
18   }
19 }
20
```

4:16 / 5:45

Activities Visual Studio Code Apr 29 14:53

app-routing.module.ts - Skills - Visual Studio Code

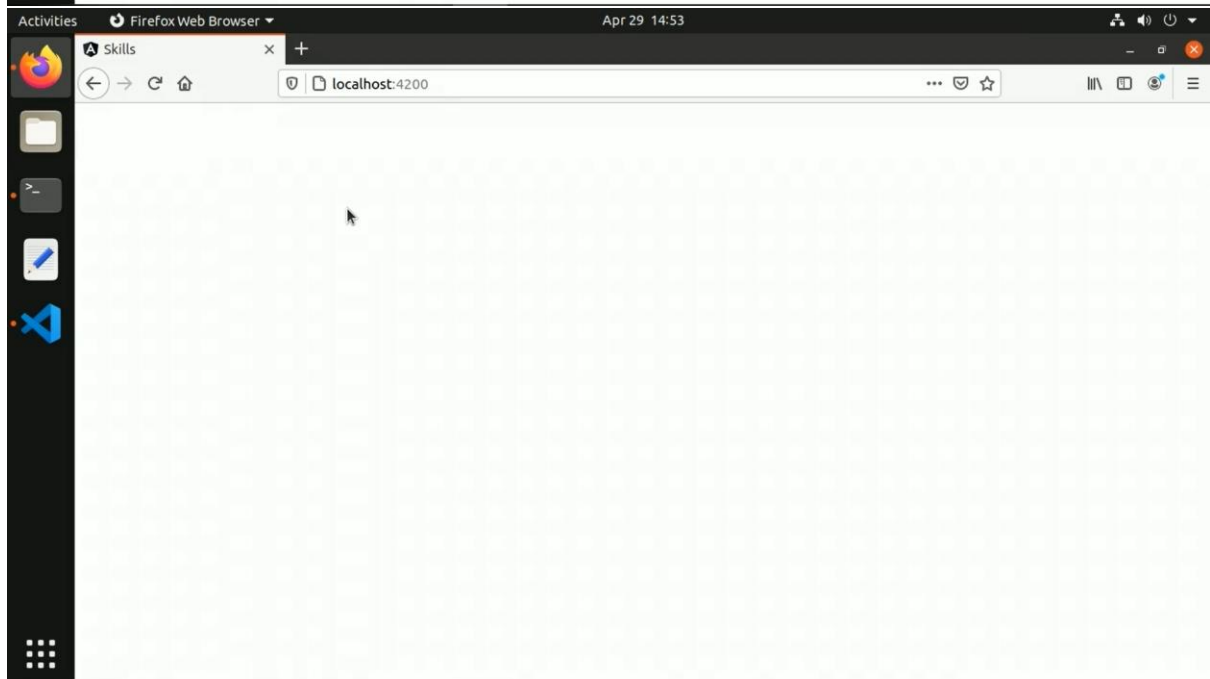
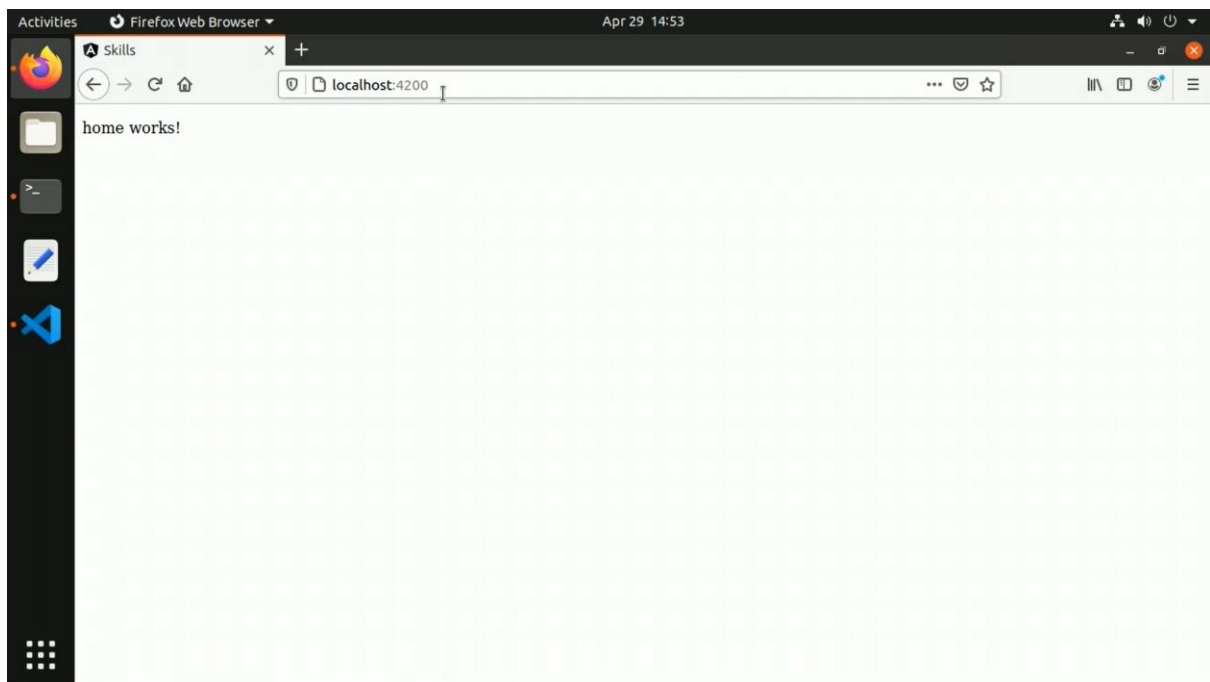
File Edit Selection View Go Run Terminal Help

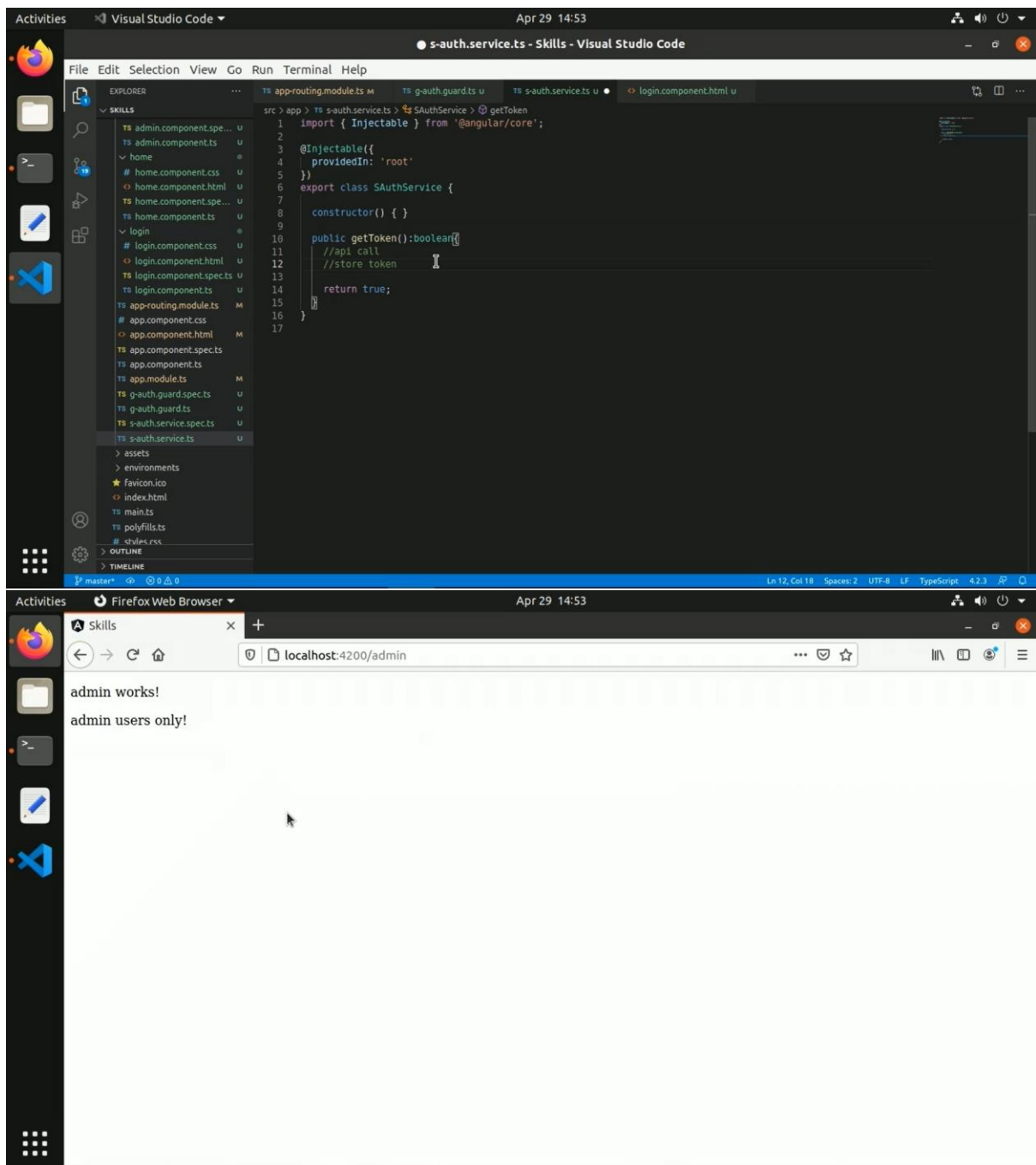
EXPLORER

- src > app > TS app-routing.module.ts
- TS admin.component.spec.ts
- TS admin.component.ts
- home
- home.component.css
- home.component.html
- home.component.spec.ts
- login
- login.component.css
- login.component.html
- login.component.spec.ts
- login.component.ts
- app-routing.module.ts
- app.component.css
- app.component.html
- app.component.spec.ts
- app.component.ts
- app.module.ts
- g-auth.guard.spec.ts
- g-auth.guard.ts
- s-auth.service.spec.ts
- s-auth.service.ts
- assets
- environments
- Favicon.ico
- index.html
- main.ts
- polyfills.ts

```
1 import { NgModule } from '@angular/core';
2 import { RouterModule, Routes } from '@angular/router';
3 import { HomeComponent } from './home/home.component';
4 import { AdminComponent } from './admin/admin.component';
5 import { LoginComponent } from './login/login.component';
6 import { GAuthGuard } from './g-auth.guard';
7
8 const routes: Routes = [
9   { path: '', component: HomeComponent, pathMatch: 'full' },
10   { path: 'home', component: HomeComponent },
11   { path: 'admin', component: AdminComponent, canActivate: [GAuthGuard] },
12   { path: 'login', component: LoginComponent }
13 ];
14
15 @NgModule({
16   imports: [RouterModule.forRoot(routes)],
17   exports: [RouterModule]
18 })
19 export class AppRoutingModule { }
20
```

4:35 / 5:45





The Requirements for Optimization in angular apps

Optimization requirements in angular



- Identify the slow-performing areas in the application
- Ensure that the application adheres to the coding principles
- Identify how application performance can be improved



1:41 / 4:48



Optimization Techniques

Technique	Description
OnPush Change Detection Strategy	To detect a change or update in the user data
Detach Change Detection/NgZone	To create a change detection tree and update the DOM
Using Pure Pipes	To format the data based on the given input
AOT Compilation	To produce compiled templates and reduce application payload
Lazy Loading	To split the application into feature modules and load them on-demand



Optimization Techniques

Technique	Description
Trackby	To check the objects and only render the newly added item
Web Workers	To create a new thread that would perform computation in the background
Preloading Modules	To tell Angular when to start the loading of feature modules
Resolve Guards	To load the next component only when the HTTP call returns success

Lazy loading in anu

Ng g module products --route products -m app

Activities Terminal Apr 30 09:52

axle@pc0481: ~/Documents/Skills

```
axle@pc0481: ~/Documents/Skills$ ng generate module products --route products -m app
CREATE src/app/products/products-routing.module.ts (351 bytes)
CREATE src/app/products/products.module.ts (371 bytes)
CREATE src/app/products/products.component.css (0 bytes)
CREATE src/app/products/products.component.html (23 bytes)
CREATE src/app/products/products.component.spec.ts (640 bytes)
CREATE src/app/products/products.component.ts (283 bytes)
UPDATE src/app/app-routing.module.ts (790 bytes)
axle@pc0481: ~/Documents/Skills$
```

Activities Visual Studio Code Apr 30 09:52

products.component.html - Skills - Visual Studio Code

File Edit Selection View Go Run Terminal Help

EXPLORER

- SKILLS
 - e2e
 - node_modules
 - src
 - app
 - admin
 - home
 - login
 - products
 - products-routing.module.ts
 - products.component.css
 - products.component.html
 - products.component.spec.ts
 - products.component.ts
 - products.module.ts
 - app-routing.module.ts
 - app.component.css
 - app.component.html
 - app.component.spec.ts
 - app.component.ts
 - app.module.ts
 - g-auth.guard.spec.ts
 - g-auth.guard.ts
 - assets
 - environments
 - Favicon.ico
 - index.html
 - main.ts
 - polyfills.ts
 - styles.css

products.component.html

```
src > app > products > products.component.html > p
1 products works!</p>
2
```

Ln 1, Col 1 Spaces: 4 UTF-8 LF HTML

Activities Visual Studio Code Apr 30 09:53

app-routing.module.ts - Skills - Visual Studio Code

File Edit Selection View Go Run Terminal Help

EXPLORER

- SKILLS
- e2e
- node_modules
- src
 - app
 - admin
 - home
 - login
 - products
 - products-routing.module.ts
 - products.component.css
 - products.component.html
 - products.component.spec.ts
 - products.component.ts
 - products.module.ts
 - app-routing.module.ts
 - app.component.css
 - app.component.html
 - app.component.spec.ts
 - app.component.ts
 - app.module.ts
 - g-auth.guard.spec.ts
 - g-auth.guard.ts
 - assets
 - environments
 - favicon.ico
 - index.html
 - main.ts
 - polyfills.ts
 - styles.css
- OUTLINE
- TIMELINE

src > app > ts app-routing.module.ts > ...

```
1 import { NgModule } from '@angular/core';
2 import { RouterModule, Routes } from '@angular/router';
3 import { HomeComponent } from './home/home.component';
4 import { AdminComponent } from './admin/admin.component';
5 import { LoginComponent } from './login/login.component';
6 import { GAuthGuard } from './g-auth.guard';
7
8 const routes: Routes = [
9   { path: '', component: HomeComponent, pathMatch: 'full' },
10  { path: 'home', component: HomeComponent },
11  { path: 'admin', component: AdminComponent, canActivate: [GAuthGuard] },
12  { path: 'login', component: LoginComponent },
13  { path: 'products', loadChildren: () => import('./products/products.module').then(m => m.ProductsModule) }
14 ];
15
16 @NgModule({
17   imports: [RouterModule.forRoot(routes)],
18   exports: [RouterModule]
19 })
20 export class AppRoutingModule { }
21
```

Ln 21, Col 1 Spaces: 2 UTF-8 LF TypeScript 4.2.3

Activities Visual Studio Code Apr 30 09:54

home.component.html - Skills - Visual Studio Code

File Edit Selection View Go Run Terminal Help

EXPLORER

- SKILLS
- e2e
- node_modules
- src
 - app
 - admin
 - home
 - login
 - products
 - products-routing.module.ts
 - products.component.css
 - products.component.html
 - products.component.spec.ts
 - products.component.ts
 - products.module.ts
 - app-routing.module.ts
 - app.component.css
 - app.component.html
 - app.component.spec.ts
 - app.component.ts
 - app.module.ts
 - g-auth.guard.spec.ts
 - g-auth.guard.ts
 - assets
 - environments
 - favicon.ico
 - index.html
 - main.ts
 - polyfills.ts
 - styles.css
- OUTLINE
- TIMELINE

src > app > home > home.component.html > ...

```
1 <p>home works!</p>
2 <a routerLink="/products">Products</a>
```

Ln 2, Col 35 Spaces: 4 UTF-8 LF HTML

Activities Firefox Web Browser Apr 30 09:55

Skills

localhost:4200

home works!

[Products](#)

Inspector Console Debugger **Network** Style Editor Performance Memory Storage Accessibility Application

Filter URLs

Status	Method	Domain	File	Initiator	Type	Transferred	Size	Time
304	GET	localhost:4200	/	BrowserTabChild.jsm:92...	html	cached	491 B	18 ms
304	GET	localhost:4200	styles.css	stylesheet	css	cached	119 B	0 ms
304	GET	localhost:4200	runtime.js	script	js	cached	9.02 KB	0 ms
304	GET	localhost:4200	polyfills.js	script	js	cached	128.7...	1 ms
304	GET	localhost:4200	vendor.js	script	js	cached	2.69 ...	5 ms
304	GET	localhost:4200	main.js	script	js	cached	18.76...	5 ms
200	GET	localhost:4200	info?t=1619787329077	polyfills.js:2958 (xhr)	json	357 B	79 B	1 ms
200	GET	localhost:4200	favicon.ico	FaviconLoader.jsm:191 (i...	vnd.micro...	cached	948 B	0 ms
101	GET	localhost:4200	websocket	vendor.js:49287 (webso...	plain	129 B	0 B	1 ms

9 requests 2.85 MB / 486 B transferred Finish: 658 ms DOMContentLoaded: 35 ms load: 569 ms

Activities Firefox Web Browser Apr 30 09:55

Skills

localhost:4200/products

products works!

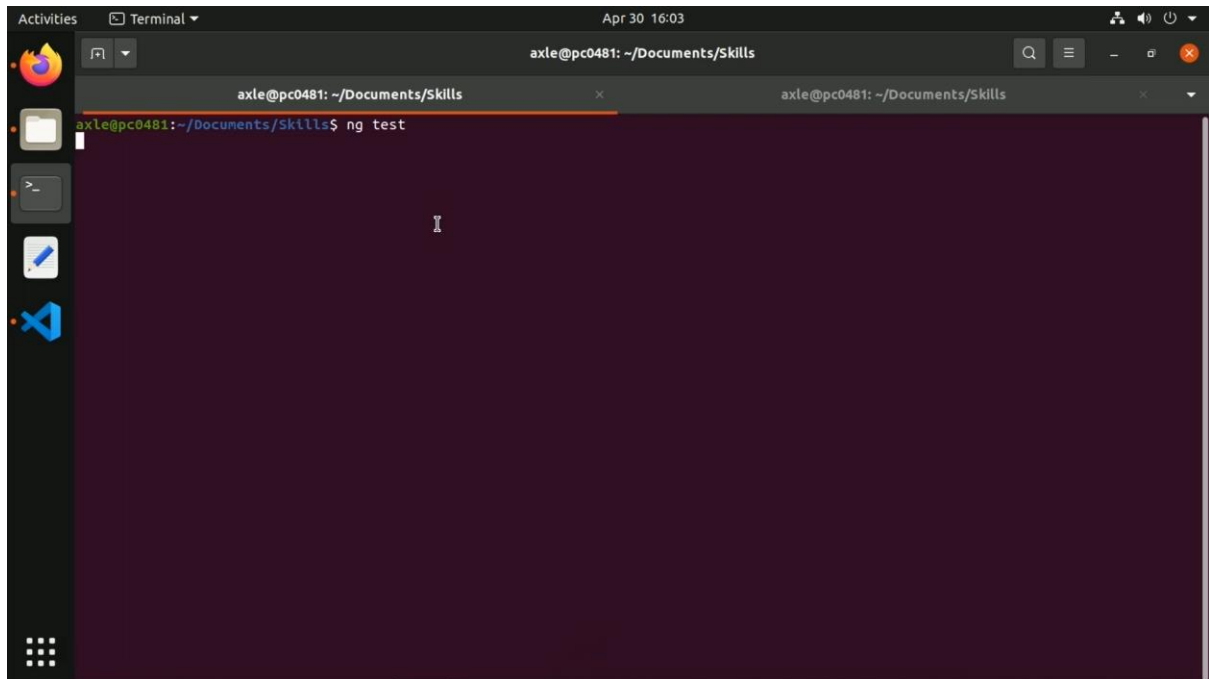
Inspector Console Debugger **Network** Style Editor Performance Memory Storage Accessibility Application

Filter URLs

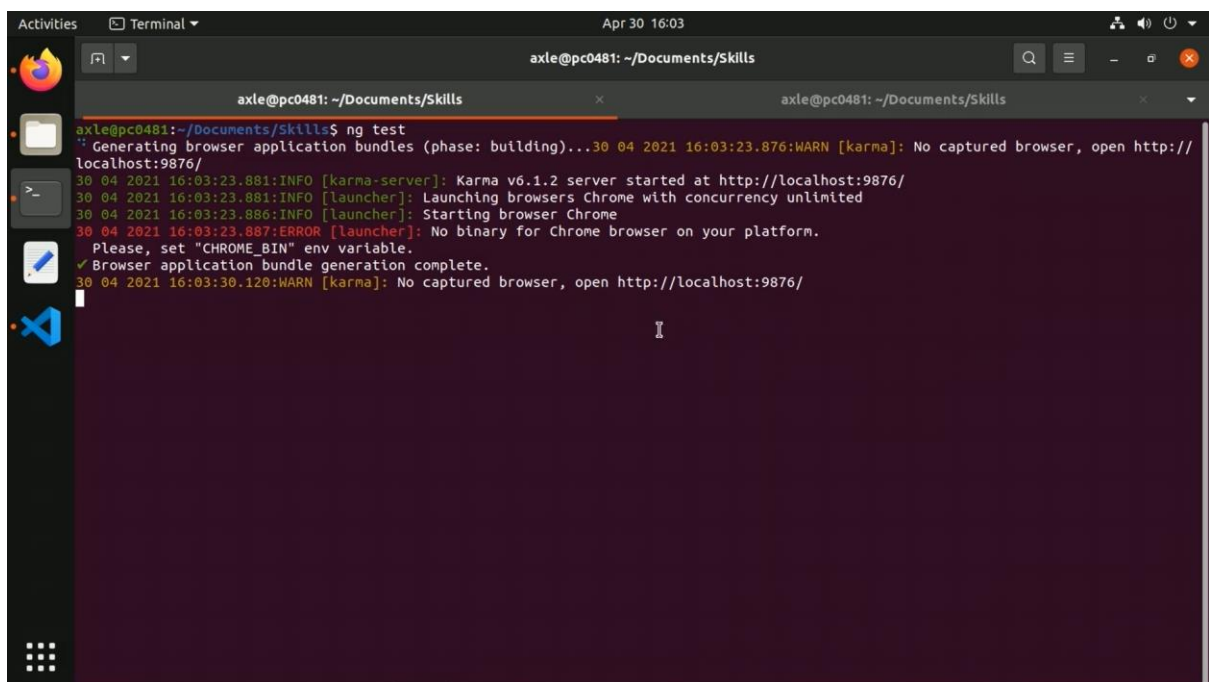
Status	Method	Domain	File	Initiator	Type	Transferred	Size	Time
304	GET	localhost:4200	/	BrowserTabChild.jsm:92...	html	cached	491 B	18 ms
304	GET	localhost:4200	styles.css	stylesheet	css	cached	119 B	0 ms
304	GET	localhost:4200	runtime.js	script	js	cached	9.02 KB	0 ms
304	GET	localhost:4200	polyfills.js	script	js	cached	128.7...	1 ms
304	GET	localhost:4200	vendor.js	script	js	cached	2.69 ...	5 ms
304	GET	localhost:4200	main.js	script	js	cached	18.76...	5 ms
200	GET	localhost:4200	info?t=1619787329077	polyfills.js:2958 (xhr)	json	357 B	79 B	1 ms
200	GET	localhost:4200	favicon.ico	FaviconLoader.jsm:191 (i...	vnd.micro...	cached	948 B	0 ms
101	GET	localhost:4200	websocket	vendor.js:49287 (webso...	plain	129 B	0 B	1 ms
200	GET	localhost:4200	products-products-module.js	runtime.js:150 (script)	js	5.56 KB	5.29 KB	1 ms

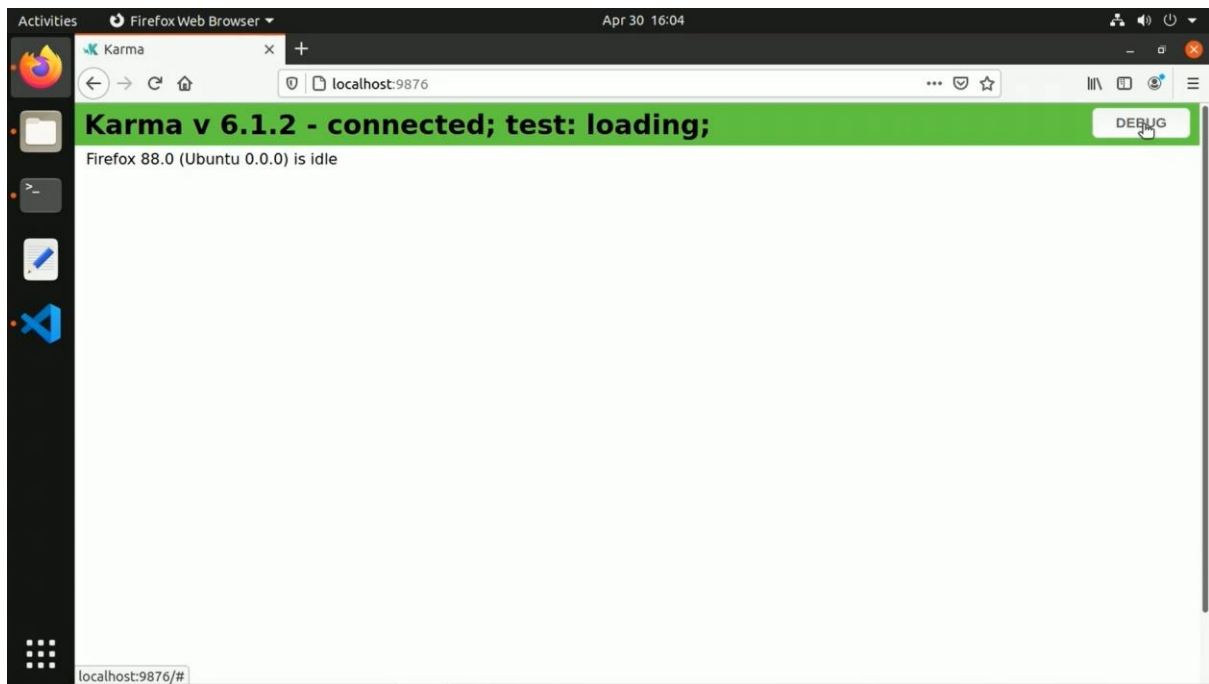
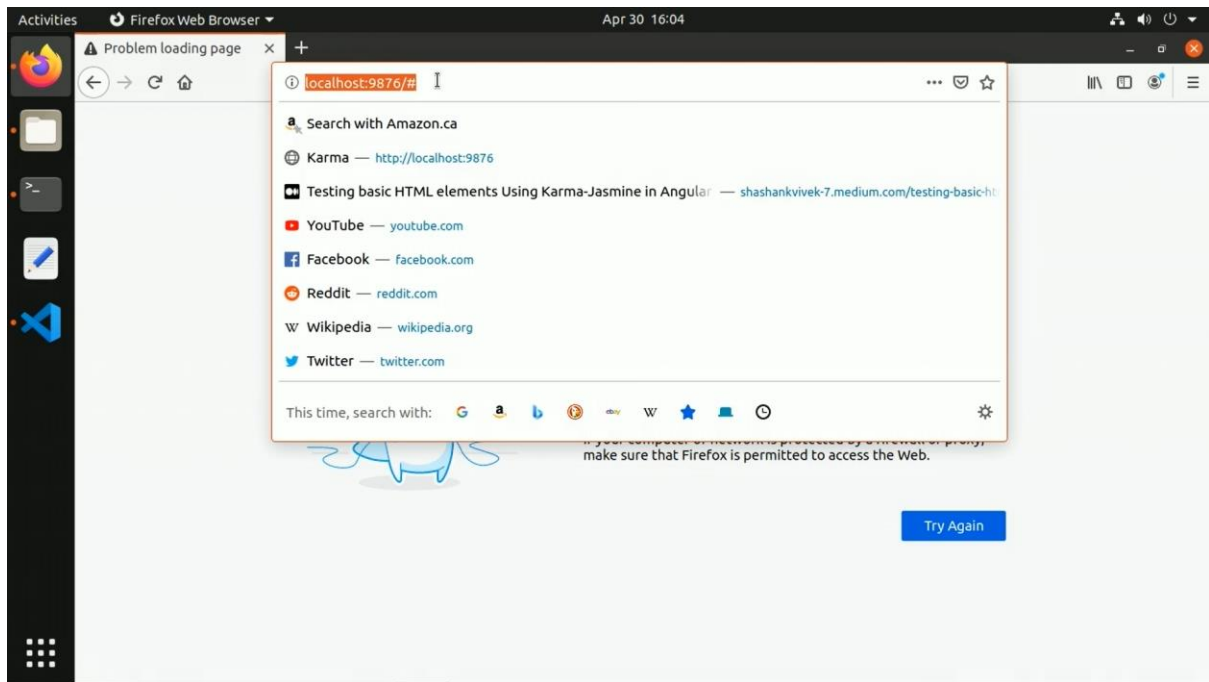
10 requests 2.85 MB / 6.03 KB transferred Finish: 20.50 s DOMContentLoaded: 35 ms load: 569 ms

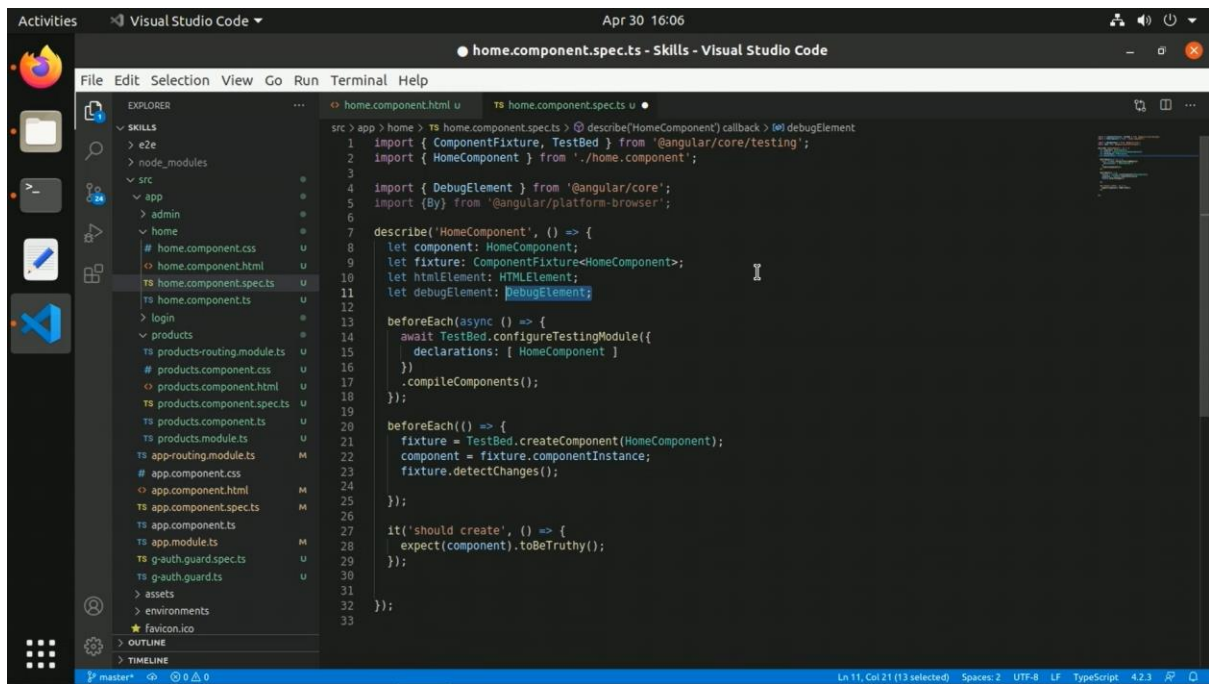
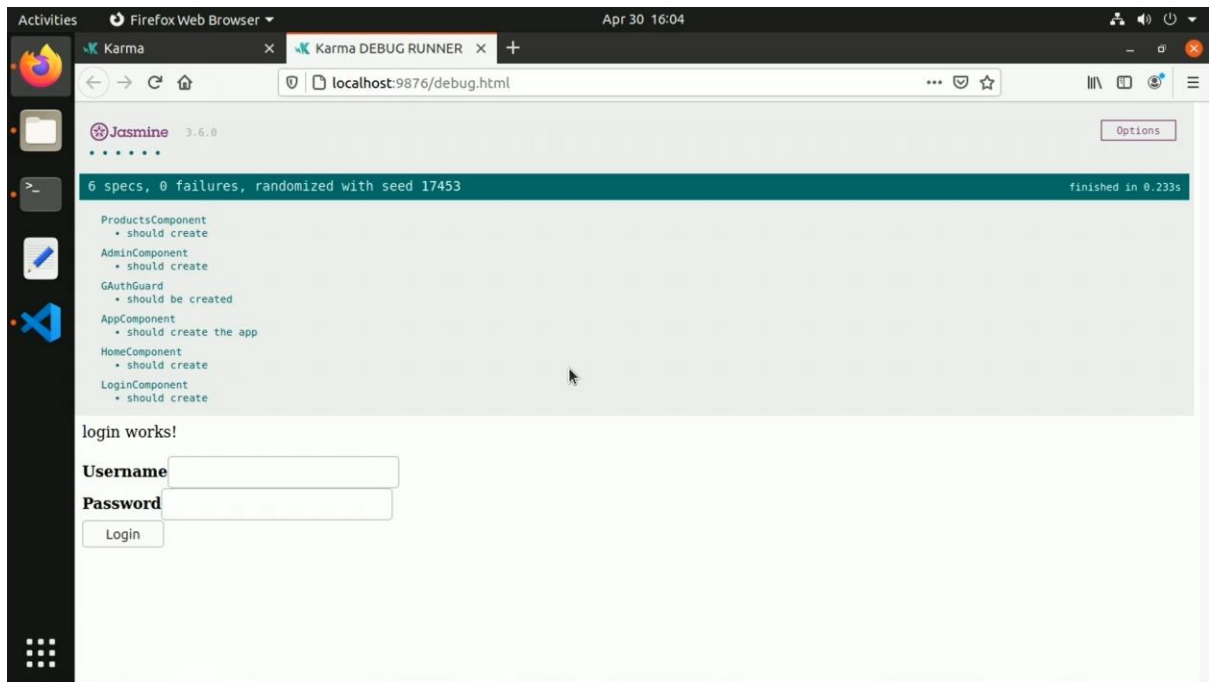
Debugging and unit testing in angular

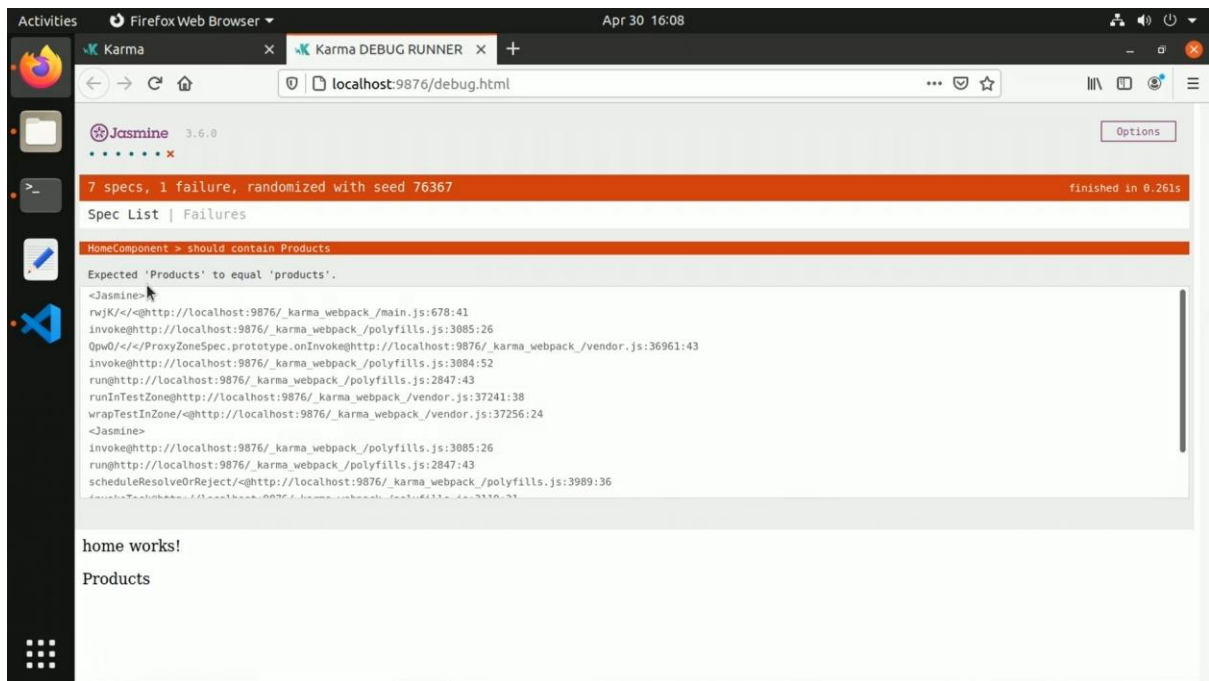
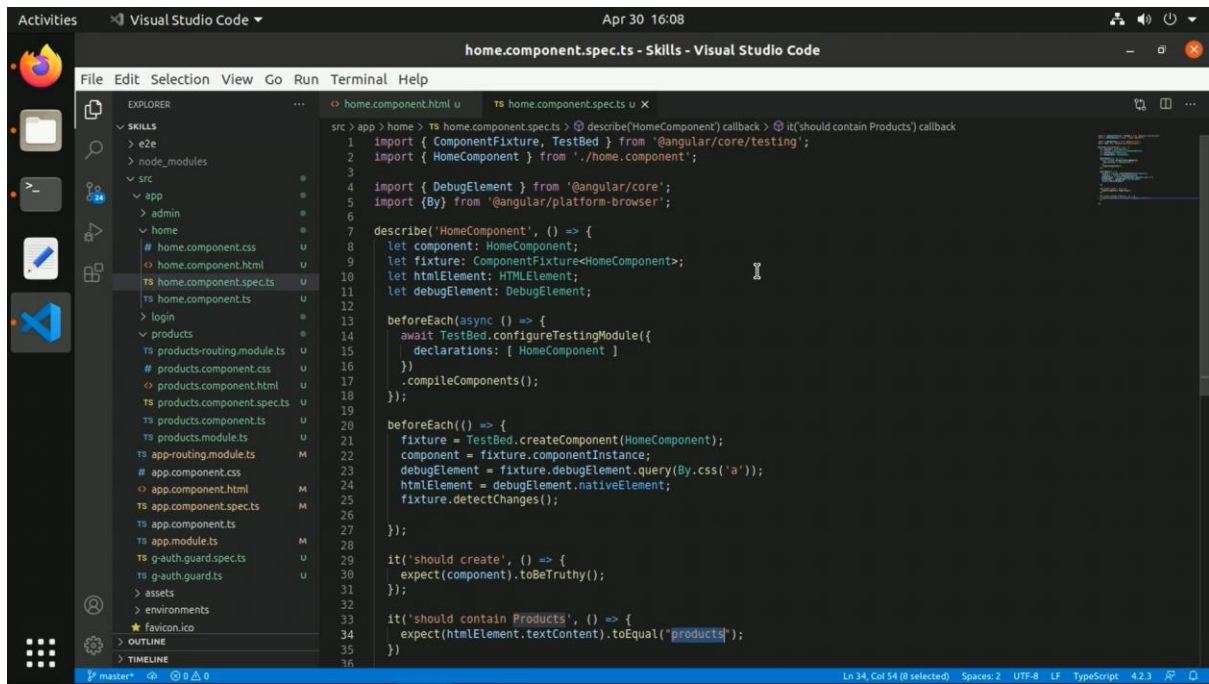


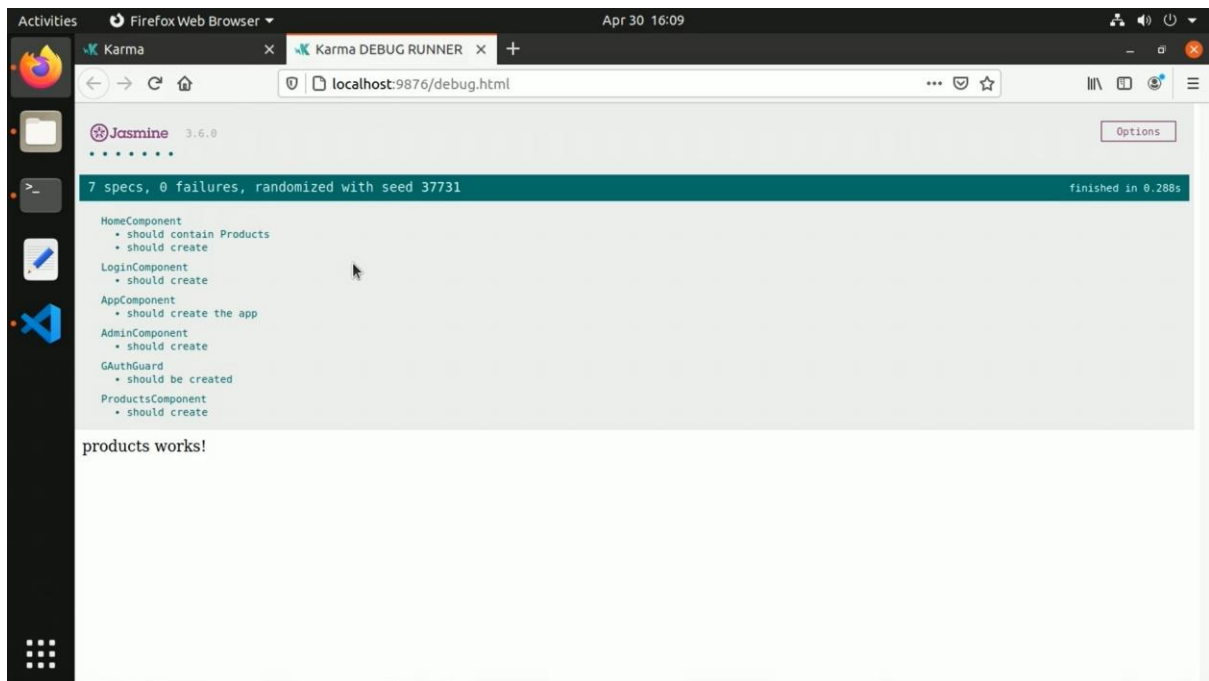
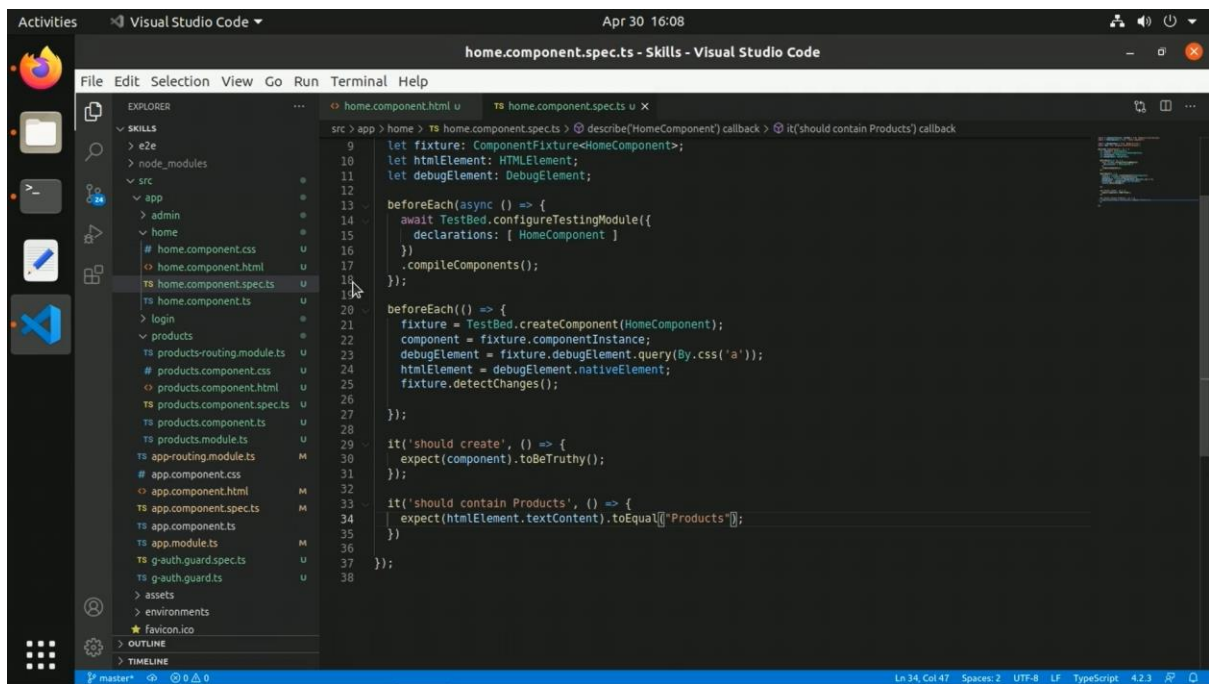
Karma jesmin











Deploying angular applications

Npm run build

Activities Terminal May 5 08:50 axle@pc0482: ~/Documents/Skills

```
axle@pc0482:~/Documents/Skills$ npm run build
> skills@0.0.0 build /home/axle/Documents/Skills
> ng build

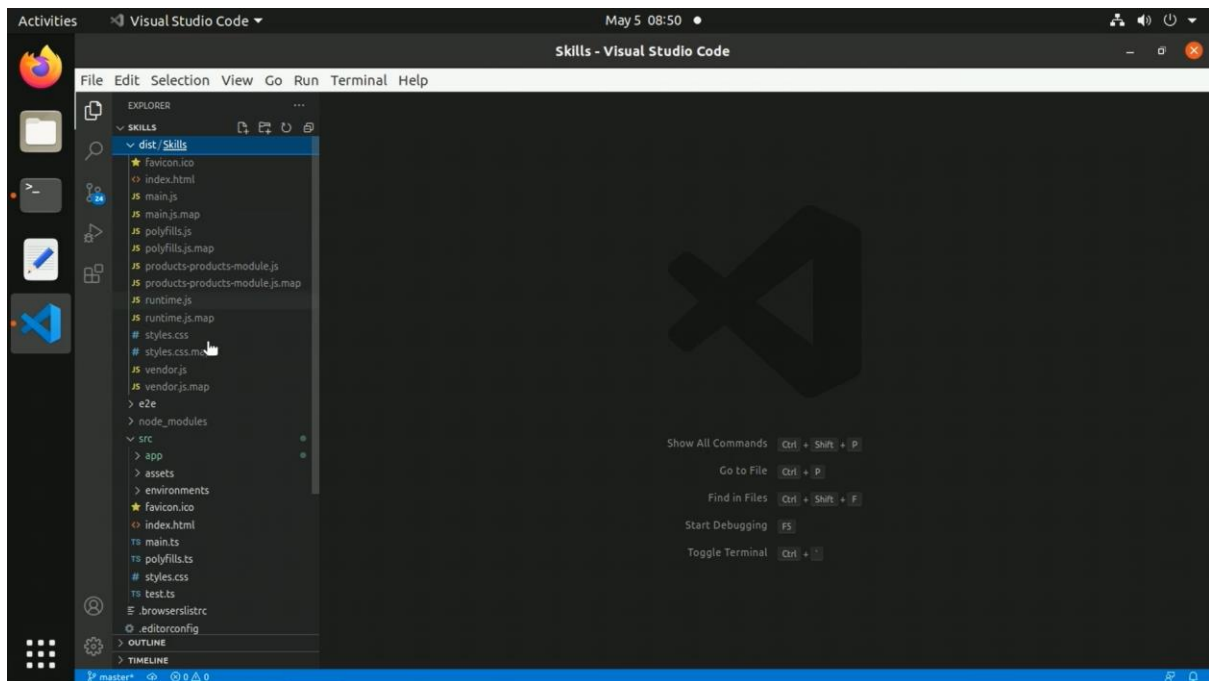
✓ Browser application bundle generation complete.
✓ Copying assets complete.
✓ Index html generation complete.

Initial Chunk Files | Names | Size
vendor.js | vendor | 2.35 MB
polyfills | polyfills | 128.75 kB
main.js | main | 17.63 kB
runtime.js | runtime | 9.02 kB
styles.css | styles | 119 bytes

Initial Total | 2.51 MB

Lazy Chunk Files | Names | Size
products-products-module.js | products-products-module | 5.29 kB

Build at: 2021-05-05T11:49:54.260Z - Hash: b55284c314fcd2ed355a - Time: 10223ms
axle@pc0482:~/Documents/Skills$
```



```
Activities Terminal May 5 08:51 axle@pc0482: ~/Documents/Skills
axle@pc0482:~/Documents/Skills$ npm run build
> skills@0.0.0 build /home/axle/Documents/Skills
> ng build
✓ Browser application bundle generation complete.
✓ Copying assets complete.
✓ Index html generation complete.

Initial Chunk Files | Names | Size
vendor.js | vendor | 2.35 MB
polyfills.js | polyfills | 128.75 kB
main.js | main | 17.63 kB
runtime.js | runtime | 9.02 kB
styles.css | styles | 119 bytes
| Initial Total | 2.51 MB

Lazy Chunk Files | Names | Size
products-products-module.js | products-products-module | 5.29 kB

Build at: 2021-05-05T11:49:54.260Z - Hash: b55284c314fcd2ed355a - Time: 10223ms
axle@pc0482:~/Documents/Skills$ sudo apt install nginx
```

```
Activities Terminal May 5 08:52 axle@pc0482: ~/Documents/Skills
axle@pc0482:~/Documents/Skills$ npm run build
> skills@0.0.0 build /home/axle/Documents/Skills
> ng build
✓ Browser application bundle generation complete.
✓ Copying assets complete.
✓ Index html generation complete.

Initial Chunk Files | Names | Size
vendor.js | vendor | 2.35 MB
polyfills.js | polyfills | 128.75 kB
main.js | main | 17.63 kB
runtime.js | runtime | 9.02 kB
styles.css | styles | 119 bytes
| Initial Total | 2.51 MB

Lazy Chunk Files | Names | Size
products-products-module.js | products-products-module | 5.29 kB

Build at: 2021-05-05T11:49:54.260Z - Hash: b55284c314fcd2ed355a - Time: 10223ms
axle@pc0482:~/Documents/Skills$ sudo systemctl status nginx
[sudo] password for axle:
```



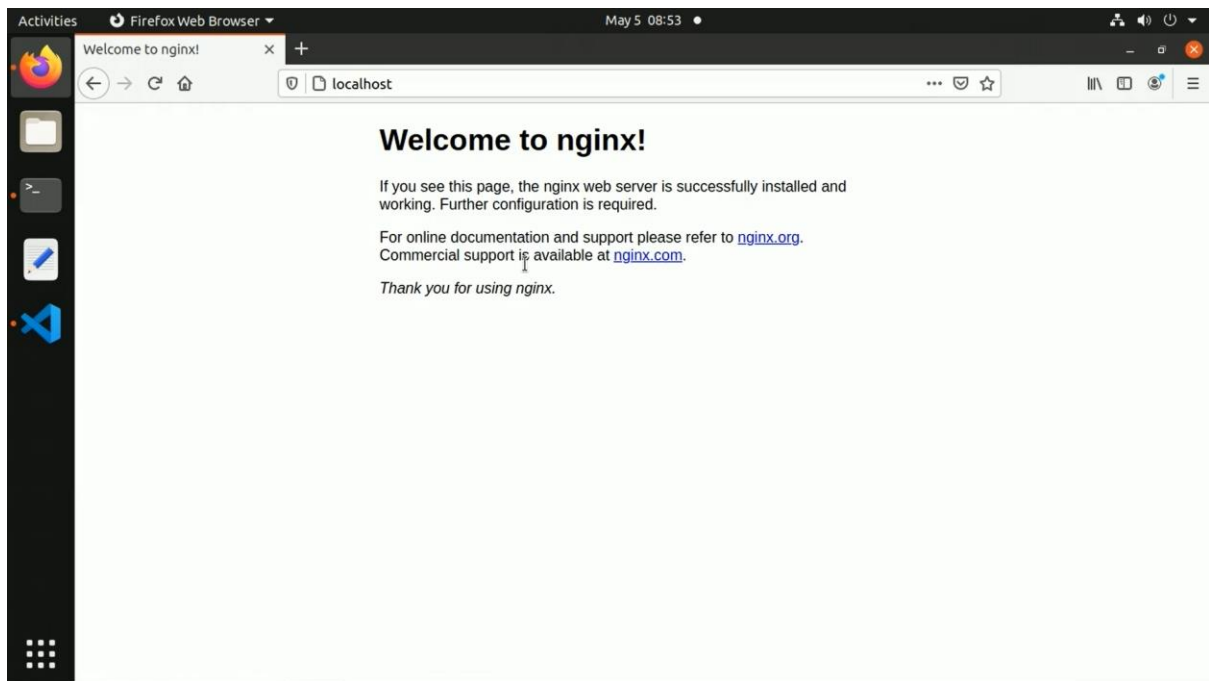
```
Activities Terminal May 5 08:52 axle@pc0482: ~/Documents/Skills

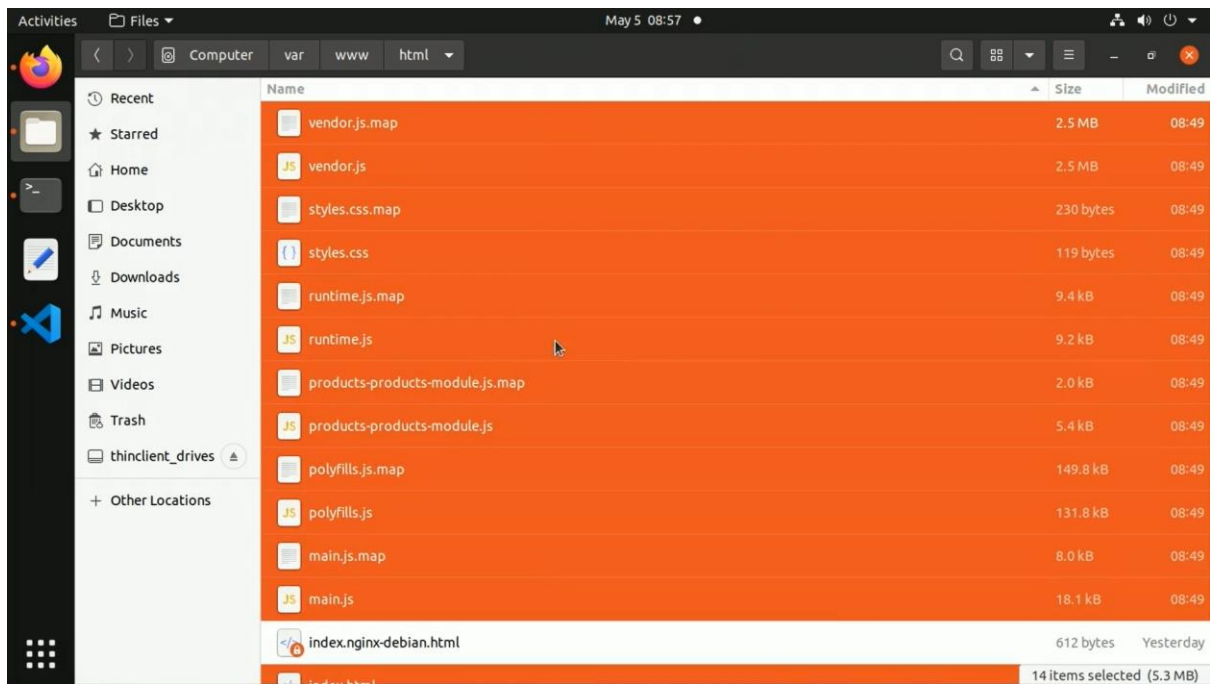
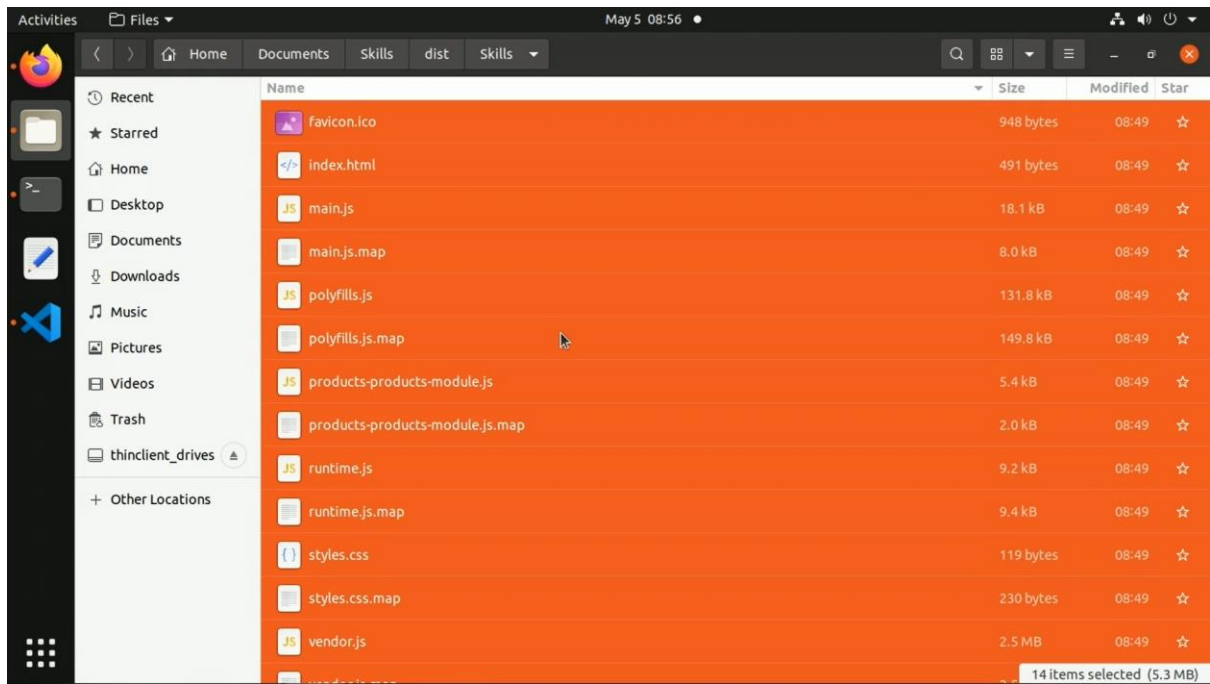
vendor.js | vendor | 2.35 MB
polyfills.js | polyfills | 128.75 kB
main.js | main | 17.63 kB
runtime.js | runtime | 9.02 kB
styles.css | styles | 119 bytes
Initial Total | 2.51 MB

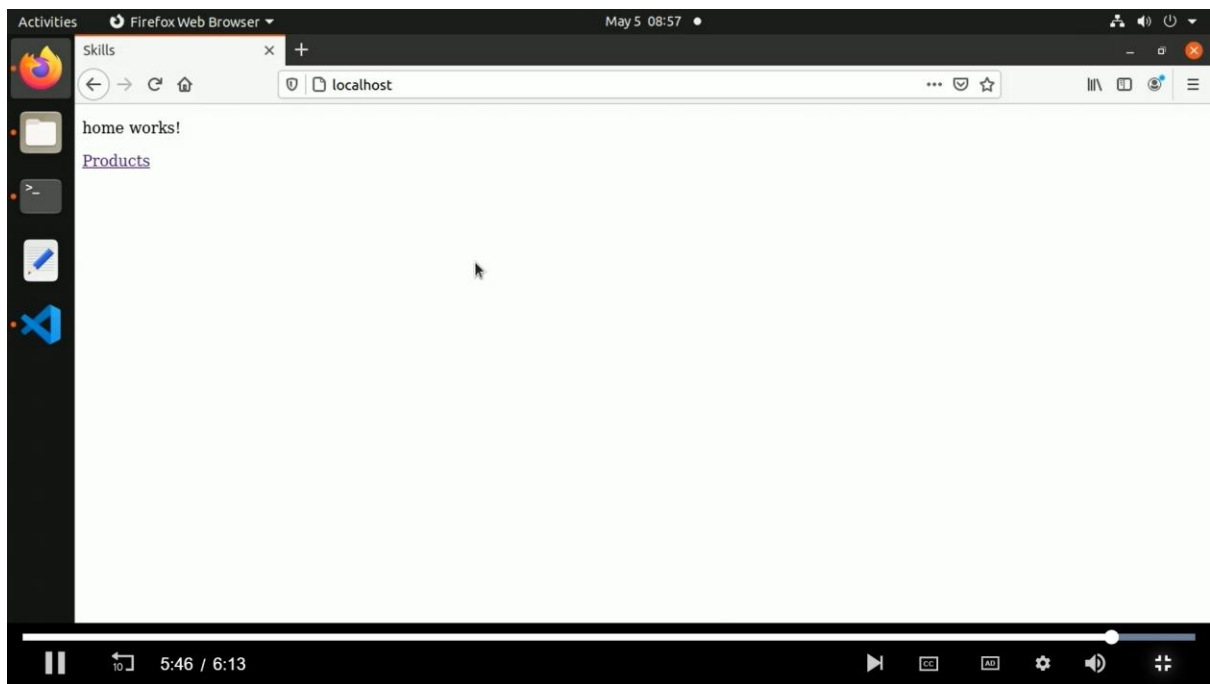
Lazy Chunk Files | Names | Size
products-products-module.js | products-products-module | 5.29 kB

Build at: 2021-05-05T11:49:54.260Z - Hash: b55284c314fcd2ed355a - Time: 10223ms
axle@pc0482:~/Documents/Skills$ sudo systemctl status nginx
[sudo] password for axle:
● nginx.service - A high performance web server and a reverse proxy server
   Loaded: loaded (/lib/systemd/system/nginx.service; enabled; vendor preset: enabled)
   Active: active (running) since Tue 2021-05-04 19:14:04 ADT; 13h ago
     Docs: man:nginx(8)
   Main PID: 1012 (nginx)
    Tasks: 3 (limit: 7062)
   Memory: 6.4M
   CGroup: /system.slice/nginx.service
           └─1012 nginx: master process /usr/sbin/nginx -g daemon on; master_process on;
              └─1014 nginx: worker process
                 └─1015 nginx: worker process

May 04 19:14:04 pc0482 systemd[1]: Starting A high performance web server and a reverse proxy server...
May 04 19:14:04 pc0482 systemd[1]: Started A high performance web server and a reverse proxy server.
axle@pc0482:~/Documents/Skills$
```









Authentication and authorization in Angular

Guards for authentication and authorization

Lazy loading Angular components

Deploying Angular applications

Debugging and unit testing



Coming Up Next . . .

Press **Esc** to exit full screen



Migrating to
Angular 11



Updates in
Angular

Next Up
Reflect on what you've learned

