



Universidad Politécnica de Pachuca

Ingeniería en Tecnologías de la Información e Innovación Digital

APLICACIONES WEB

PRÁCTICA 4: ANGULAR

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Fecha: Pachuca, Hidalgo
22/01/2026

```
● PS C:\Users\cesar.SHIZA\Documents\GitHub\Practicas_Web_CesarHernandez\Practica 4> ng new practica04-angular
? Which stylesheet system would you like to use?
  > CSS [ https://developer.mozilla.org/docs/Web/CSS ]
    Tailwind CSS [ https://tailwindcss.com ]
    Sass (SCSS) [ https://sass-lang.com/documentation/syntax#scss ]
✓ Which stylesheet system would you like to use? CSS [ https://developer.mozilla.org/docs/Web/CSS ]
]
✓ Do you want to enable Server-Side Rendering (SSR) and Static Site Generation (SSG/Prerendering)? Yes
✓ Which AI tools do you want to configure with Angular best practices? https://angular.dev/ai/develop-with-ai None
CREATE practica04-angular/angular.json (2172 bytes)
CREATE practica04-angular/package.json (1214 bytes)
CREATE practica04-angular/README.md (1529 bytes)
CREATE practica04-angular/tsconfig.json (990 bytes)
CREATE practica04-angular/.editorconfig (331 bytes)
CREATE practica04-angular/.gitignore (666 bytes)
CREATE practica04-angular/tsconfig.app.json (464 bytes)
CREATE practica04-angular/tsconfig.spec.json (456 bytes)
CREATE practica04-angular/.vscode/extensions.json (134 bytes)
CREATE practica04-angular/.vscode/launch.json (490 bytes)
CREATE practica04-angular/.vscode/mcp.json (191 bytes)
CREATE practica04-angular/.vscode/tasks.json (1020 bytes)
CREATE practica04-angular/src/main.ts (228 bytes)
CREATE practica04-angular/src/index.html (316 bytes)
CREATE practica04-angular/src/styles.css (81 bytes)
CREATE practica04-angular/src/main.server.ts (300 bytes)
CREATE practica04-angular/src/server.ts (1677 bytes)
CREATE practica04-angular/src/app/app.spec.ts (708 bytes)
CREATE practica04-angular/src/app/app.ts (312 bytes)
CREATE practica04-angular/src/app/app.css (0 bytes)
```

Directory is already under version control. Skipping initialization of git.

```
● PS C:\Users\cesar.SHIZA\Documents\GitHub\Practicas_Web_CesarHernandez\Practica 4> cd practica04-angular
○ PS C:\Users\cesar.SHIZA\Documents\GitHub\Practicas_Web_CesarHernandez\Practica 4\practica04-angular> ng serve
```

Would you like to share pseudonymous usage data about this project with the Angular Team at Google under Google's Privacy Policy at <https://policies.google.com/privacy>. For more details and how to change this setting, see <https://angular.dev/cli/analytics>.

No
Global setting: enabled
Local setting: disabled
Effective status: disabled
Browser bundles

Initial chunk files	Names	Raw size
main.js	main	48.52 kB
styles.css	styles	95 bytes
	Initial total	48.61 kB

Server bundles

Initial chunk files	Names	Raw size
main.server.mjs	main.server	49.78 kB
server.mjs	server	1.81 kB
polyfills.server.mjs	polyfills.server	243 bytes

Application bundle generation complete. [6.424 seconds] - 2026-01-22T19:34:50.329Z

The screenshot shows the VS Code interface with the following details:

- Explorer View:** Shows the project structure under "PRACTICA 4".
- Terminal:** Displays the command line output for running the Angular application.
- Output Panel:** Shows the build logs for "app.config.servers.ts".
- Bottom Status Bar:** Shows the file path "TS app.config.servers.ts" and other status indicators.

```

    import { mergeApplicationConfig, ApplicationConfig } from '@angular/core';
    import { provideServerRendering, withRoutes } from '@angular/ssr';
    import { AppConfig } from './app.config';
    import { serverRoutes } from './app.routes.server';

    const serverConfig: ApplicationConfig = {
      providers: [
        ...
      ]
    };
  
```

PS C:\Users\cesar.SHTZA\Documents\GitHub\Practicas_Web_CesarHernandez\Practica 4> ng new practica04-angular
 ✓ Packages installed successfully.
 Directory is already under version control. Skipping initialization of git.
 PS C:\Users\cesar.SHTZA\Documents\GitHub\Practicas_Web_CesarHernandez\Practica 4> cd practica04-angular
 PS C:\Users\cesar.SHTZA\Documents\GitHub\Practicas_Web_CesarHernandez\Practica 4> ng serve

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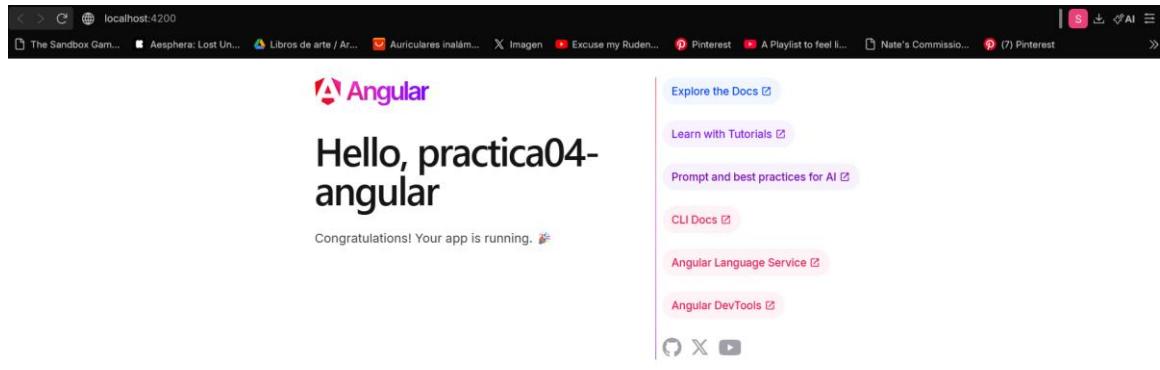
```

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  Application bundle generation complete. [6.424 seconds] - 2026-01-22T19:34:50.329Z
  
```

Watch mode enabled. Watching for file changes...
 NOTE: Raw file sizes do not reflect development server per-request transformations.
 → Local: http://localhost:4200/
 → press h + enter to show help



```
Application bundle generation complete. [6.424 seconds] - 2026-01-22T19:34:50.329Z

Watch mode enabled. Watching for file changes...
NOTE: Raw file sizes do not reflect development server per-request transformations.
→ Local: http://localhost:4200/
→ press h + enter to show help

ng serve
● PS C:\Users\cesar.SHIZA\Documents\GitHub\Practicas_Web_CesarHernandez\Practica 4\practica04-angular> npm install boots
trap

added 2 packages, and audited 495 packages in 17s

111 packages are looking for funding
  run `npm fund` for details

found 0 vulnerabilities
○ PS C:\Users\cesar.SHIZA\Documents\GitHub\Practicas_Web_CesarHernandez\Practica 4\practica04-angular> 
```

The screenshot shows the VS Code interface with the following details:

- File Explorer:** Shows the project structure for "PRACTICA 4" containing "practica04-angular" with files like .angular.cache\21.1.1\practica04-angular, vite, .vscode, node_modules, public, favicon.ico, src, app, index.html, main.server.ts, main.ts, server.ts, styles.css, editorconfig, .gitignore, angular.json, package-lock.json, package.json, README.md, tsconfig.app.json, tsconfig.json, and tsconfig.spec.json.
- Editor:** The "angular.json" file is open in the editor. The code defines a project named "practica04-angular" with an architect named "practica04-angular". It includes configurations for "build" (builder: "@angular/build:application", options: { browser: "src/main.ts", tsconfig: "tsconfig.app.json", assets: [{ glob: "**/*", input: "public" }] }, styles: ["node_modules/bootstrap/dist/css/bootstrap.min.css", "src/styles.css"]), "server" (server: "src/main.server.ts", outputMode: "server", ssr: { entry: "src/server.ts" }), and "configurations" (production: { budgets: [{ type: "initial", maximumWarning: "500kB", maximumError: "1MB" }, { type: "anyComponentStyle", maximumWarning: "4kB", maximumError: "8kB" }] }).
- Terminal:** The terminal shows the command "ng serve" being run in a PowerShell window.
- Bottom Status Bar:** Shows "Watch mode enabled. Watching for file changes...".

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- File Explorer:** Shows the project structure for "PRACTICA 4" containing "practica04-angular" with files like .angular.cache\21.1.1\practica04-angular, vite, .vscode, node_modules, public, favicon.ico, src, app, index.html, main.server.ts, main.ts, server.ts, styles.css, editorconfig, .gitignore, angular.json, package-lock.json, package.json, README.md, tsconfig.app.json, tsconfig.json, and tsconfig.spec.json.
- Editor:** The "angular.json" file is open in the editor. The code defines a project named "practica04-angular" with an architect named "practica04-angular". It includes configurations for "build" (options: { ... }), "styles" (["node_modules/bootstrap/dist/css/bootstrap.min.css", "src/styles.css"]), "scripts" (["node_modules/bootstrap/dist/js/bootstrap.bundle.min.js"]), "server" (server: "src/main.server.ts", outputMode: "server", ssr: { entry: "src/server.ts" }), and "configurations" (production: { budgets: [{ type: "initial", maximumWarning: "500kB", maximumError: "1MB" }, { type: "anyComponentStyle", maximumWarning: "4kB", maximumError: "8kB" }] }).
- Terminal:** The terminal shows the command "ng serve" being run in a PowerShell window.
- Bottom Status Bar:** Shows "Watch mode enabled. Watching for file changes...".

```

found 0 vulnerabilities
PS C:\Users\cesar.SHIZA\Documents\GitHub\Practicas_Web_CesarHernandez\Practica 4\practica04-angular>
PS C:\Users\cesar.SHIZA\Documents\GitHub\Practicas_Web_CesarHernandez\Practica 4\practica04-angular> ng serve
Browser bundles
Initial chunk files | Names | Raw size
styles.css | styles | 277.01 kB
scripts.js | scripts | 107.73 kB
main.js | main | 48.52 kB
1:51:20 p.m. [vite] (ssr) Re-optimizing dependencies because lockfile has changed (x2)
→ Local: http://localhost:4200/
→ press h + enter to show help

```

The screenshot shows the Visual Studio Code (VS Code) interface with the following details:

- Explorer View:** Shows the project structure under "PRACTICA 4". The "src" folder contains "app" which has "components" (containing "header" and "footer" components), "navbars" (containing "navbar" component), and "app" (containing "config" and "html" files). Other files visible include ".angularcache", ".vscode", "public" (with "favicon.ico"), and "angular.json".
- Editor View:** The "Footer" component's template file ("footer.html") is open. It contains the following code:

```

<footer class="bg-dark text-white text-center p-3">
  <p class="mb-0">© 2026 Aplicaciones Web</p>

```
- Terminal View:** The terminal shows the command `ng generate component header` being run, followed by output indicating new files were created:

```

PS C:\Users\cesar.SHIZA\Documents\GitHub\Practicas_Web_CesarHernandez\Practica 4\practica04-angular> ng generate component header
CREATE src/app/components/header/header.spec.ts (554 bytes)
CREATE src/app/components/header/header.ts (197 bytes)
CREATE src/app/components/header/header.css (0 bytes) ...
CREATE src/app/components/footer/footer.css (0 bytes)
CREATE src/app/components/footer/footer.html (22 bytes)

```

File Edit Selection View Go Run Terminal Help

practica4-angular > src > app > pages > home > home.html

```

<main class="container mt-4">
  <div class="row">
    <section class="col-md-8 mb-4">
      <div class="card mb-3">
        <div class="card-body">
          <h5 class="card-title">Bienvenidos</h5>
          <p class="card-text"> Esta es mi primera interfaz web mejorada con Bootstrap.</p>
          </div>
        </div>
      </section>
      <aside class="col-lg-4 col-md-6 d-md-block d-none">
        <div class="card" style="width: auto;">
          
        </div>
      </aside>
    </div>
  </main>

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS GITLENS

ps C:\Users\cesar.SHTZA\Documents\GitHub\Practicas_Web_CesarHernandez\Practica 4\practica04-angular> ng generate component pages/home

ps C:\Users\cesar.SHTZA\Documents\GitHub\Practicas_Web_CesarHernandez\Practica 4\practica04-angular> ng generate component pages/contact

- CREATE src/app/pages/contact/contact.spec.ts (561 bytes)
- CREATE src/app/pages/contact/contact.ts (201 bytes)
- CREATE src/app/pages/contact/contact.css (0 bytes)
- CREATE src/app/pages/contact/contact.html (23 bytes)

ps C:\Users\cesar.SHTZA\Documents\GitHub\Practicas_Web_CesarHernandez\Practica 4\practica04-angular> ng generate component pages/listado

- CREATE src/app/pages/listado/listado.spec.ts (561 bytes)
- CREATE src/app/pages/listado/listado.ts (201 bytes)
- CREATE src/app/pages/listado/listado.css (0 bytes)
- CREATE src/app/pages/listado/listado.html (23 bytes)

ps C:\Users\cesar.SHTZA\Documents\GitHub\Practicas_Web_CesarHernandez\Practica 4\practica04-angular> ng serve

CHAT

Build with Agent

AI responses may be inaccurate.

Generate Agent Instructions to onboard AI onto your codebase.

home.html

Describe what to build next

Agent Auto Finish Setup Prettier

File Edit Selection View Go Run Terminal Help

practica4-angular > src > app > app.html

```

<app-header></app-header>
<app-navbar></app-navbar>
<main class="container my-4">
  <router-outlet></router-outlet>
</main>
<app-footer></app-footer>

```

EXPLORER

practica4-angular

- _angular
- .vscode
- node_modules
- public
- src
 - app
 - components
 - pages
 - contact
 - # contact.css
 - contact.html
 - contact.spec.ts
 - contact.ts
 - home
 - # listado.css
 - listado.html
 - listado.spec.ts
 - listado.ts
 - config.server.ts
 - config.ts
 - app.css
 - app.html
 - app.routes.server.ts
 - app.routes.ts
 - app.spec.ts
 - app.ts

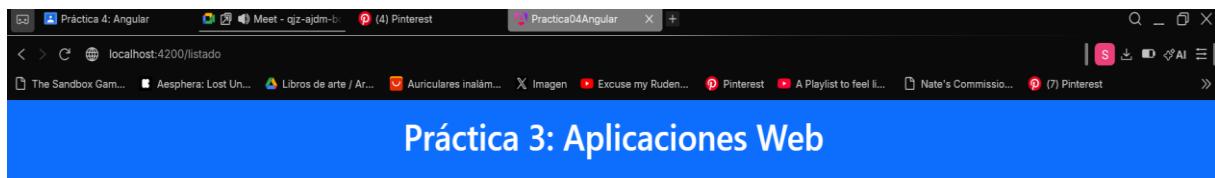
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS GITLENS

ps C:\Users\cesar.SHTZA\Documents\GitHub\Practicas_Web_CesarHernandez\Practica 4\practica04-angular> ng serve

The screenshot shows the VS Code interface with the following details:

- File Explorer (Left):** Shows the project structure under "PRACTICA 4". The "src" folder contains "app", which has "components", "pages", and "contact" subfolders. "contact" contains "contact.css", "contact.html", "contact.spec.ts", and "listado.css". "listado" contains "listado.html", "listado.spec.ts", and "listado.ts". Other files include "app.config.server.ts", "app.config.ts", "app.css", "app.html", "app.routes.server.ts", and "main.server.ts".
- Code Editor (Center):** Displays the file `app.routes.ts` with the following code:

```
practica04-angular > app > TS app.routes.ts ...
1 import { Routes } from '@angular/router';
2 import { Home } from './pages/home/home';
3 import { Contact } from './pages/contact/contact';
4 import { Listado } from './pages/listado/listado';
5 export const routes: Routes = [
6   { path: '', component: Home },
7   { path: 'contacto', component: Contact },
8   { path: 'listado', component: Listado }
9 ];
```
- Terminal (Bottom):** Shows the command `ng serve` being run in a powershell window, with the output indicating the application bundle generation complete.



The screenshot shows the VS Code interface with the title bar "Practica 4". The Explorer sidebar on the left lists the project structure for "practica04-angular". The main editor area displays the content of "navbar.html". The terminal at the bottom shows the command "ng serve" running, with the output "Watch mode enabled. Watching for file changes..." and "Local: http://localhost:4200".

```
<nav class="navbar navbar-expand-lg navbar-dark bg-dark">
  <div class="container">
    <a class="navbar-brand" routerLink="">Inicio</a>
    <div class="navbar-nav">
      <a class="nav-link" routerLink="/contacto">Contacto</a>
      <a class="nav-link" routerLink="/listado">Listado</a>
    </div>
  </div>
</nav>
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS GITLENS esbuild - practica04-angular + Local: http://localhost:4200

The screenshot shows the terminal window with the title bar "Practica 4". The terminal content displays the code for "navbar.ts".

```
import { Component } from '@angular/core';
import { RouterLink } from '@angular/router';
@Component({
  selector: 'app-navbar',
  standalone:true,
  imports: [RouterLink],
  templateUrl: './navbar.html',
  styleUrls: ['./navbar.css'],
})
export class Navbar {
```

Práctica 4: Angular Meet - ajz-ajdm-b... Pinterest Pin en Character art Práctica04Angular X + S ↴ ⌂ ⌂ AI ⌂

localhost:4200 The Sandbox Gam... Aesphera: Lost Un... Libros de arte / Ar... Auriculares inalám... Imagen Excuse my Ruden... Pinterest A Playlist to feel li... Nate's Commissio... Pinterest

Práctica 3: Aplicaciones Web

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Bienvenidos
Esta es mi primera interfaz web mejorada con Bootstrap.

