Angular

Angular is a **TypeScript-based** open-source framework developed by **Google** for building **client-side (front-end)** applications, especially **single-page applications (SPAs)**.

Angular is used for:

- Creating dynamic web pages that run in the **browser**
- Building **user interfaces (UIs)**
- Managing **user interactions and views**
- Consuming **APIs** from a back-end server

Cannot directly accessing a **database, managing server. So we need a back-end** tools/frameworks like:

- **Node.js / Express**
- **Django (Python)**
- **Spring Boot (Java)**
- **ASP.NET (C#)**

Full stack (front-end + back-end) architecture

VS Code for Angular (and front-end) development:

✅ 1. Excellent TypeScript Support

Angular is written in **TypeScript**, and VS Code has **built-in TypeScript support**:

- Syntax highlighting
- Type checking
- IntelliSense (auto-completion)
- Error detection as you type

✅ 2. Angular-Specific Extensions

You can install extensions like:

- **Angular Language Service** – helps with smart autocompletion in templates
- **Angular Snippets** – faster coding with boilerplate shortcuts
- **Prettier / ESLint** – for code formatting and linting

✅ 3. Integrated Terminal

You can run Angular CLI commands (`ng serve`, `ng generate`, etc.) right inside the editor without switching windows.

✅ 4. Debugging Tools

VS Code allows:

- Breakpoint debugging in TypeScript and browser
- Chrome/Edge debugging extensions for Angular apps

✅ 5. Git Integration

Built-in version control lets you:

- See code changes
- Commit & push with Git/GitHub easily
- Manage branches

Installation Procedure:

Download Node.js software (LTS)

Note: base of all java script like java.

While Installation of Node.js npm (Node Package Manager) also installed.

Verify the Node installation using CMD

C:\Users\CSA>node –version **(OR) node -v**

v22.15.1

Note: Work in node.js terminal

C:\Users\CSA>node

Welcome to Node.js v22.15.1.

Type ".help" for more information.

> 3>4

false

> 1+5

6

C:\Users\CSA>npm --version

10.9.2

C:\Users\CSA>npm i -g @angular/cli

Note: i -> Install,   -g -> for execute cmd from any directory in cmd like set java path

Result:

 added 274 packages in 44s

52 packages are looking for funding **(Note: some packages need financial support)**

 run `npm fund` for details

 In CMD

D:\>cd Angular-App

D:\Angular-App>ng new ProjectName   **Note:** `ng new` – Creates a new Angular project.

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.

  (y/N) **No**

Global setting: disabled

Local setting: No local workspace configuration file.

Effective status: disabled

? Which stylesheet format would you like to use?

> **CSS**   **[https://developer.mozilla.org/docs/Web/CSS**   **]** **(Note: Select CSS)**

  Sass (SCSS)   [https://sass-lang.com/documentation/syntax#scss   ]

  Sass (Indented) [https://sass-lang.com/documentation/syntax#the-indented-syntax]

  Less   [http://lesscss.org

Do you want to enable Server-Side Rendering (SSR) and Static Site Generation (SSG/Prerendering)? (y/N) **Yes**

Would you like to use the Server Routing and App Engine APIs (Developer Preview) for this server application? **Yes**

Note: `@angular/cli` refers to the **Angular Command Line Interface (CLI)** — a tool provided by the Angular team to help developers create, build, and manage Angular applications

Download all packages

Now Open Project using VS Code.
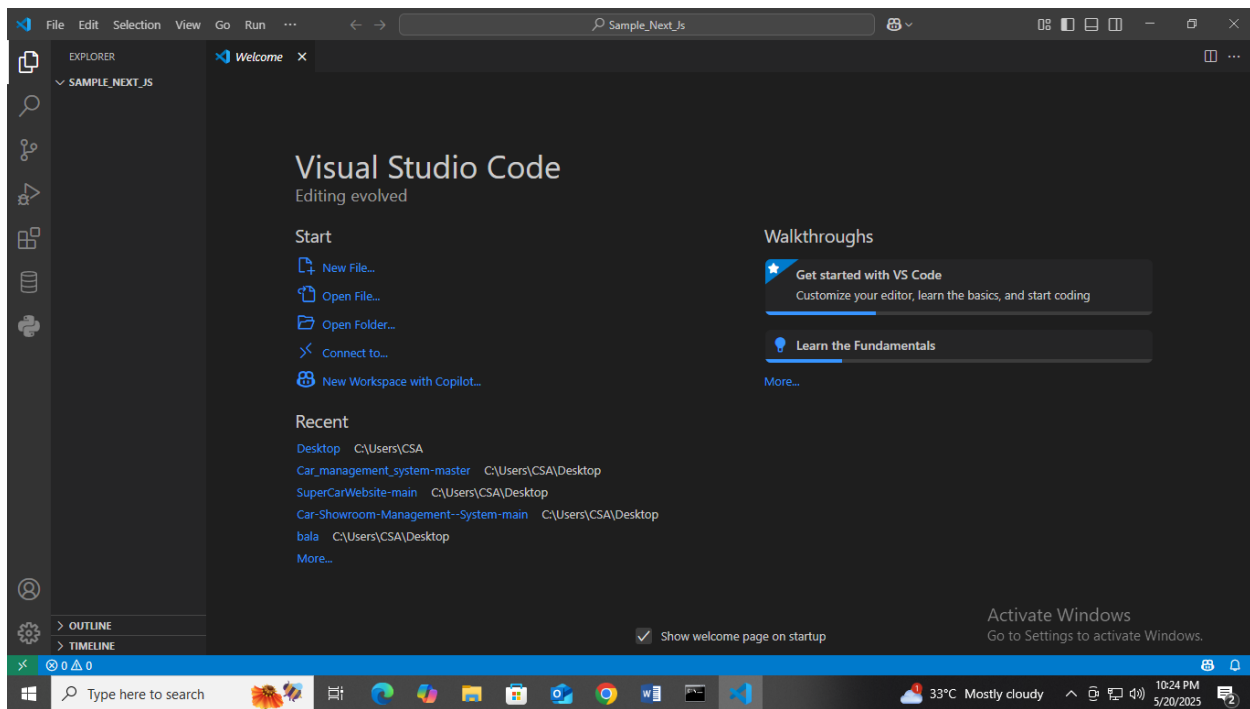
(Or)

Goto CMD -> D:\Angular-App>code .ProjectName

Press-> Ctrl + ` (backtick key) to opens and closes the **integrated terminal** in **Visual Studio Code**.

PS C:\Users\CSA> d:

PS D:\> cd Angular-App

PS D:\Angular-App> ng serve

Error: ng : File C:\Users\CSA\AppData\Roaming\npm\ng.ps1 cannot be loaded because running scripts is disabled on this system. For more information, see about_Execution_Policies at
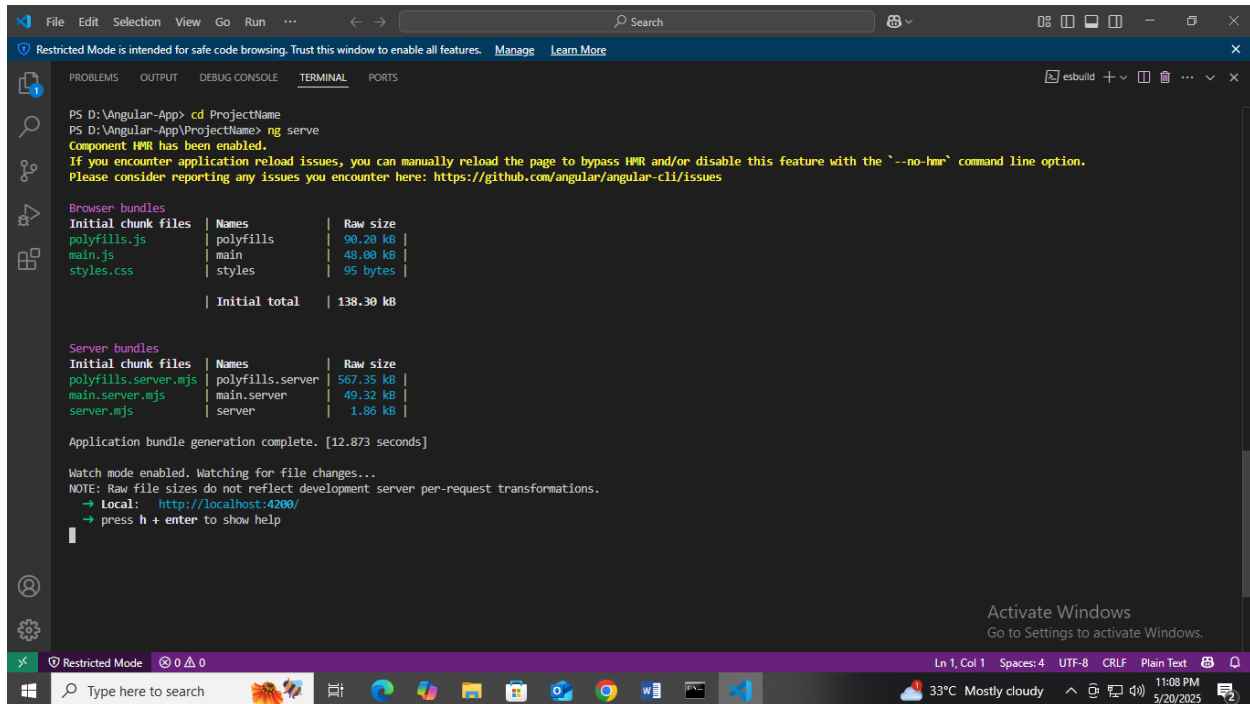
https:/go.microsoft.com/fwlink/?LinkID=135170.

At line:1 char:1

+ ng serve

+ ~~

   + CategoryInfo   : SecurityError: (:) [], PSSecurityException

   + FullyQualifiedErrorId : UnauthorizedAccess

Solution: To run the following command to execute cli command in this terminal

Set-ExecutionPolicy -Scope CurrentUser -ExecutionPolicy RemoteSigned

PS D:\Angular-App> ng serve

Output View in the link shown in the Terminal -> Local: http://localhost:4200/
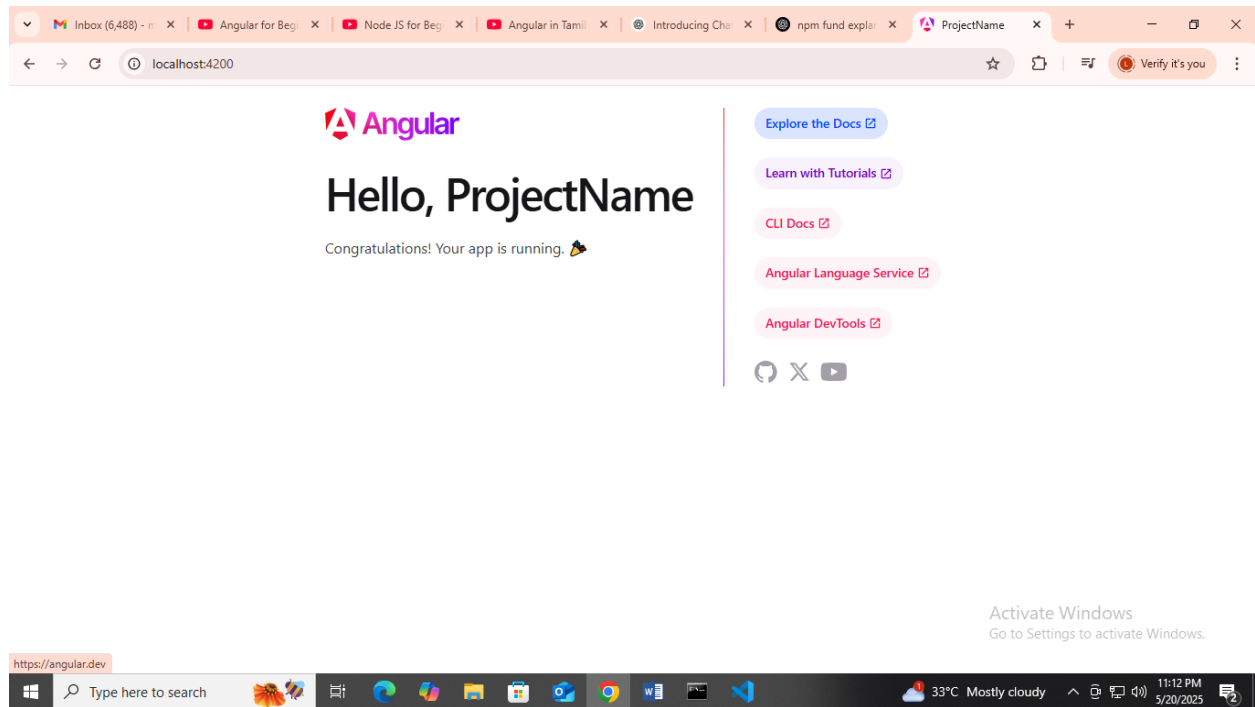
Note: Shortcuts in VS Code Terminal

press r + enter to force reload browser

press u + enter to show server url

press o + enter to open in browser
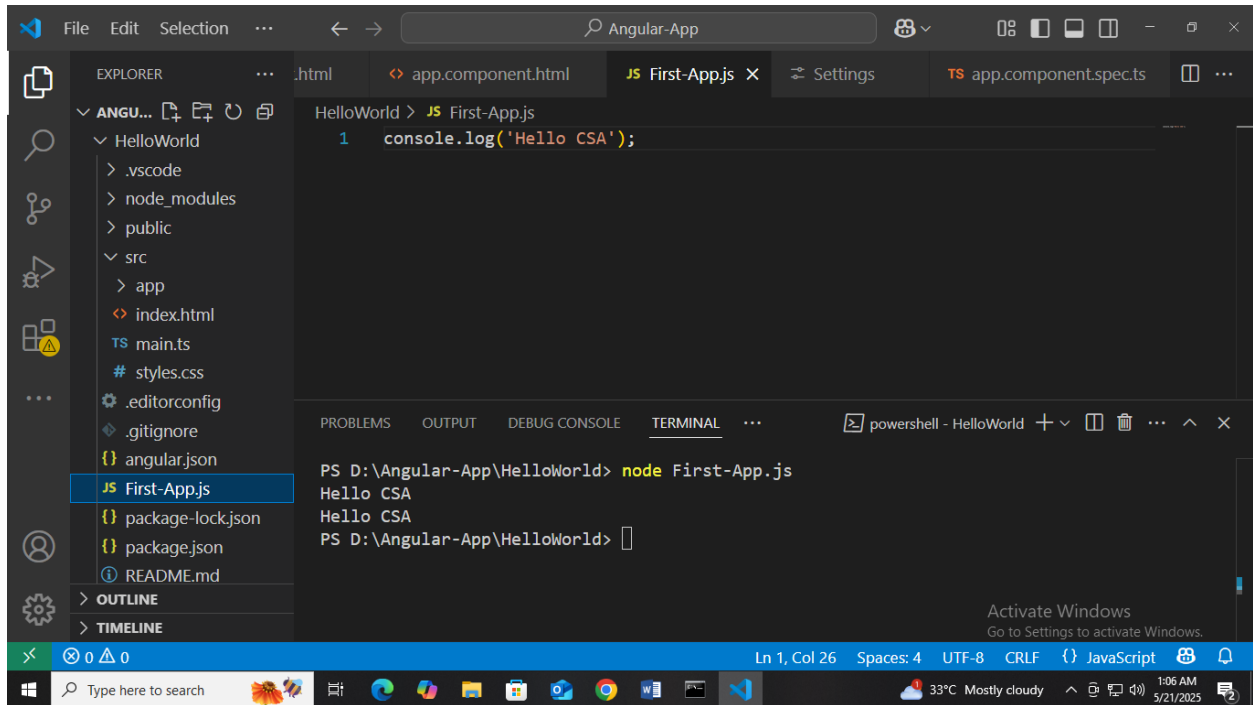
press c + enter to clear console

press q + enter to quit

Browser

Use any browser using above mentioned port

Without Refresh your browser, Output has changed at the time of file change and save. This is the feature of On Module Replacement.

Node JS

Open Project -> Create a New File -> File Name.js

Run in Terminal using the command

node First-App.js

Hello CSA

```js
var uname="Prema";

function display(userName,userAge)
{
    return 'Username is\t'+userName+ '\n'+'Age\t'+userAge;
}
console.log(display(uname,Age));
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL

PS D:\Angular-App\HelloWorld> node First-App.js
Username is   Prema
Age   35
PS D:\Angular-App\HelloWorld>