CS214: Advanced Application Development

Lab Session 2: Building a Simple To-Do App with Angular

Lab Overview

In this lab session, you will build a basic **To-Do App** using Angular. The goal of this lab is to understand how components interact, how to manage data with TypeScript, and how to use Angular's key features like **data binding**, **directives**, and **event handling**. You will also learn how to structure an Angular application by working with separate HTML, CSS, and TypeScript files.

Learning Objectives

By the end of this lab, you will be able to:

- Create and structure an Angular component.
- Use **TypeScript classes** to represent objects.
- Implement **data binding** and **event handling** in Angular.
- Use **ngModel** for two-way data binding.
- Utilize **ngFor** and **ngIf** directives for dynamic UI updates.
- Apply **CSS Flexbox** to ensure a responsive UI.

Lab Requirements

Prerequisites

- Basic understanding of HTML, CSS, and JavaScript.
- Prior exposure to TypeScript is helpful but not required.
- Basic knowledge of Angular component structure.

Software Requirements

- **Node.js** (LTS version) and **npm** (Installed together with Node.js)
- **Angular CLI** (If not installed, run npm install -g @angular/cli)
- **Code Editor** (VS Code recommended)
- **Web Browser** (Chrome, Edge, or Firefox)

Step-by-Step Guide

Step 1: Set Up Your Angular Project

Run the following command to create a new Angular project:

ng new todo-app-lab02
cd todo-app-lab02
ng serve

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This will start a development server, and your app will be accessible at http://localhost:4200/.

Step 2: Create the To-Do Component

Generate a new component for managing the to-do list:

ng generate component todo-app

This creates a new folder src/app/todo-app with the necessary files.

Step 3: Define the To-Do Model Class

Create a new file: src/app/todo-app/todo-item.model.ts.

This class will represent each task with an **id**, **description**, and a **completed status**.

Step 4: Implement To-Do Logic in TypeScript

Edit src/app/todo-app/todo-app.component.ts to manage the tasks.

Step 5: Update the To-Do Component HTML

Modify src/app/todo-app/todo-app.component.html.

Step 6: Add Styling for the To-Do List

Modify src/app/todo-app/todo-app.component.css.

Step 7: Integrate the Component into the Main App

Edit src/app/app.module.ts to declare the new component:

Update src/app/app.component.html:

Final Steps & Testing

Run the application with:

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ng serve

Visit http://localhost:4200/ to test your To-Do App.

Conclusion

In this lab, you learned how to:

- Create an Angular component for a **To-Do App**.
- Use **TypeScript classes** to model data.
- Implement **data binding** and **event handling**.
- Apply **CSS Flexbox** for layout.

Continue practicing by adding more features like task editing, due dates.

Take a look at: https://angular.dev/tutorials/first-app

Next week: Typescript: https://www.w3schools.com/typescript/index.php

Study Week 2 slides