Angular – My Bills

Lingyi Yin (lucah)

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Web Applications framework for Single Page Apps (SPAs).

- UI framework built by Google
- libraries: React, MomentJS, Lodash
  - features: Template, Data Binding, Forms, Routing, Observables, PWA.

Angular vs React

Feature	Angular	React
Framework Type	Full framework	UI library
Language	TypeScript	JavaScript (with JSX)
State Management	Services / RxJS / NgRx	useState, Redux, Hooks
Routing	@angular/router built-in	React Router
CLI and Tooling	Strong out-of-box CLI	CRA/Vite or manual config
Learning Curve	Steeper (more concepts)	More flexible but fragmented

Prerequisites:

- HTML
- CSS or SCSS
- TypeScript - https://www.typescriptlang.org/

Tools:

- VSCode
- Git
- Node.js - https://nodejs.org/en
- Angular CLI - https://angular.dev/tools/cli/setup-local
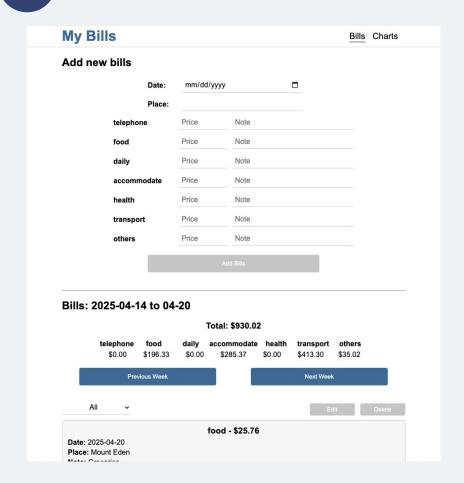- Angular DevTools (optional, Chrome extension)
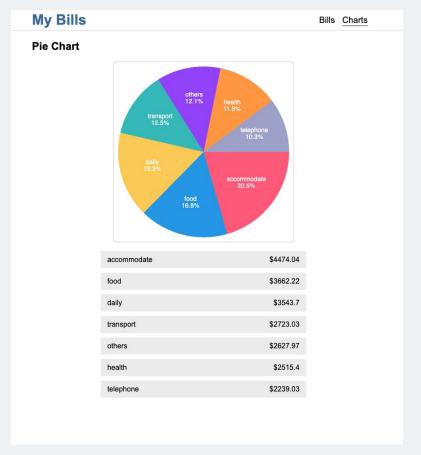
Create a new Angular project:

- ng new your-project-name
- ng generate your-folder-name
- Set new route
- Install and run

Getting started with Angular

Install My Bills Project:

- Clone the repository

git clone https://github.com/UOA-CS732-S1-2025/cs732-assignment-lucah101.git

- Open in VS Code
- Install – npm install
- Run the project – ng serve
- Visit in browser

My Bills Project

My Bills

Add new bills

Date:	mm/dd/yyyy	
Place:		
telephone	Price	Note
food	Price	Note
daily	Price	Note
accommodate	Price	Note
health	Price	Note
transport	Price	Note
others	Price	Note

Add Bills

Bills: 2025-04-14 to 04-20

Total: $930.02

telephone	food	daily	accommodate	health	transport	others
$0.00	$196.33	$0.00	$285.37	$0.00	$413.30	$35.02

Previous Week   Next Week

All ⌄

Edit   Delete

food - $25.76

Date: 2025-04-20
Place: Mount Eden
Note: Groceries

My Bills

Pie Chart

accommodate	$4474.04
food	$3662.22
daily	$3543.7
transport	$2723.03
others	$2627.97
health	$2515.4
telephone	$2239.03

Tech Stack

Layer	Technology
Frontend	Angular (v16+)
Language	TypeScript + HTML + SCSS
State handling	Component state + ngModel
Chart	Native Canvas API
Styling	SCSS
Tooling	Angular CLI, VS Code

Features:

- Add new expenses with batch input
- Real-time category summaries
- Filter and view weekly total spendings
- Inline edit / delete support
- Pie chart visualization with Canvas API

My Bills Project

- **Application structure**

```
src/
    app/
        components/
            bills/
                bills.component.html
                bills.component.scss
                bills.component.spec.ts
                bills.component.ts
                bills.data.ts
                bills.model.ts
            charts/
                charts.component.html
                charts.component.scss
                charts.component.spec.ts
                charts.component.ts
        app.component.ts
        app.config.ts
        app.routes.ts
    index.html
    main.ts
    style.scss
```

page	function
bills.component.html	Form UI: batch input per label, dynamic filter
bills.component.scss	Scoped styles for bill layout and form controls
bills.component.ts	Component logic: add/edit/delete bills, weekly stats
bills.model.ts	TypeScript model (Bill interface)
bills.data.ts	mock bills data
charts.component.html	Chart + label list UI
charts.component.scss	Chart display & active slice styles
charts.component.ts	Canvas-based pie chart, dynamic hover & label filtering
app.component.ts	Provides the header and navigation using for SPA routing
app.config.ts	Angular standalone app config: router + zone optimization
app.routes.ts	Routes setup for "bills" and "charts"
index.html	Host HTML
main.ts	Bootstrap Angular app with appConfig
style.scss	Global styles

- Tool support

Tool	Purpose
Angular CLI	Project scaffolding, component generation, local dev server
TypeScript	Strongly typed JavaScript for safer and more scalable code
SCSS	Stylesheets with nesting, variables, and better organization
Canvas API	Native drawing for high-performance pie charts
Angular Router	Built-in navigation between components
FormsModule	Enables template-driven forms and two-way data binding

My Bills Project

● **State management**

Form Data: Managed via ngModel two-way binding

Local Variables:

- bills[ ]: Global list of all bills

- filteredBills[]: Bills displayed for the selected week

- editIndex: Tracks the bill currently being edited

- selectedBillIndex: Tracks which bill is selected

- totalByLabel: Calculated totals by category

- batchBillForm: Contains date, place, and an array of bills grouped by label

My Bills Project

- ## Routing

```
TS app.routes.ts  ×

frontend > src > app > TS app.routes.ts > ...
        You, 7 hours ago | 1 author (You)
  1   // Define the application's route configuration
  2   import { Routes } from '@angular/router';   409 (gzipped: 265)
  3   import { BillsComponent } from './components/bills/bills.component';
  4   import { ChartsComponent } from './components/charts/charts.component';
  5
  6   export const routes: Routes = [
  7     // Redirect the empty path ('') to the 'bills' path as the default route
  8     { path: '', redirectTo: 'bills', pathMatch: 'full' },
  9     { path: 'bills', component: BillsComponent },
 10     { path: 'charts', component: ChartsComponent }
 11   ];
```

```
TS app.component.ts  ×

frontend > src > app > TS app.component.ts > 🦆 AppComponent
        You, 3 hours ago | 1 author (You)
  1   // header and navigation bar.
  2   import { Component } from '@angular/core';   398.9k (gzipped: 118k)
  3   import { RouterModule } from '@angular/router';   207.1k (gzipped: 47.2k)
  4
        You, 2 days ago | 1 author (You)
  5   @Component({
  6     selector: 'app-root',
  7     standalone: true,
  8     imports: [RouterModule],
  9     template: `
 10       <div class="title">
 11         <div class="tcontent">
 12           <h1>My Bills</h1>
 13           <nav>
 14             <a routerLink="/bills" routerLinkActive="active">Bills</a>
 15             <a routerLink="/charts" routerLinkActive="active">Charts</a>
 16           </nav>
 17         </div>
 18       </div>
 19       <div class="container">
 20         <router-outlet></router-outlet>
 21       </div>
```

Thanks

Lingyi Yin (lucah)