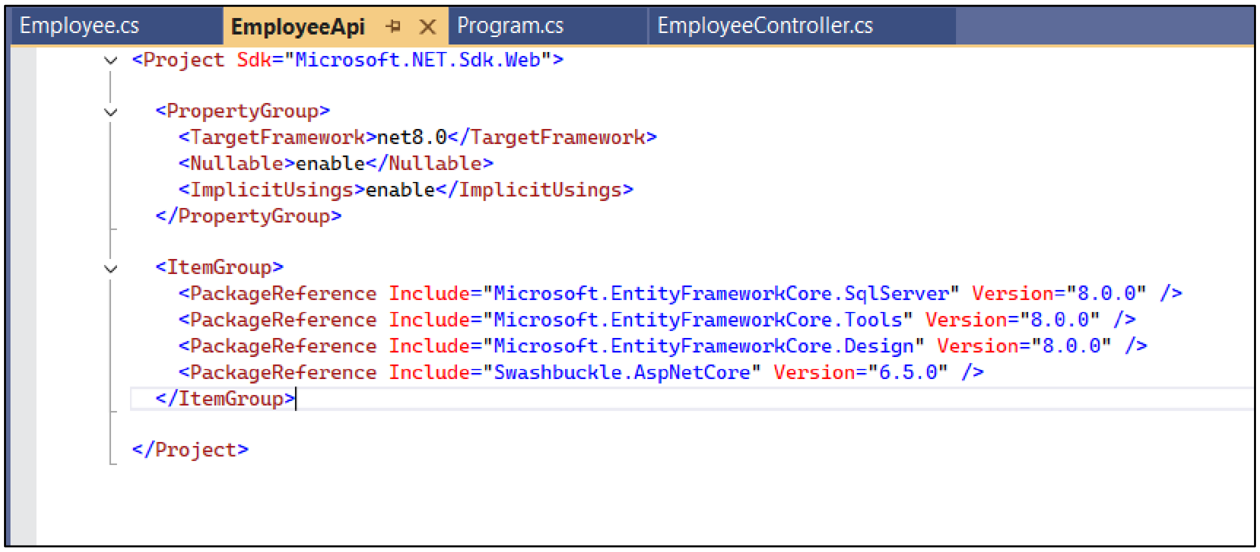
Final Assessment - .NET Full Stack

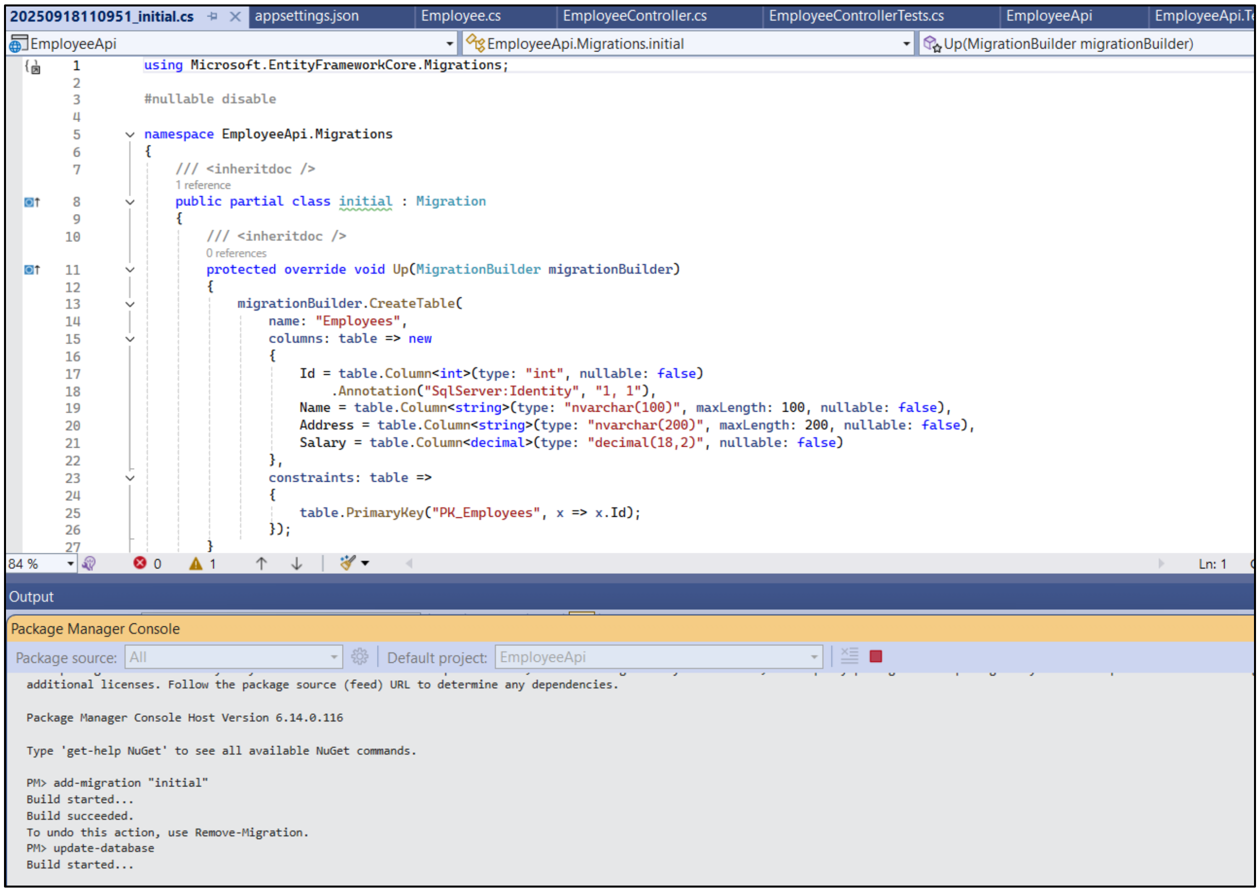
1. Make a WebApi named EmployeeApi with Id, Name, Address, Salary



Employee.cs | EmployeeApi | Program.cs | EmployeeController.cs

```xml
<Project Sdk="Microsoft.NET.Sdk.Web">

  <PropertyGroup>
    <TargetFramework>net8.0</TargetFramework>
    <Nullable>enable</Nullable>
    <ImplicitUsings>enable</ImplicitUsings>
  </PropertyGroup>

  <ItemGroup>
    <PackageReference Include="Microsoft.EntityFrameworkCore.SqlServer" Version="8.0.0" />
    <PackageReference Include="Microsoft.EntityFrameworkCore.Tools" Version="8.0.0" />
    <PackageReference Include="Microsoft.EntityFrameworkCore.Design" Version="8.0.0" />
    <PackageReference Include="Swashbuckle.AspNetCore" Version="6.5.0" />
  </ItemGroup>

</Project>
```

2. Use EF , Code First Approach to link with database



20250918110951_initial.cs | appsettings.json | Employee.cs | EmployeeController.cs | EmployeeControllerTests.cs | EmployeeApi | EmployeeApi.T

EmployeeApi | EmployeeApi.Migrations.initial | Up(MigrationBuilder migrationBuilder)

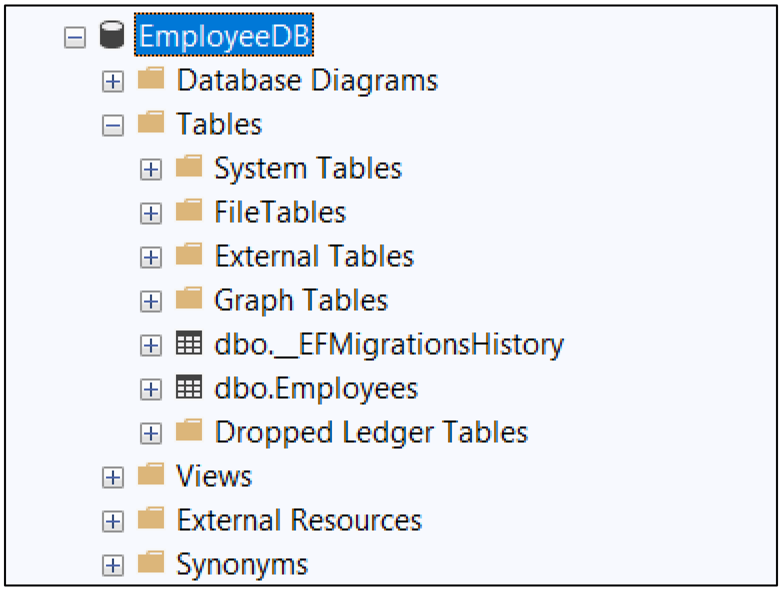
```csharp
using Microsoft.EntityFrameworkCore.Migrations;

#nullable disable

namespace EmployeeApi.Migrations
{
    /// <inheritdoc />
    public partial class initial : Migration
    {
        /// <inheritdoc />
        protected override void Up(MigrationBuilder migrationBuilder)
        {
            migrationBuilder.CreateTable(
                name: "Employees",
                columns: table => new
                {
                    Id = table.Column<int>(type: "int", nullable: false)
                        .Annotation("SqlServer:Identity", "1, 1"),
                    Name = table.Column<string>(type: "nvarchar(100)", maxLength: 100, nullable: false),
                    Address = table.Column<string>(type: "nvarchar(200)", maxLength: 200, nullable: false),
                    Salary = table.Column<decimal>(type: "decimal(18,2)", nullable: false)
                },
                constraints: table =>
                {
                    table.PrimaryKey("PK_Employees", x => x.Id);
                });
        }
```

Output

Package Manager Console

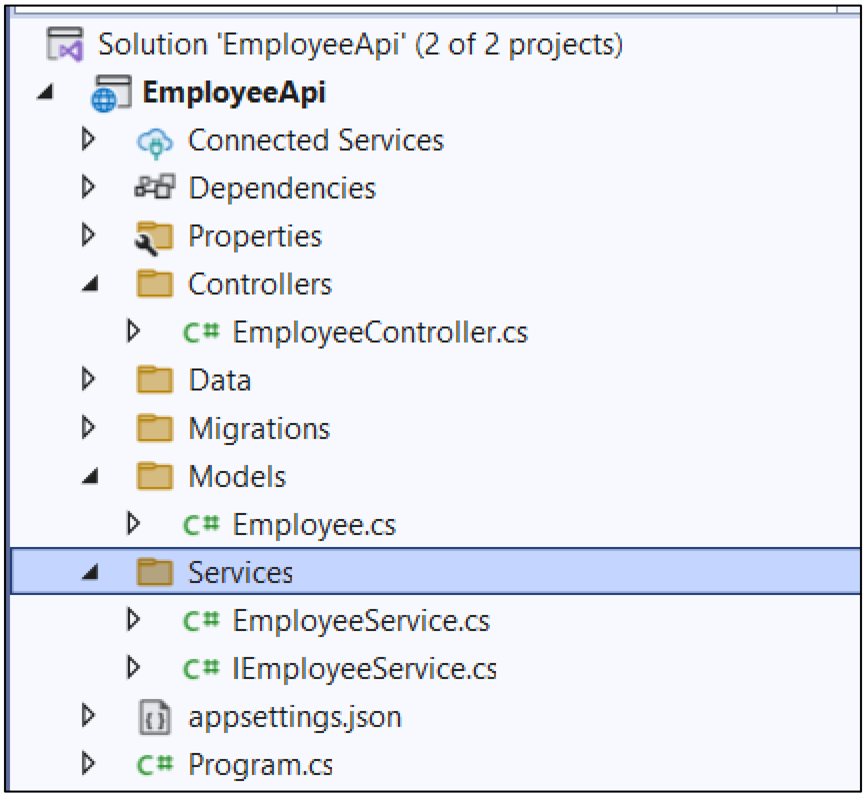
Package source: All | Default project: EmployeeApi

```
additional licenses. Follow the package source (feed) URL to determine any dependencies.

Package Manager Console Host Version 6.14.0.116

Type 'get-help NuGet' to see all available NuGet commands.

PM> add-migration "initial"
Build started...
Build succeeded.
To undo this action, use Remove-Migration.
PM> update-database
Build started...
```



EmployeeDB
Database Diagrams
Tables
System Tables
FileTables
External Tables
Graph Tables
dbo.__EFMigrationsHistory
dbo.Employees
Dropped Ledger Tables
Views
External Resources
Synonyms

3. Add all methods in EmpServive, Add it in EmployeeController

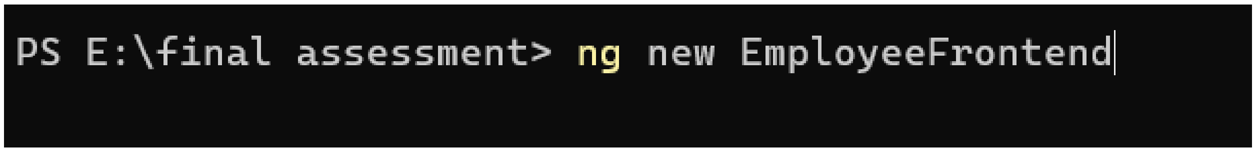


Solution 'EmployeeApi' (2 of 2 projects)
EmployeeApi
Connected Services
Dependencies
Properties
Controllers
EmployeeController.cs
Data
Migrations
Models
Employee.cs
Services
EmployeeService.cs
IEmployeeService.cs
appsettings.json
Program.cs

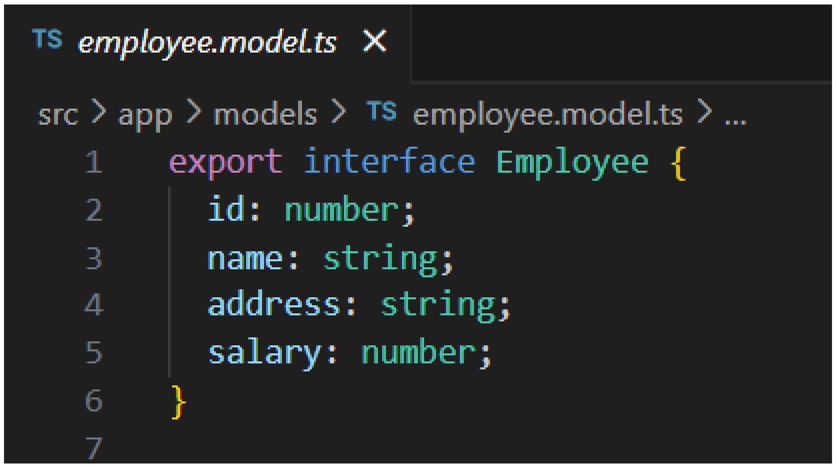
4. Create an Angular Application

declare Id, Name, Address, Salary in Models folder

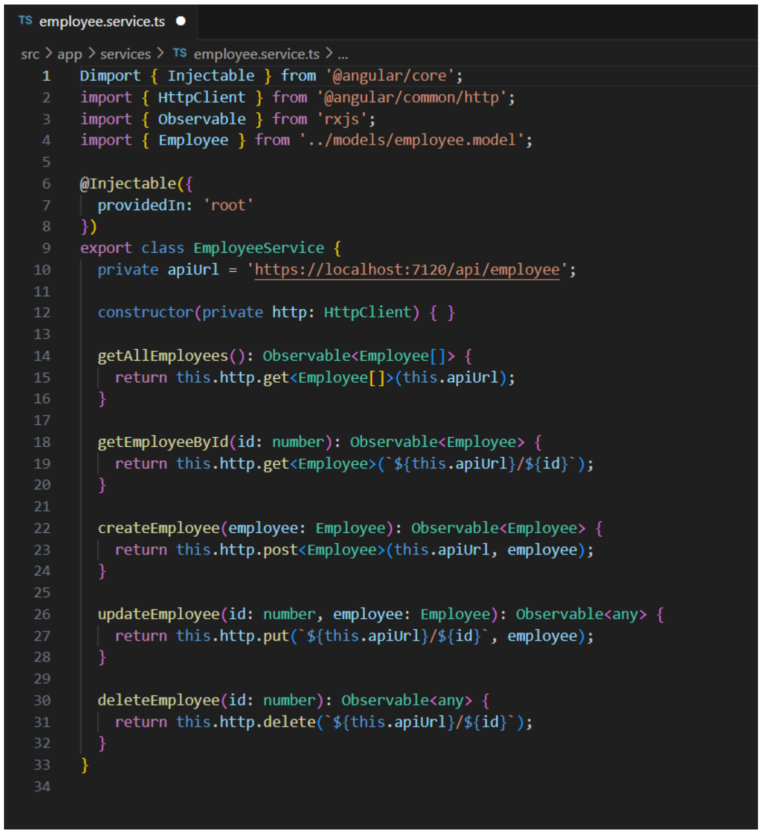
Call the EmployeeApi from here



```
PS E:\final assessment> ng new EmployeeFrontend
```



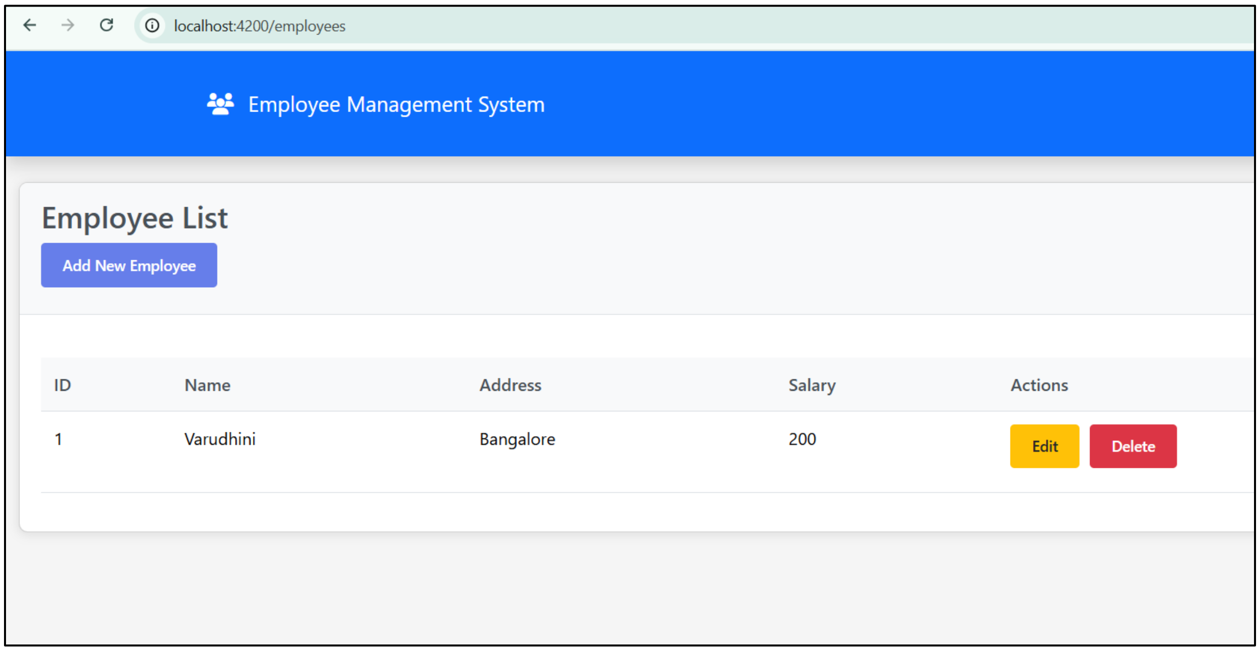
```typescript
export interface Employee {
  id: number;
  name: string;
  address: string;
  salary: number;
}
```



```typescript
import { Injectable } from '@angular/core';
import { HttpClient } from '@angular/common/http';
import { Observable } from 'rxjs';
import { Employee } from '../models/employee.model';

@Injectable({
  providedIn: 'root'
})
export class EmployeeService {
  private apiUrl = 'https://localhost:7120/api/employee';

  constructor(private http: HttpClient) { }

  getAllEmployees(): Observable<Employee[]> {
    return this.http.get<Employee[]>(this.apiUrl);
  }

  getEmployeeById(id: number): Observable<Employee> {
    return this.http.get<Employee>(`${this.apiUrl}/${id}`);
  }

  createEmployee(employee: Employee): Observable<Employee> {
    return this.http.post<Employee>(this.apiUrl, employee);
  }

  updateEmployee(id: number, employee: Employee): Observable<any> {
    return this.http.put(`${this.apiUrl}/${id}`, employee);
  }

  deleteEmployee(id: number): Observable<any> {
    return this.http.delete(`${this.apiUrl}/${id}`);
  }
}
```

5. Perform 2 operations List of Employees

- Since I've already uploaded one value from swagger, the current list show that one record



localhost:4200/employees

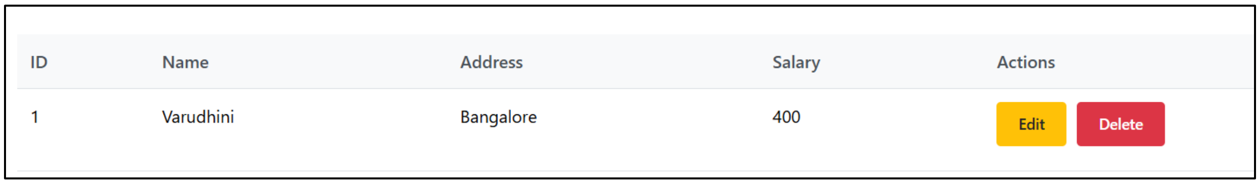
Employee Management System

Employee List

Add New Employee

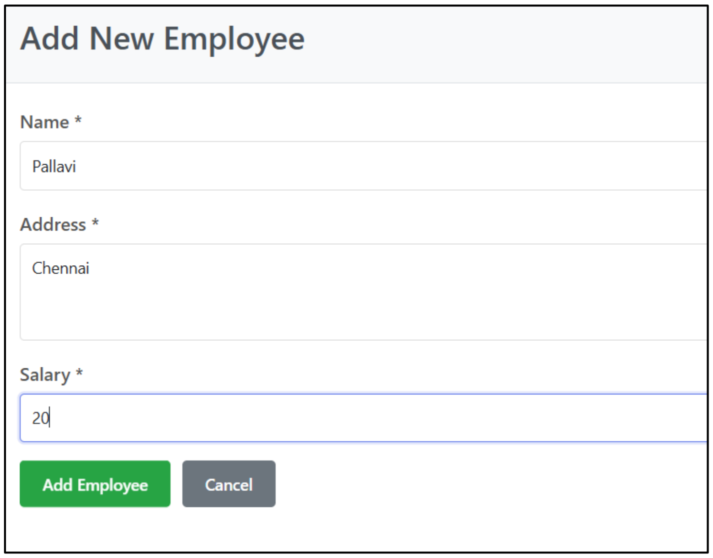
ID	Name	Address	Salary	Actions
1	Varudhini	Bangalore	200	Edit Delete

- Edited the list (changed salary to 400)



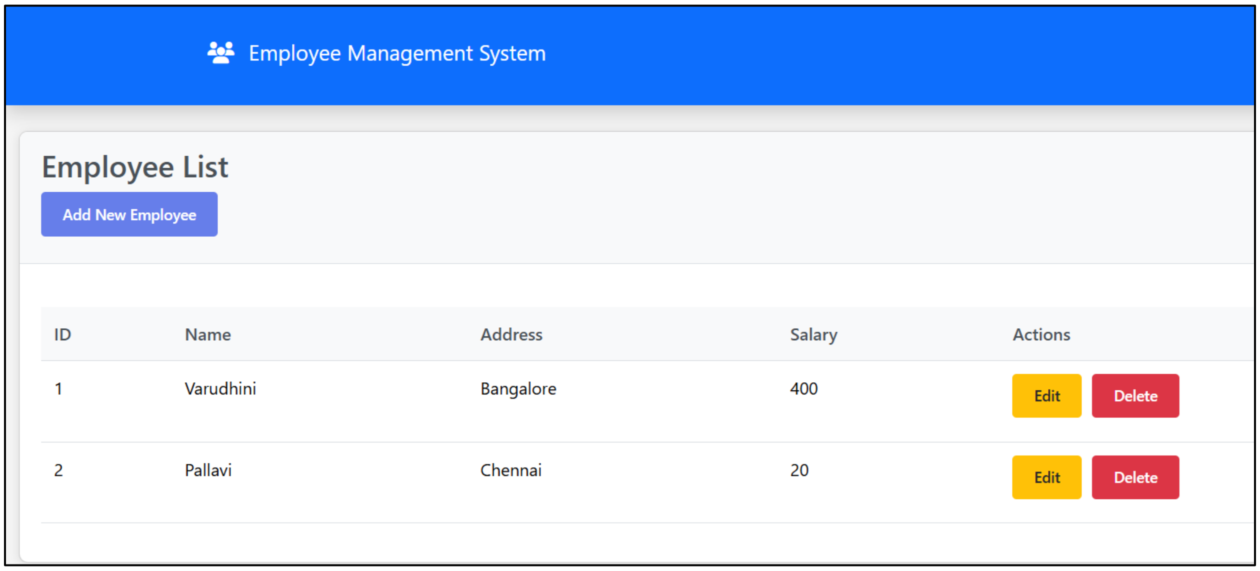
ID	Name	Address	Salary	Actions
1	Varudhini	Bangalore	400	Edit Delete

6. Add a new Employee



Add New Employee

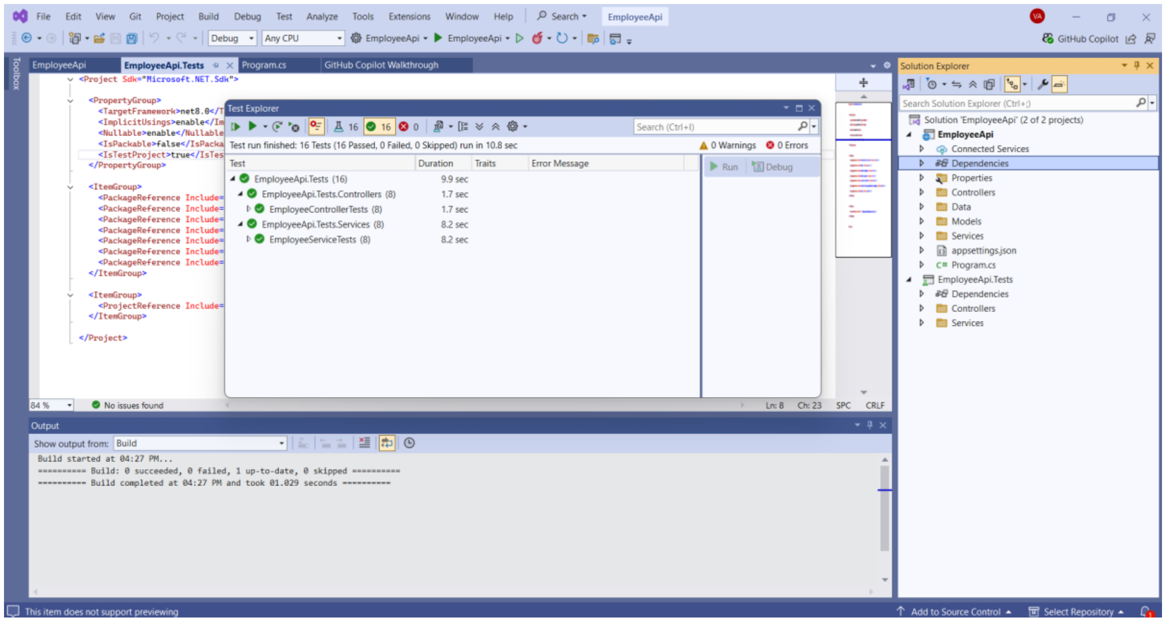
Name *	Pallavi
Address *	Chennai
Salary *	20



Employee List

ID	Name	Address	Salary	Actions
1	Varudhini	Bangalore	400	Edit Delete
2	Pallavi	Chennai	20	Edit Delete

7. Add Test Cases in both Angular & Web Api



```
<Project Sdk="Microsoft.NET.Sdk">

  <PropertyGroup>
    <TargetFramework>net8.0</T
    <ImplicitUsings>enable</Im
    <Nullable>enable</Nullable
    <IsPackable>false</IsPacka
    <IsTestProject>true</IsTes
  </PropertyGroup>

  <ItemGroup>
    <PackageReference Include=
    <PackageReference Include=
    <PackageReference Include=
    <PackageReference Include=
    <PackageReference Include=
    <PackageReference Include=
    <PackageReference Include=
  </ItemGroup>

  <ItemGroup>
    <ProjectReference Include=
  </ItemGroup>

</Project>
```

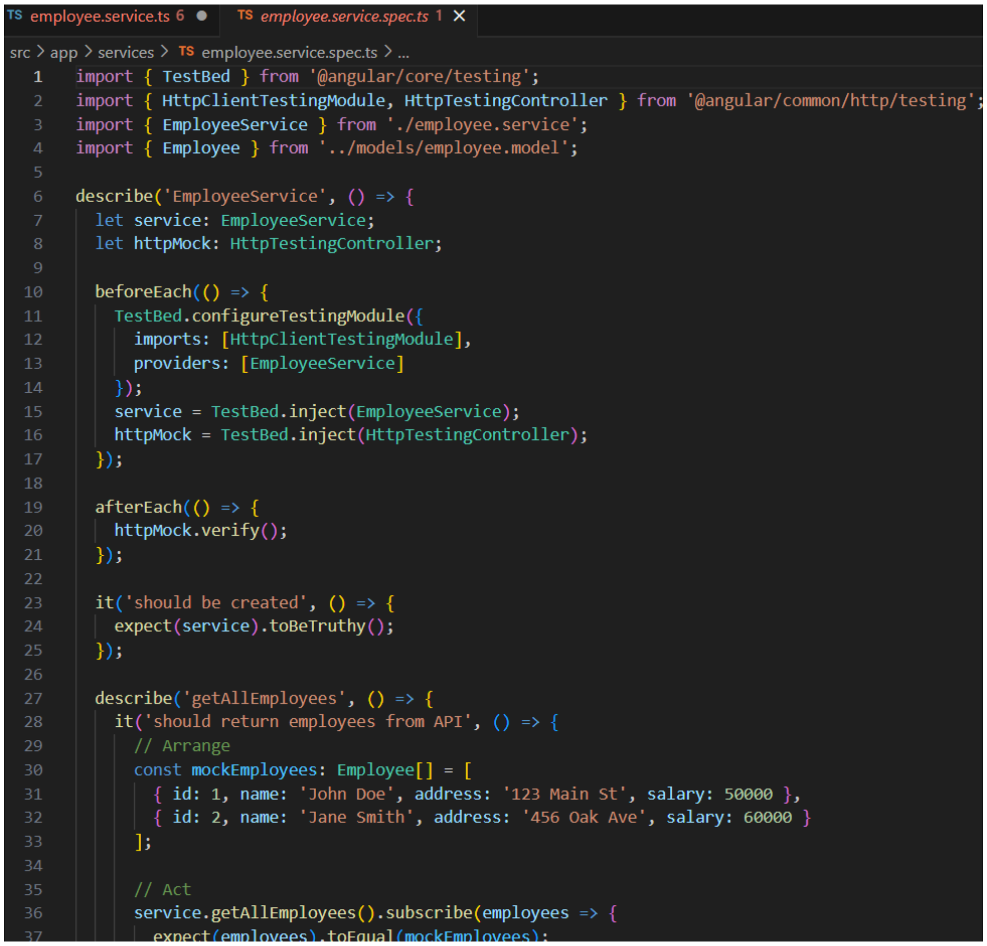
Test Explorer

Test run finished: 16 Tests (16 Passed, 0 Failed, 0 Skipped) run in 10.8 sec   0 Warnings   0 Errors

Test	Duration	Traits	Error Message
EmployeeApi.Tests (16)	9.9 sec		
EmployeeApi.Tests.Controllers (8)	1.7 sec		
EmployeeControllerTests (8)	1.7 sec		
EmployeeApi.Tests.Services (8)	8.2 sec		
EmployeeServiceTests (8)	8.2 sec		

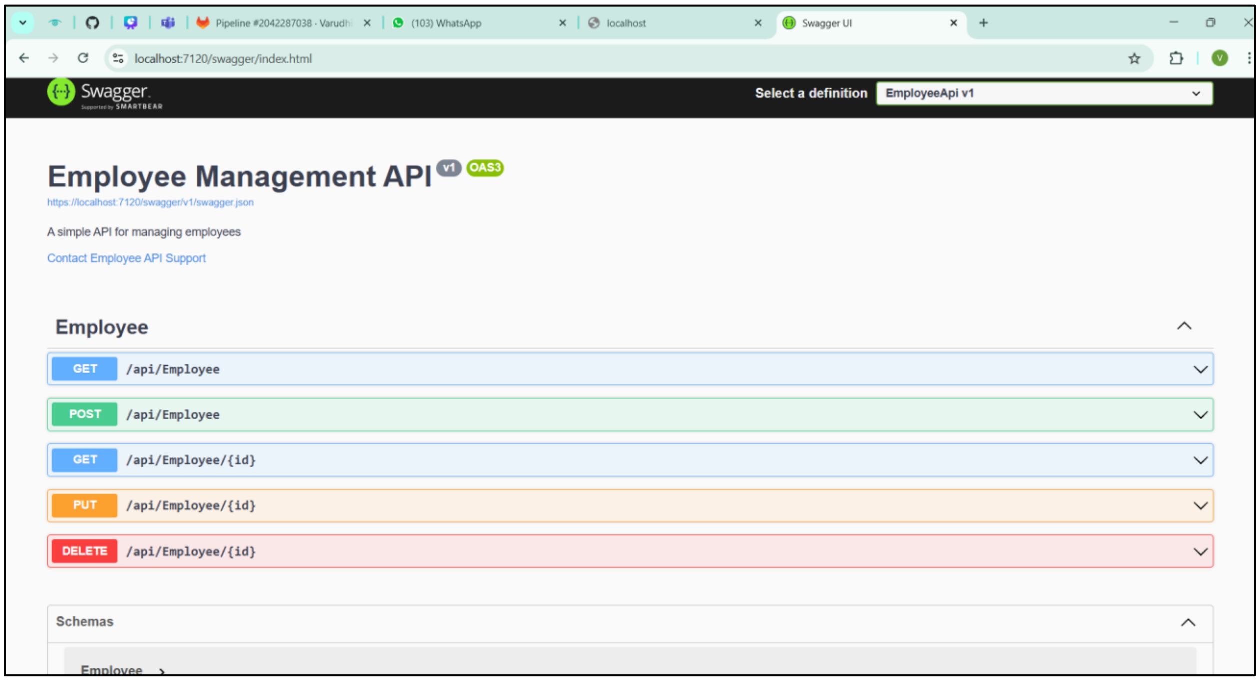
Output — Show output from: Build

```
Build started at 04:27 PM...
========== Build: 0 succeeded, 0 failed, 1 up-to-date, 0 skipped ==========
---------- Build completed at 04:27 PM and took 01.029 seconds ----------
```


employee.service.ts 6
employee.service.spec.ts 1
src > app > services > employee.service.spec.ts > ...

```typescript
import { TestBed } from '@angular/core/testing';
import { HttpClientTestingModule, HttpTestingController } from '@angular/common/http/testing';
import { EmployeeService } from './employee.service';
import { Employee } from '../models/employee.model';

describe('EmployeeService', () => {
  let service: EmployeeService;
  let httpMock: HttpTestingController;

  beforeEach(() => {
    TestBed.configureTestingModule({
      imports: [HttpClientTestingModule],
      providers: [EmployeeService]
    });
    service = TestBed.inject(EmployeeService);
    httpMock = TestBed.inject(HttpTestingController);
  });

  afterEach(() => {
    httpMock.verify();
  });

  it('should be created', () => {
    expect(service).toBeTruthy();
  });

  describe('getAllEmployees', () => {
    it('should return employees from API', () => {
      // Arrange
      const mockEmployees: Employee[] = [
        { id: 1, name: 'John Doe', address: '123 Main St', salary: 50000 },
        { id: 2, name: 'Jane Smith', address: '456 Oak Ave', salary: 60000 }
      ];

      // Act
      service.getAllEmployees().subscribe(employees => {
        expect(employees).toEqual(mockEmployees);
```

8. Add Swagger in Api



localhost:7120/swagger/index.html

Select a definition: EmployeeApi v1

Employee Management API v1 OAS3

https://localhost:7120/swagger/v1/swagger.json

A simple API for managing employees

Contact Employee API Support

Employee

GET /api/Employee

POST /api/Employee

GET /api/Employee/{id}

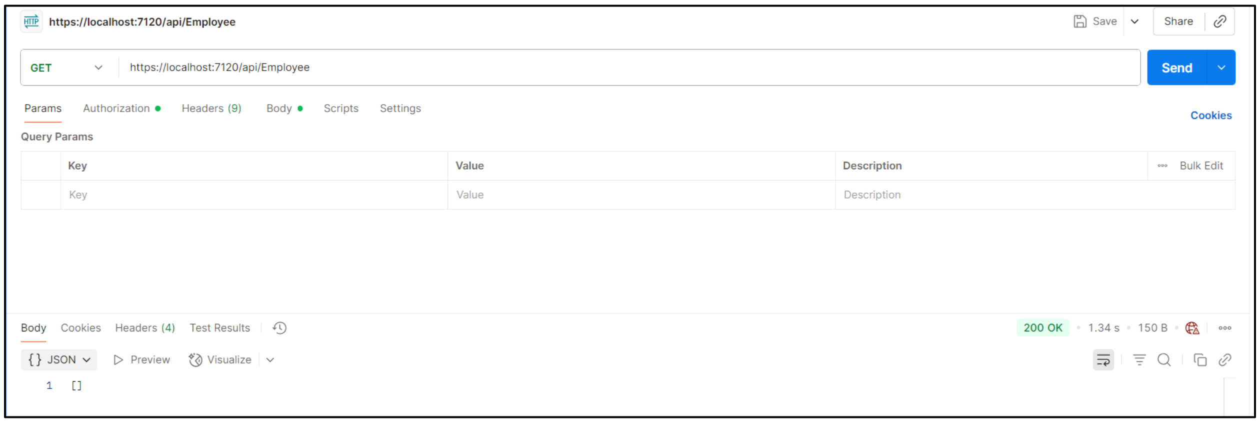
PUT /api/Employee/{id}

DELETE /api/Employee/{id}

Schemas

Employee

9. Test Service through postman



https://localhost:7120/api/Employee

GET https://localhost:7120/api/Employee

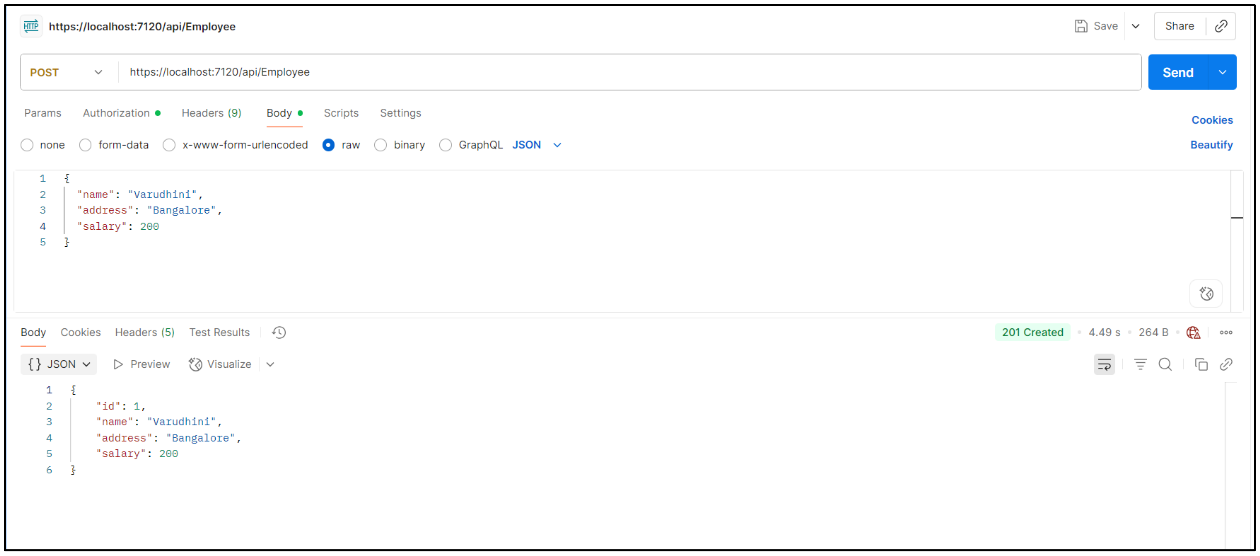
Params | Authorization | Headers (9) | Body | Scripts | Settings

Query Params

Key	Value	Description
Key	Value	Description

Body | Cookies | Headers (4) | Test Results — 200 OK • 1.34 s • 150 B

```
1  []
```



https://localhost:7120/api/Employee

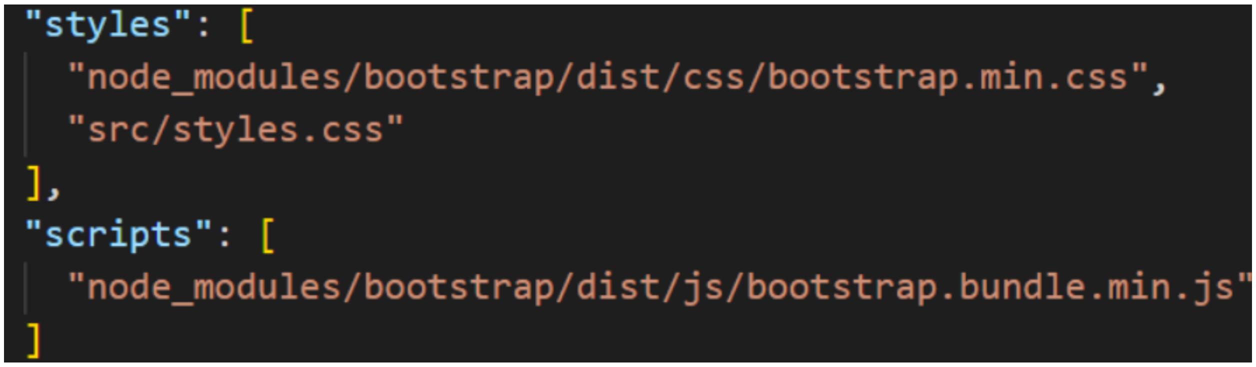
POST https://localhost:7120/api/Employee

```
{
  "name": "Varudhini",
  "address": "Bangalore",
  "salary": 200
}
```

201 Created · 4.49 s · 264 B

```
{
    "id": 1,
    "name": "Varudhini",
    "address": "Bangalore",
    "salary": 200
}
```

10. Use bootstrap in Angular



```
"styles": [
  "node_modules/bootstrap/dist/css/bootstrap.min.css",
  "src/styles.css"
],
"scripts": [
  "node_modules/bootstrap/dist/js/bootstrap.bundle.min.js"
]
```