

Full Stack web Development Lab (PMCA601P)

23MCA1030

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1). Develop SPA using Angular for university management system.

Step 1: Create Basic Structure of Angular App.

- ng new university-management-system
- cd university-management-system
- ng generate component students
- ng generate component courses

Step 2: Define routes in app-routing.module.ts

```
import { NgModule } from '@angular/core';
import { RouterModule, Routes } from '@angular/router';
import { BrowserModule } from '@angular/platform-browser';
import { HttpClientModule } from '@angular/common/http';
import { StudentsComponent } from './students/students.component';
import { CoursesComponent } from './courses/courses.component';
```

```
const routes: Routes = [
  { path: 'students', component: StudentsComponent },
  { path: 'courses', component: CoursesComponent },
  { path: '', redirectTo: '', pathMatch: 'full' },
];
```

```
@NgModule({
  imports: [BrowserModule, HttpClientModule,
    RouterModule.forRoot(routes)],
  exports: [RouterModule]
})
```

```
export class AppRoutingModule { }
```

Step 3: Students.Components.ts

```
import {Component} from '@angular/core';
```

```
@Component({
```

```
  selector: 'app-students',
```

```
  templateUrl: './student.component.html',
```

```
  styleUrls: ['./students.component.css']
```

```
})
```

```
export class StudentsComponent {
```

```
  mcaStudents = [
```

```
{
```

```
  name: 'Vinayak Singh',
```

```
  rollNumber: '23MCA1030',
```

```
  email: 'vinayak.kumar.singh2023@vitstudent.ac.in',
```

```
  phoneNumber: '9630576848'
```

```
},
```

```
{
```

```
  name: 'Pankaj Singh',
```

```
  rollNumber: '23MCA1070',
```

```
  email: 'Pankaj.2023a@vitstudent.ac.in',
```

```
  phoneNumber: '9004506586'
```

```
},
```

```
{
```

```
  name: 'Raj Gupta',
```

```
  rollNumber: '23MCA1060',
```

```
  email: 'raj.gupta2023@vitstudent.ac.in',
```

```
  phoneNumber: '9102642148'
```

```
},
```

```
{
```

```
  name: 'Atul Kumar',
```

```
  rollNumber: '23MCA1068',
```

```
  email: 'atul.kumar2023@vitstudent.ac.in',
```

```
  phoneNumber: '9057592022'
```

```
},
```

```
{
```

```
  name: 'Sanchit Raj',
```

```
  rollNumber: '23MCA112',
```

```
  email: 'sanchit.raj@2023@vitstudent.ac.in',
```

```
  phoneNumber: '9200406035'
```

```
},
```

```
{
```

```
  name: 'Rupayan Paul',
```

```
  rollNumber: '23MCA1008',
```

```
  email: 'rupayan.paul2023@vitstudent.ac.in',
```

```
  phoneNumber: '6900938038'
```

```
}]
```


Step 4: StudentS.component.html

```
<div class="Students-Container">
  <h2 style="margin: 0px;">MCA Students </h2>
  <div *ngFor="let Student of mcaStudents"
    class="Student-Card">
    <img [src]="https://img.freepik.com/premium-vector/
      avatar-profile-icon-188544-4755.jpg"
      alt="Student Image">
    <div class="Student-details">
      <h3>Name: {{ Student.name }} </h3>
      <p>RollNumber: {{ Student.rollNumber }} </p>
      <p>Email: {{ Student.email }} </p>
      <p>PhoneNumber: {{ Student.phoneNumber }} </p>
    </div>
  </div>
</div>
```

Step 5: Courses.component.ts

```
import { Component } from '@angular/core';
@Component({
  selector: 'app-courses',
  templateUrl: './courses.component.html',
  styleUrls: ['./courses.component.css']
})
export class CoursesComponent {
  courses: any[] = [
    { id: 1, courseName: 'Probability and Statistics',
      Credit: 3, Semester: 1 },
    { id: 2, courseName: 'Data Structure and Algorithms',
      Credit: 4, Semester: 1 },
    { id: 3, courseName: 'Full Stack Web development',
      Credit: 5, Semester: 1 },
    { id: 4, courseName: 'Python Programming',
      Credit: 3, Semester: 1 },
    { id: 5, courseName: 'Software Engineering',
      Credit: 4, Semester: 1 },
    { id: 6, courseName: 'Database Systems',
      Credit: 3, Semester: 1 },
    { id: 7, courseName: 'Qualitative Skills',
      Credit: 2, Semester: 1 }
  ]
}
```

```

{id: 8, CourseName: 'Technical Report Writing', Credit: 3,
 Semester: 1},
{id: 9, CourseName: 'Java Programming', Credit: 3,
 Semester: 2},
{id: 10, CourseName: 'Data Communication and Network',
 Credit: 3, Semester: 2},
{id: 11, CourseName: 'Cloud Computing', Credit: 3,
 Semester: 2},
{id: 12, CourseName: 'Machine Learning', Credit: 3,
 Semester: 2},
{id: 13, CourseName: 'Big Data Analytics', Credit: 3,
 Semester: 2},
{id: 14, CourseName: 'Blockchain Technologies',
 Credit: 3, Semester: 2},
{id: 15, CourseName: 'Technical Report Writing',
 Credit: 3, Semester: 2},
{id: 16, CourseName: 'Software Testing',
 Credit: 3, Semester: 2},
{id: 17, CourseName: 'Quantitative Skills
 Practice', Credit: 3, Semester: 2},
{id: 18, CourseName: 'Advanced Competitive
 Coding', Credit: 3, Semester: 2},
];

hasCoursesForSemester (Semester: number):
boolean {
  return this.courses.some (course => course.Semester === Semester);
}

getCoursesForSemester (Semester: number): any[] {
  return this.courses.filter (course => course.Semester === Semester);
}
}

```


Step 6: Courses.Component.html

```
<div class="tables-container">
  <table class="left-table">
    <thead>
      <tr>
        <th>Title </th>
        <th>Credit </th>
      </tr>
    </thead>
    <tbody>
      <tr *ngFor="let course of getCoursesForSemester(1)">
        <td>{{ course.courseName }} </td>
        <td>{{ course.credit }} </td>
      </tr>
    </tbody>
  </table>
  <table class="right-table">
    <thead>
      <tr>
        <th>Title </th>
        <th>Credit </th>
      </tr>
    </thead>
    <tbody>
      <tr *ngFor="let course of getCoursesForSemester(2)">
        <td>{{ course.courseName }} </td>
        <td>{{ course.credit }} </td>
      </tr>
    </tbody>
  </table>
</div>
```

Step 7: app.component.ts

```
import {Component} from '@angular/core';  
@Component({  
  selector: 'app-root',  
  templateUrl: './app.component.html',  
  styleUrls: ['./app.component.css']  
})  
export class AppComponent {  
  title = 'university-management-system';  
}
```

Step 8: app.component.html

```
<header>  
  <h1> VIT Chennai University Management System </h1>  
  <div>  
    <h3> Name: Vinayak Kumar Singh <br>  
    Register number: 23MCA4030 </h3>  
  </div>  
</header>  
  <div id="app-container">  
    <div id="main-container">  
      <div id="content-container">  
        <div class="department-info">  
          <h2> MCA Department </h2>  
          <p> The master of Computer Application (MCA)  
            department at VIT Chennai is committed  
            to providing quality education in the field  
            of computer applications. </p>  
        </div>  
        <app-courses> </app-courses>  
        <app-students> </app-students>  
      </div>  
    </div>  
  </div>
```

Step 9: Run the application : ng serve

2) Develop SPA with 2 Child Components. In one Component display the name of Student. In another display name, regno and marks of the Student. Create the array of Students in a Service Class. Fetch the array details in Components and perform dependency injection approximately.

Step 1: ng new Student-app

Step 2: Student.Service.ts

```
import { Injection } from '@angular/core';
```

```
@Injection({  
  provideIn: 'root'})
```

```
export class StudentService {
```

```
  private Students: any[] = [
```

```
    { name: 'Vinayak Singh', regNo: '23MCA1030', marks: 90 },
```

```
    { name: 'Pankaj Singh', regNo: '23MCA1070', marks: 50 },
```

```
    { name: 'Raj Gupta', regNo: '23MCA1060', marks: 95 },
```

```
    { name: 'Atul Kumar', regNo: '23MCA1068', marks: 85 },
```

```
    { name: 'Sanchit Raj', regNo: '23MCA1152', marks: 75 },
```

```
    { name: 'Rupayan Paul', regNo: '23MCA1008', marks: 45 },
```

```
  ];
```

```
  getStudents(): any[] {
```

```
    return this.Students;
```

```
  }  
}
```

Step 3: Student-name.component.ts

```
import {Component} from '@angular/core';
import {StudentService} from './student-service';
@Component({
  selector: 'app-student-name',
  template: `
```

```
<h2>Student Name</h2>
<ol>
  <li *ngFor="let student of students">
    {{ student.name }} </li>
  </ol>
`
})
```

```
export class StudentNameComponent {
  students: any[];
  constructor(private studentService: StudentService) {
    this.students = this.studentService.getStudents();
  }
}
```

Step 4: Student-details.component.ts

```
import {Component} from '@angular/core';
import {StudentService} from './student-service';
@Component({
  selector: 'app-student-details',
  template: `
```

```
<h2>Student Details</h2>
<ol>
  <li *ngFor="let student of students">
    <b>Name:</b> {{ student.name }} <br>
    <b>Reg No:</b> {{ student.regNo }} <br>
    <b>Marks:</b> {{ student.mark }}
  </li>
</ol>
`
})
```

```
export class StudentDetailsComponent {
  students: any[];
  constructor(private studentService: StudentService) {
    this.students = this.studentService.getStudents();
  }
}
```


Step 5: app.module.ts

```
import { NgModule } from '@angular/core';
import { BrowserModule } from '@angular/platform-browser';
import { AppComponent } from './app.component';
import { StudentNameComponent } from './student-name.component';
import { StudentDetailsComponent } from './student-details.component';
import { StudentService } from './student.service';
```

```
@NgModule({
```

```
  declarations: [
```

```
    AppComponent,
```

```
    StudentNameComponent,
```

```
    StudentDetailsComponent,
```

```
  ],
```

```
  imports: [
```

```
    BrowserModule
```

```
  ],
```

```
  providers: [StudentService],
```

```
  bootstrap: [AppComponent]
```

```
})
```

```
export class AppModule {}
```

Step 6: app.component.html

```
<h1> Student APP </h1>
```

```
<app-student-name> </app-student-name>
```

```
<app-student-details> </app-student-details>
```

Step 7: app-routing.module.ts

```
import { NgModule } from '@angular/core';
import { RouterModule, Routes } from '@angular/router';
const routes: Routes = [];
@NgModule({
  imports: [RouterModule.forRoot(routes)],
  exports: [RouterModule]
})
export class AppRoutingModule {}
```

Step 8: ng serve

—X—