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Subject: Full Stack Development

Register No: 23MCA1030

Date: 18-10-2023

Exercise no: 9

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.component.ts

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

@Component({
  selector: 'app-students',
  templateUrl: './students.component.html',
  styleUrls: ['./students.component.css']
})
export class StudentsComponent {
  mcaStudents = [
    {
      name: 'Vinayak Singh',
      rollNumber: '23MCA1030',
      email: 'vinayakkumar.singh2023@vitstudent.ac.in',
      PhoneNumber: '9630576848'
    },
    {
      name: 'Pankaj Singh',
      rollNumber: '23MCA1070',
      email: 'pankaj.2023a@vitstudent.ac.in',
      PhoneNumber: '9001506586'
    },
    {
      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.raj2023@vitstudent.ac.in',
    PhoneNumber: '6200106035'
  },
  {
    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>Roll Number: {{ student.rollNumber }}</p>
      <p>Email: {{ student.email }}</p>
      <p>PhoneNumber: {{ student.PhoneNumber }}</p>
    </div>
  </div>
</div>

```

</div>

Step 5: students.component.css

```
.department-info {  
  display: none;  
}  
  
.student-card {  
  display: inline-flex;  
  flex-wrap: wrap;  
  border: 1px solid #ddd;  
  margin-bottom: 10px;  
  margin-top: 10px;  
  margin-right: 20px;  
  padding: 10px;  
  min-width: 450px;  
}  
  
.student-card img {  
  width: 80px;  
  height: 80px;  
  margin-right: 10px;  
  margin-top: 20px;  
}  
  
.tables-container {  
  display: flex;  
  justify-content: space-between;  
  border: 10px solid black;  
  
}  
  
.left-table,  
.right-table {  
  border: 10px solid black;
```

```
margin: 10px;
padding: 10px;
}
```

Step 6: 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 structures 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 Networking', 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 7: **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 8: courses.component.css

```

h2{
  color: black;
}
.tables-container {
  display: flex;
  justify-content: flex-start;
}
.left-table,
.right-table {
  border: 1px solid black;
  margin: 10px;
  padding: 10px;
}

```

Step 9: 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 10: app.component.html

```
<header>
  <h1>VIT Chennai University Management System</h1>
  <div>
    <h3>Name : Vinayak Kumar Singh <br> Register Number : 23MCA1030 </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 Applications (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 11: app.component.css

```
body {
  font-family: 'Arial', sans-serif;
```



```
margin: 0px;
padding: 0px;
}
#app-container {
  display: flex;
  flex-direction: column;
  min-height: 100vh;
}
header {
  background-color: #3498db;
  color: #fff;
  padding: 10px;
  text-align: center;
}
#main-container {
  display: flex;
  flex: 1;
}
app-sidebar {
  width: 200px;
  background-color: #2c3e50;
  color: #ecf0f1;
  padding: 20px;
}
#content-container {
  flex: 1;
  padding-left: 20px;
}
nav ul {
  list-style: none;
  padding: 0px;
```

```
    margin: 0px;
}
nav ul li {
    margin-bottom: 10px;
}
nav a {
    text-decoration: none;
    color: #ecf0f1;
    font-weight: bold;
}
nav a:hover {
    color: #3498db;
}
.home-container {
    padding: 20px;
}
.department-info {
    margin-top: 20px;
}
.quick-links {
    margin-top: 20px;
}
.quick-links ul {
    list-style: none;
    padding: 0;
}
.quick-links li {
    margin-bottom: 10px;
}
.quick-links a {
    text-decoration: none;
```

}

Output:









MCA Department

The Master of Computer Applications (MCA) department at VIT Chennai is committed to providing quality education in the field of computer applications.

Title	Credit	Title	Credit
Probability and Statistics	3	Java Programming	3
Data structures and Algorithms	4	Data Communication and Networking	3
Full Stack Web Development	5	Cloud Computing	3
Python Programming	3	Machine Learning	3
Software Engineering	4	Big Data Analytics	3
Database Systems	3	Blockchain Technologies	3
Qualitative Skills	2	Technical Report Writing	3
Technical Report Writing	3	Software Testing	3
		Quantitative Skills Practice	3
		Advanced Competitive Coding	3

MCA Students

 Name: Vinayak Singh Roll Number: 23MCA1030 Email: vinayakkumar.singh2023@vitstudent.ac.in PhoneNumber: 9630576848	 Name: Pankaj Singh Roll Number: 23MCA1070 Email: pankaj.2023a@vitstudent.ac.in PhoneNumber: 9001506586	 Name: Raj Gupta Roll Number: 23MCA1060 Email: raj.gupta2023@vitstudent.ac.in PhoneNumber: 9102642148
 Name: Atul Kumar Roll Number: 23MCA1068 Email: atul.kumar2023@vitstudent.ac.in PhoneNumber: 9057592022	 Name: Sanchit Raj Roll Number: 23MCA112 Email: sanchit.raj2023@vitstudent.ac.in PhoneNumber: 6200106035	 Name: Rupayan Paul Roll Number: 23MCA1008 Email: rupayan.paul2023@vitstudent.ac.in PhoneNumber: 6900938038

Develop SPA with 2 child components. in one component display the name of the 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 appropriately.

Step 1: ng new student-app

Step 2: student.service.ts

```
import { Injectable } from '@angular/core';
@Injectable({
  providedIn: '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: '23MCA112', 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.marks }}
      </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

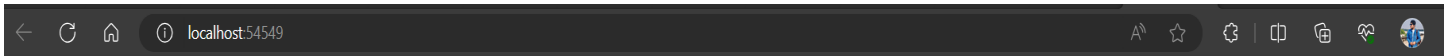
```
<h1>Student App</h1>  
<app-student-name></app-student-name>  
<app-student-details></app-student-details>
```

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

Output:



Student App

Student Name

1. Vinayak Singh
2. Pankaj Singh
3. Raj Gupta
4. Atul Kumar
5. Sanchit Raj
6. Rupayan Paul

Student Details

1. **Name:** Vinayak Singh,
Reg No: 23MCA1030,
Marks: 90
2. **Name:** Pankaj Singh,
Reg No: 23MCA1070,
Marks: 50
3. **Name:** Raj Gupta,
Reg No: 23MCA1060,
Marks: 95
4. **Name:** Atul Kumar,
Reg No: 23MCA1068,
Marks: 85
5. **Name:** Sanchit Raj,
Reg No: 23MCA112,
Marks: 75
6. **Name:** Rupayan Paul,
Reg No: 23MCA1008,
Marks: 45

END