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COLLEGE NAME:SACS MAVMM ENGINEERING COLLEGE

DEPARTMENT:COMPUTER SCIENCE AND ENGINEERING

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DATE:06.10.2025

Completed the project named as phase5

TECHNOLOGY PROJECT NAME: SINGLE PAGE APPLICATION

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Project Demonstration & Documentation:

1. Final Demo Walkthrough

The final demonstration showcases the complete functionality of the Single Page Application (SPA) developed for the Learning Management Portal.
The application provides a unified interface for students, staff, and administrators to interact seamlessly through a single-page view without reloading.

During the demo, the following workflow was presented:

- **Home Section** – Displays an introduction to the platform and its purpose.

- **Course Section** – Lists available courses. Students can browse and enroll in courses, while staff can upload or manage course content.

- **Progress Section** – Shows the user's learning progress, such as completed modules and ongoing lessons.

- **Admin Section** – Displays analytical reports, student data, and course performance metrics.

The demo illustrated how the entire user experience remains smooth due to the dynamic content switching using JavaScript DOM manipulation. The front-end application, created with HTML, CSS, and JavaScript, was tested across browsers to ensure consistent performance and responsiveness.

2. Project Report

The **project report** summarizes all the development phases, from problem identification to deployment.
It documents how the SPA was built using a structured five-phase model aligned with IBM's project methodology for Naan Mudhalvan.

Report Sections:

- **Introduction:** Overview of the SPA and its objectives.

- **Problem Statement:** The need for a centralized online learning interface.

- **System Design:** Explanation of architecture, modules, and flow diagrams.

- **Implementation:** Details about project setup, front-end design, and code snippets.

- **Testing & Validation:** Core feature testing and results.

- **Conclusion:** Outcomes and future scope for improvement.

The report also includes references, team member details, screenshots, and the GitHub repository link for verification.

3. Screenshots / API Documentation

Screenshots:

To provide visual evidence of the project's functionality, screenshots were included for:

- Home Page (Navigation Bar and Welcome Section)

- Course Listing Interface

- Progress Tracking Dashboard

- Admin Analytics View

Each screenshot includes labeled elements to help evaluators understand the UI flow and design consistency.

API Documentation (Optional Enhancement):

Although this version of the SPA primarily uses static content, the design can be extended to integrate a **Node.js REST API** for dynamic data retrieval.
In such a case, API endpoints like /api/login, /api/courses, /api/progress, and /api/admin would handle authentication, course data, and analytics.

Sample format for documentation:

- **GET /api/courses:** Returns list of available courses.

- **POST /api/login:** Validates user credentials and returns a JWT token.

- **GET /api/progress/:id:** Fetches progress data for a student.

This structure allows scalability when integrated with backend databases like MongoDB or MySQL.

4. Challenges & Solutions

Challenge	Description	Solution Implemented
1. SPA Navigation Logic	Switching between multiple views without reloading the page caused display conflicts.	Used JavaScript functions with DOM manipulation and CSS classes (hidden) to toggle visibility efficiently.
2. UI Consistency	Maintaining a clean, responsive layout on different devices was challenging.	Used flexible CSS properties (Flexbox) and responsive design practices for layout adaptation.
3. Code Reusability	Redundant code occurred when building separate sections.	Created reusable components and modularized the HTML structure.
4. Version Management	Difficulty in maintaining versions while updating features.	Implemented GitHub version control with frequent commits and branch-based development.
5. Hosting & Deployment	Static hosting required an easy-to-use platform.	Deployed the SPA on GitHub Pages, allowing public access via a direct URL.

5. GitHub README & Setup Guide

➢ https://github.com/fathimajaffer2005-dev
➢ https://github.com/gopika2006raja-web
➢ https://github.com/kiruthigadharshini2006-hub
➢ https://github.com/priya1819pri-lab

The file includes:

- **Project Overview:** Brief about the SPA purpose and modules.

- **Technologies Used:** HTML, CSS, JavaScript (Vanilla)

- **Features:** Navigation, Course Display, Progress Tracking, Admin Reports

- **Team Members:** Names and registration numbers
- **Deployment Link:** Direct URL to the hosted project

This ensures that anyone reviewing the project can easily clone, test, and explore the system locally.

6. Final Submission (Repo + Deployed Link)

The final submission includes:

1. **GitHub Repository:**
   Contains all project source files (index.html, style.css, script.js) and the README file.

   - Souce code(frontend + backend)
   - README with setup guide
   - Screenshot folders
   - API docs

2. **Deployed Link (GitHub Pages):**

   - Frontend.
   - Backend.
   - Provide demo credentials (test user) for reviewers.

Coding:

```
<!DOCTYPE html>
<html lang="en">
<head>
 <meta charset="UTF-8">
 <meta name="viewport" content="width=device-width, initial-scale=1.0">
 <title>School SPA - Student & Teacher</title>
 <style>
  /* General Styles */
  body {
   font-family: Arial, Helvetica, sans-serif;
```

```css
  margin: 0;

  padding: 0;

  background: #f5f5f5;

}

header {

  background-color: #4CAF50;

  color: white;

  padding: 20px;

  text-align: center;

}

nav {

  display: flex;

  justify-content: center;

  background-color: #333;

}

nav a {

  color: white;

  padding: 14px 20px;

  text-decoration: none;

  text-align: center;

}

nav a:hover {

  background-color: #ddd;

  color: black;

}

.section {

  display: none;

  padding: 40px;

  text-align: center;

}

.active {
```

```css
  display: block;

}


/* Student Section */

.student {

  background-color: #e3f2fd;

}

.student h2 {

  color: #0d47a1;

}


/* Teacher Section */

.teacher {

  background-color: #fff3e0;

}

.teacher h2 {

  color: #e65100;

}


/* Form Styles */

form {

  max-width: 400px;

  margin: 20px auto;

  text-align: left;

}

label {

  display: block;

  margin-bottom: 5px;

  font-weight: bold;

}

input, textarea, select {
```

```css
      width: 100%;

      padding: 10px;

      margin-bottom: 15px;

      border-radius: 5px;

      border: 1px solid #ccc;

      box-sizing: border-box;

    }

    button {

      background-color: #4CAF50;

      color: white;

      padding: 12px 20px;

      border: none;

      border-radius: 5px;

      cursor: pointer;

    }

    button:hover {

      background-color: #45a049;

    }


    /* Footer */

    footer {

      text-align: center;

      padding: 20px;

      background: #333;

      color: white;

      position: fixed;

      bottom: 0;

      width: 100%;

    }


  </style>
```

```html
</head>
<body>

 <header>
  <h1>School SPA - Student & Teacher Portal</h1>
 </header>
 <nav>
  <a href="#" onclick="showSection('student')">Student</a>
  <a href="#" onclick="showSection('teacher')">Teacher</a>
 </nav>
 <!-- Student Section -->
 <div id="student" class="section student active">
  <h2>Student Dashboard</h2>
  <p>Welcome, Student! You can access your courses, assignments, and profile
here.</p>
  <form>
   <label for="sname">Name:</label>
   <input type="text" id="sname" placeholder="Enter your name">

   <label for="scourse">Course:</label>
   <input type="text" id="scourse" placeholder="Enter course name">

   <label for="sassignment">Assignment:</label>
   <textarea id="sassignment" placeholder="Write your assignment here"></textarea>

   <button type="submit">Submit Assignment</button>
  </form>
 </div>
 <!-- Teacher Section -->
 <div id="teacher" class="section teacher">
  <h2>Teacher Dashboard</h2>
```

```html
    <p>Welcome, Teacher! You can manage courses, view student assignments, and
update profiles.</p>
    <form>
      <label for="tname">Name:</label>
      <input type="text" id="tname" placeholder="Enter your name">


      <label for="tcourse">Course:</label>
      <input type="text" id="tcourse" placeholder="Enter course name">


      <label for="tfeedback">Feedback:</label>
      <textarea id="tfeedback" placeholder="Provide feedback for students"></textarea>


      <button type="submit">Submit Feedback</button>
    </form>
  </div>


  <footer>
    &copy; 2025 School SPA. All rights reserved.
  </footer>


  <script>
    function showSection(sectionId) {
      const sections = document.querySelectorAll('.section');
      sections.forEach(sec => sec.classList.remove('active'));
      document.getElementById(sectionId).classList.add('active');
    }
  </script>


</body>
</html>
```

Output:

School SPA - Student & Teacher Portal

Student   Teacher

Student Dashboard

Welcome, Student! You can access your courses, assignments, and profile here.

Name:

Enter your name

Course:

Enter course name

Assignment:

Write your assignment here

Submit Assignment

School SPA - Student & Teacher Portal

Student   Teacher

Teacher Dashboard

Welcome, Teacher! You can manage courses, view student assignments, and update profiles.

Name:

Enter your name

Course:

Enter course name

Feedback:

Provide feedback for students

Submit Feedback