BANNARI AMMAN INSTITUTE OF TECHNOLOGY

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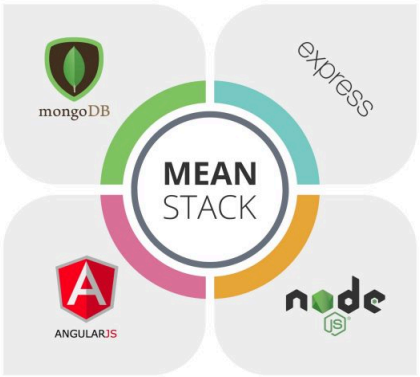
Roll No.	: 7376222AD204
Seat No.	: 14
Project ID	: 14
Domain	: Office Special Labs
Module Name	: Special Lab Portal - Overall

Stack Allocation : MEAN Stack



★ **Database System** → MongoDB

★ **Back-end Web Framework** → Express.js

★ **Front-end Framework** → Angular.js

★ **Back-end Runtime Environment** → Node.js

Software Requirements Specification (SRS) for Special Lab Portal :

PROBLEM STATEMENT :

In educational institutions, the process of lab selection, registration, and interview scheduling for specialized courses is often inefficient, complex, and time-consuming. College students encounter challenges and confusion due to the absence of a streamlined and organized system, leading to delays, misunderstandings, and potential mismatches between students' preferences and available lab slots.

Key Issues:

1. **Lack of Centralized System:** Without a centralized system, students struggle to find information about available labs, registration procedures, and interview schedules, leading to scattered and fragmented processes.
2. **Inefficient Communication:** Current methods often rely on manual communication methods, such as notices and emails, which can be prone to errors, delays, and missed information.
3. **Limited Flexibility:** The existing systems often lack flexibility, making it difficult for students to change labs, accommodate special cases like medical leaves, or opt for additional slots for interviews.
4. **Unclear Guidelines:** Students and faculty often face challenges due to unclear or inconsistent guidelines regarding registration norms, interview procedures, and lab selection criteria.
5. **Ineffective Resource Utilization:** Without a clear overview of student preferences and lab capacities, there is a risk of underutilizing available resources, leading to vacant slots in popular labs and overcrowding in others.

Consequences:

- **Student Frustration:** Students experience frustration due to the complexity and uncertainty involved in the lab selection and enrollment process, impacting their academic experience and satisfaction.

- **Faculty Burden:** Faculty members face challenges in managing the registration and interview processes manually, leading to increased workload and potential administrative errors.
- **Inefficiency and Delays:** The absence of an efficient system results in delays, inefficiencies, and potential mismatches, leading to suboptimal utilization of resources and opportunities.

SCOPE OF THE PROJECT :

The Special Lab Portal aims to:

- Streamline the student enrollment process.
- Automate the registration and interview scheduling.
- Provide a user-friendly interface for lab selection.
- Enable faculty to assess students and update results efficiently.
- Accommodate special cases and lab change requests within defined rules.

FUNCTIONAL REQUIREMENTS :

1. Student Enrollment and Authentication:

- **1.1** Implement a secure user authentication system that allows students to log in using their college mail-id.
- **1.2** Provide a user-friendly portal home page that displays clusters of labs categorized as IT and Non-IT, facilitating easy navigation and access to relevant information.

2. Registration Process:

- **2.1** Develop a systematic and automated registration process where students receive clear guidelines and notifications about the duration, norms, and conditions of the registration process.

- **2.2** Enable students to book slots for interviews through an intuitive and interactive interface, with real-time updates on available slots and lab vacancies.

3. Automated Mail Notification System:

- **3.1** Implement an automated mail notification system to send timely and accurate notifications to students and faculty regarding the registration process, interview schedules, and updates.
- **3.2** Ensure seamless integration with the portal to update student and faculty details, registration status, and interview outcomes automatically.

4. Ongoing Interview Process:

- **4.1** Facilitate timely reminders and notifications to students and faculty to ensure punctuality and participation in the interview process.
- **4.2** Enable faculty members to assess students effectively, update interview results promptly, and provide feedback through the portal.

5. Wildcard Entry and Lab Selection:

- **5.1** Implement a wildcard entry system that allows students to book additional slots for interviews in labs with vacancies, based on real-time availability and faculty details.
- **5.2** Provide comprehensive information about each lab, including faculty names, details, and the number of vacant seats, enabling informed decision-making by students.

6. Special Case Registration:

- **6.1** Develop a specialized registration process for students on medical leave, allowing them to submit genuine proof, opt for any lab irrespective of vacancy, and undergo the interview process as per their convenience.
- **6.2** Ensure flexibility and accommodation of special cases within the defined rules and guidelines to provide equal opportunities and support to all students.

7. Lab Change Request:

- **7.1** Implement a structured and transparent process for students to request lab changes, allowing one change per year, based on availability and faculty assessment.
- **7.2** Provide an overview of vacant labs, enable slot booking for the new lab, notify faculty for assessment, and update the interview results and student details in the portal.

8. Reporting and Analytics (Student's Personal Portfolio) :

- **8.1** Incorporate reporting and analytics features to monitor and analyze student preferences, lab capacities, registration trends, and interview outcomes.
- **8.2** Provide insights and data-driven recommendations to optimize resource allocation, enhance user experience, and improve the overall efficiency and effectiveness of the lab selection and enrollment process.
- **8.3** Explore your potential with LabSphere – where achievements, targets, CGPA, skills, and more come together to shape your academic journey and propel your future success.

TECH STACK : MEAN Stack :

1. MongoDB (Database):

- **Description**: MongoDB is a popular NoSQL database that stores data in a flexible, JSON-like format, making it ideal for handling diverse and evolving data structures.
- **Usage in Special Lab Portal:**
    - Store and manage student and faculty profiles, registration details, lab information, interview schedules, and results.
    - Facilitate seamless integration with the portal for real-time data updates, notifications, and reporting.

2. Express.js (Backend Framework):

- **Description:** Express.js is a minimal and flexible Node.js web application framework that provides a robust set of features for building web and mobile applications.
- **Usage in Special Lab Portal:**

- Develop a secure and scalable backend API to handle user authentication, registration process, wildcard entry, lab change requests, and other core functionalities.
- Implement middleware for request handling, data validation, error handling, and routing to ensure smooth and efficient communication between the frontend and the database.

3. **Angular (Frontend Framework)**:

- **Description:** Angular is a powerful JavaScript framework for building dynamic and interactive single-page applications (SPAs) with a rich user interface and seamless user experience.
- **Usage in Special Lab Portal:**
  - Design and develop a responsive and user-friendly frontend interface for students and faculty to access the portal, view lab clusters, book slots, receive notifications, and update preferences.
  - Implement components, services, and modules to manage user interactions, data binding, form validations, and navigation within the portal.

4. Node.js (Runtime Environment):

- **Description:** Node.js is a JavaScript runtime environment that enables server-side execution of JavaScript code, allowing developers to build scalable and high-performance applications.
- **Usage in Special Lab Portal:**
  - Deploy and host the backend API developed using Express.js on Node.js to handle concurrent requests, manage server-side logic, and interact with the MongoDB database.
  - Utilize Node.js libraries and modules to implement features like automated mail notifications, wildcard entry management, special case registration, lab change requests, and reporting and analytics functionalities.

END USERS :

1. Students:

- ★ **Primary Users:** Students are the primary end users of the Special Lab Portal.
- ★ **Roles and Responsibilities:**
  - **Lab Selection and Enrollment:** Students use the portal to explore available labs, view lab details, and select labs based on their interests and preferences.
  - **Registration and Interview Scheduling:** Students register for the labs, book interview slots, and manage their interview schedules through the portal.
  - **Notifications and Updates:** Students receive automated notifications, reminders, and updates regarding the registration process, interview schedules, and results.
  - **Wildcard Entry and Special Case Registration:** Students utilize the portal to avail wildcard entry, book additional interview slots, and register for special cases like medical leaves.
  - **Feedback and Reporting:** Students provide feedback, view interview results, and access reporting and analytics features to monitor their performance and preferences.

2. Lab Faculties (Including Interns):

- ★ **Secondary Users:** Lab faculties, including full-time faculties and interns, are secondary end users of the Special Lab Portal.
- ★ **Roles and Responsibilities:**
  - **Assessment and Interview Management:** Faculties assess students during the interviews, update interview results, and provide feedback through the portal.
  - **Lab Availability and Details:** Faculties manage lab details, update availability, and provide information about vacant seats, faculty names, and lab capacities.
  - **Notifications and Reminders:** Faculties receive notifications and reminders regarding student interviews, assessment deadlines, and result updates.

- **Wildcard Entry and Lab Change Requests:** Faculties manage wildcard entries, process lab change requests, and coordinate with students and college management to ensure smooth lab allocation and transition processes.

3. <u>College Management</u>:

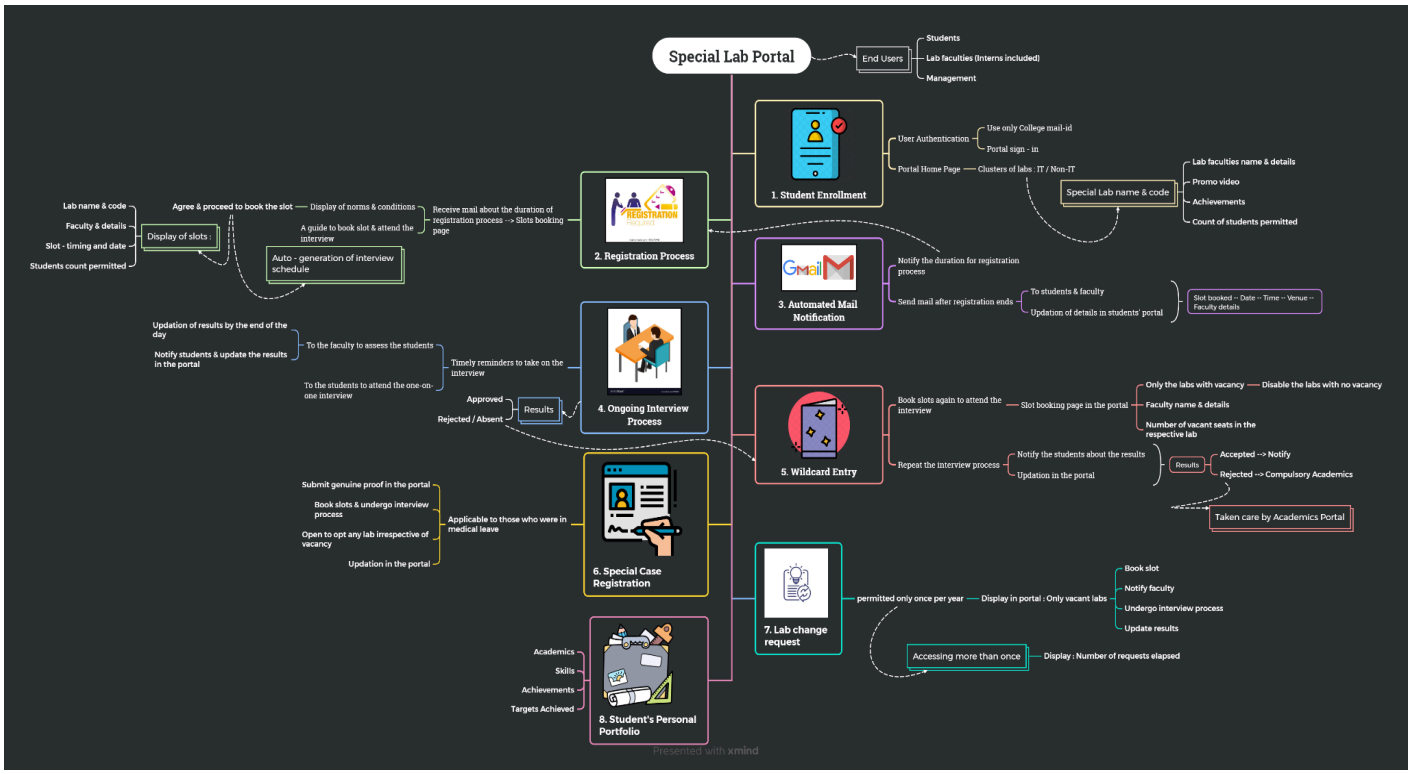
★ **Administrative Users:** College management, including administrators, coordinators, and department heads, are administrative end users of the Special Lab Portal.

★ **Roles and Responsibilities:**

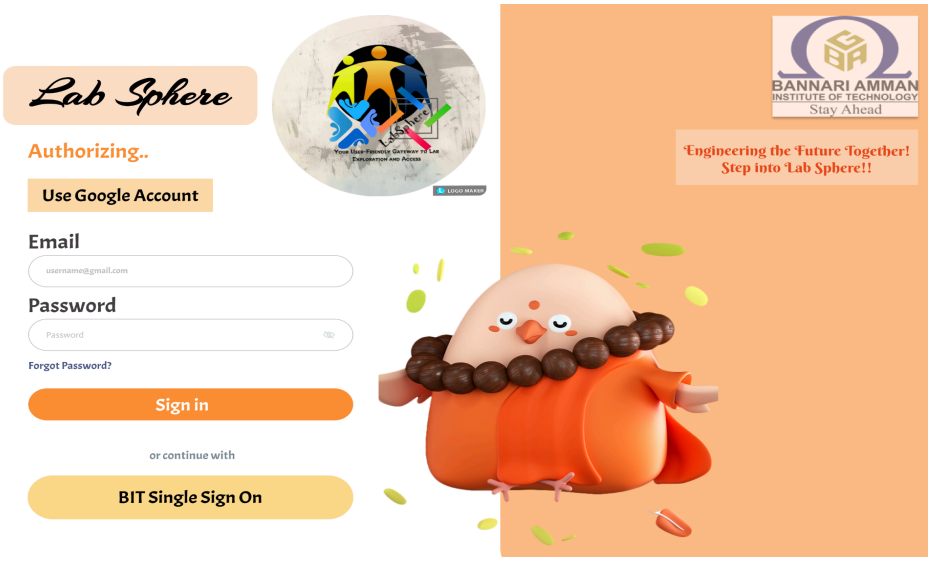
- **System Administration and Monitoring:** College management oversees and manages the overall administration, configuration, and monitoring of the portal, ensuring compliance with institutional policies, guidelines, and regulations.
- **Data Management and Reporting:** College management accesses reporting and analytics features to monitor student enrollment, lab capacities, registration trends, interview outcomes, and overall system performance.
- **Policy Formulation and Implementation:** College management formulates and implements registration policies, lab allocation rules, interview procedures, and other institutional guidelines through the portal.
- **Communication and Coordination:** College management communicates and coordinates with students, faculties, and other stakeholders through the portal to address queries, resolve issues, and facilitate efficient and effective lab selection and enrollment processes.

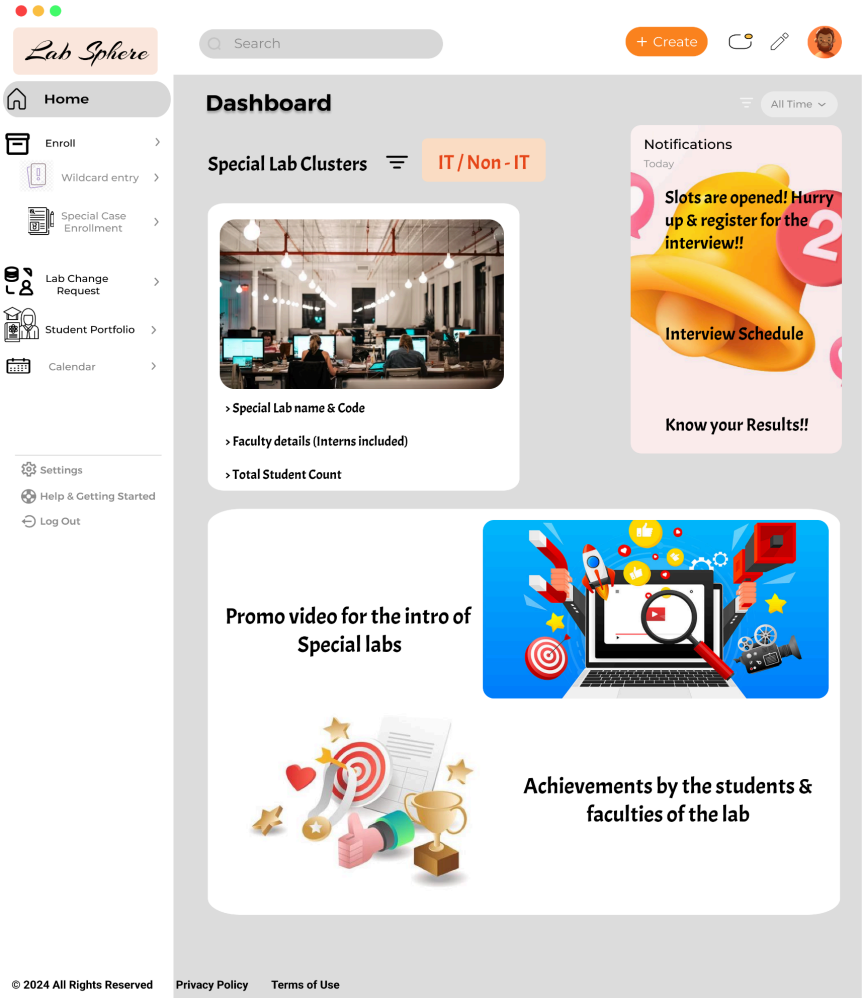
WORKFLOW :


LabSphere
Your User-Friendly Gateway to Lab Exploration and Access
LOGO MAKER


Special Lab Portal
End Users
Students
Lab faculties (Interns included)
Management
1. Student Enrollment
User Authentication
Use only College mail-id
Portal sign - in
Portal Home Page
Clusters of labs : IT / Non-IT
Special Lab name & code
Lab faculties name & details
Promo video
Achievements
Count of students permitted
2. Registration Process
Lab name & code
Faculty & details
Slot - timing and date
Students count permitted
Display of slots :
Agree & proceed to book the slot
Display of norms & conditions
Receive mail about the duration of registration process --> Slots booking page
A guide to book slot & attend the interview
Auto - generation of interview schedule
3. Automated Mail Notification
Notify the duration for registration process
Send mail after registration ends
To students & faculty
Updation of details in students' portal
Slot booked -- Date -- Time -- Venue -- Faculty details
4. Ongoing Interview Process
Updation of results by the end of the day
Notify students & update the results in the portal
To the faculty to assess the students
To the students to attend the one-on-one interview
Timely reminders to take on the interview
Results
Approved
Rejected / Absent
5. Wildcard Entry
Book slots again to attend the interview
Slot booking page in the portal
Only the labs with vacancy
Disable the labs with no vacancy
Faculty name & details
Number of vacant seats in the respective lab
Repeat the interview process
Notify the students about the results
Updation in the portal
Results
Accepted --> Notify
Rejected --> Compulsory Academics
Taken care by Academics Portal
6. Special Case Registration
Submit genuine proof in the portal
Book slots & undergo interview process
Open to opt any lab irrespective of vacancy
Updation in the portal
Applicable to those who were in medical leave
7. Lab change request
permitted only once per year
Display in portal : Only vacant labs
Book slot
Notify faculty
Undergo interview process
Update results
Accessing more than once
Display : Number of requests elapsed
8. Student's Personal Portfolio
Academics
Skills
Achievements
Targets Achieved
Presented with xmind

DESIGN :


Lab Sphere
Authorizing..
Use Google Account
Email
Password
Forgot Password?
Sign in
or continue with
BIT Single Sign On
BANNARI AMMAN
INSTITUTE OF TECHNOLOGY
Stay Ahead
Engineering the Future Together!
Step into Lab Sphere!!


Lab Sphere
Search
+ Create
Home
Enroll
Wildcard entry
Special Case Enrollment
Lab Change Request
Student Portfolio
Calendar
Settings
Help & Getting Started
Log Out
Dashboard
All Time
Special Lab Clusters
IT / Non - IT
› Special Lab name & Code
› Faculty details (Interns included)
› Total Student Count
Notifications
Today
Slots are opened! Hurry up & register for the interview!!
Interview Schedule
Know your Results!!
Promo video for the intro of Special labs
Achievements by the students & faculties of the lab
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