BANNARI AMMAN INSTITUTE OF TECHNOLOGY
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SATHYAMANGALAM - 638401 ERODE DISTRICT TAMILNADU INDIA
Ph: 04295-226000/221289 Fax: 04295-226666 Email: stayahead@bitsathy.ac.in Web: www.bitsathy.ac.in
Stay Ahead

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Academics Lab Slot Booking

NAME	**: IMTHIYAS AHAMED A**
ROLL.NO	**: 7376221EC181**
SEAT.NO	**: 302**
PROJECT ID	**: 21**

PROBLEM STATEMENT : STUDENTS LAB SLOT BOOKING BASED ON THEIR AVAILABILITY

MERN STACK :

The MERN stack is a popular framework that integrates JavaScript technologies to facilitate the creation of full-stack web applications. MERN is an acronym for the set of technologies that make up the stack: MongoDB, Express, React, and Node.js. Web developers have found that its JavaScript-centric approach offers a cohesive development environment for building dynamic web applications, reducing the need for context switching between different programming languages.

FRONTEND	React
BACKEND	Node Js, Express
DATABASE	MongoDB

PROBLEM STATEMENT:

The scattered nature of academic slot booking within educational institutions presents several challenges, including:

- **Inconsistent Booking Process:** Different departments and faculty manage slot bookings independently, resulting in duplication of effort and inconsistent booking procedures.
- **Schedule Conflicts:** Students and faculty receive multiple booking options with overlapping schedules, leading to confusion and missed academic opportunities.
- **Venue Management:** The system will provide a list of available labs with a maximum capacity of 50 seats each. Students will see real-time updates on the number of available seats, and once a lab reaches its maximum capacity.
- **Faculty Attendance Management:** Faculty will have access to a comprehensive list of registered students for each lab session, with features to mark attendance and view student details

These challenges hinder the efficiency and effectiveness of academic slot bookings, affecting the overall academic experience for both students and faculty.

1. INTRODUCTION:

In educational institutions, the process of lab slot booking is often fragmented, leading to various challenges. Students must navigate through multiple departments, faculty selections, and venue availabilities to secure their preferred slots efficiently. This system aims to streamline this process, ensuring students can book lab slots based on their availability and preferences seamlessly. By enhancing accessibility and efficiency, it aims to improve overall academic management within the institution.

1.1 CHALLENGES FACED:

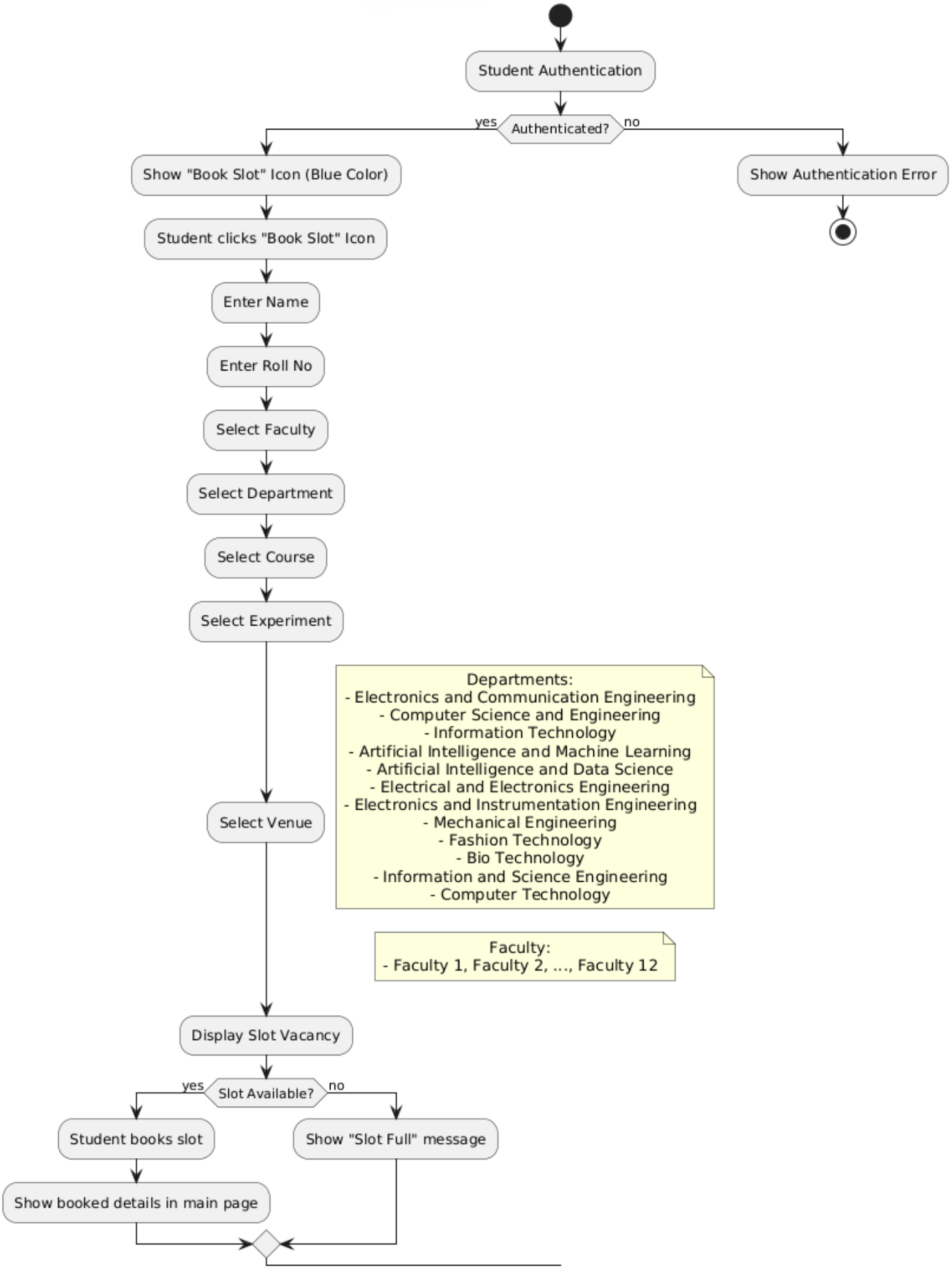
The challenges faced in academic lab slot booking include navigating a complex selection process involving multiple departments, faculties, and venues, which often leads to scheduling inefficiencies and confusion among students. Real-time visibility of available slots and venue capacities is frequently unclear, complicating students' ability to make informed booking decisions promptly.

STUDENT SIDE:

- ✓ **User Authentication and Access:**
  - Secure login using institutional credentials for students to access the slot booking system.
  - Single sign-on (SSO) integration for streamlined access using existing institutional login credentials.
- ✓ **Booking Process:**
  - Form for entering personal details (name, roll number, academic year, department, course).
  - Selection of available slots based on course schedules and venue availability.
- ✓ **Schedule Management:**
  - Interactive schedule display for students to view booked slots and plan academic activities effectively.

This expanded functionality ensures secure and convenient access for students using their institutional credentials, complemented by a streamlined single sign-on process.

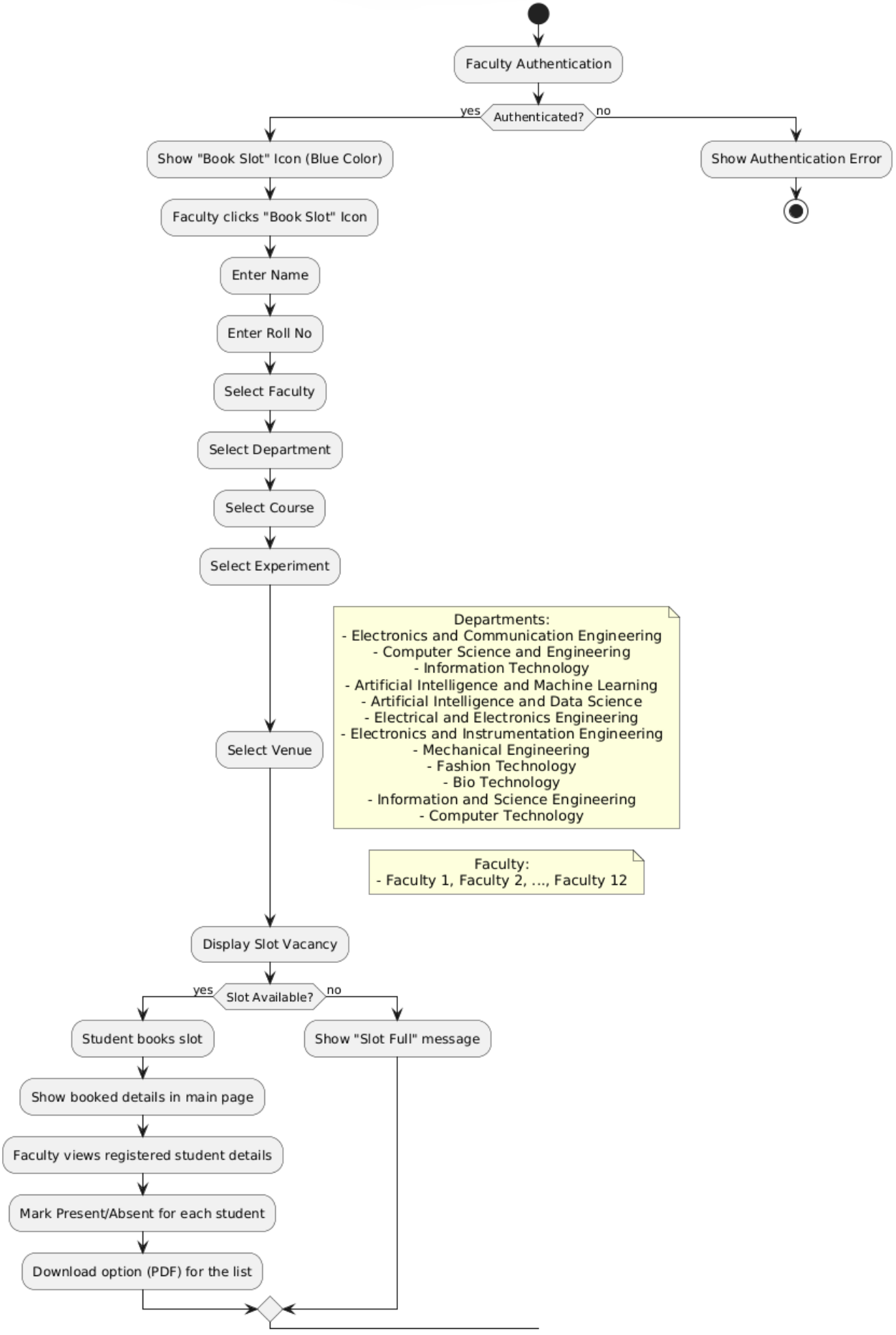
FLOW CHART:


Student Authentication
Authenticated?
yes
no
Show "Book Slot" Icon (Blue Color)
Show Authentication Error
Student clicks "Book Slot" Icon
Enter Name
Enter Roll No
Select Faculty
Select Department
Select Course
Select Experiment
Select Venue
Departments:
- Electronics and Communication Engineering
- Computer Science and Engineering
- Information Technology
- Artificial Intelligence and Machine Learning
- Artificial Intelligence and Data Science
- Electrical and Electronics Engineering
- Electronics and Instrumentation Engineering
- Mechanical Engineering
- Fashion Technology
- Bio Technology
- Information and Science Engineering
- Computer Technology
Faculty:
- Faculty 1, Faculty 2, ..., Faculty 12
Display Slot Vacancy
Slot Available?
yes
no
Student books slot
Show "Slot Full" message
Show booked details in main page

FACULTY SIDE:

- **User Authentication and Access:**
  - Secure login using institutional credentials for faculty members to access the slot booking system.
  - Single sign-on (SSO) integration for streamlined access using existing institutional login credentials.
- **Booking Oversight:**
  - View and manage slot bookings specific to courses taught by the faculty member.
  - Option to approve or reject slot booking requests.
- **Attendance Management:**
  - Ability to mark student attendance for each booked slot.
  - Real-time updates on attendance status and notifications for absent students.
- **Reporting and Download:**
  - Downloadable reports in PDF format containing detailed student booking and attendance information.
  - Option to generate reports based on specific courses or time periods for administrative purpose.
- **Communication:**
  - System-generated notifications for new booking requests and changes in booking status.
- **Conflict Resolution:**
  - Resolve scheduling conflicts among students or between students and faculty within the system.
- **Analytics Dashboard:**
  - Access to visual analytics and insights on slot utilization, attendance trends, and booking patterns to inform decision-making and improve efficiency.

FLOW CHART: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- Information Technology
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- Electrical and Electronics Engineering
- Electronics and Instrumentation Engineering
- Mechanical Engineering
- Fashion Technology
- Bio Technology
- Information and Science Engineering
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Display Slot Vacancy
Slot Available?
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Student books slot
Show "Slot Full" message
Show booked details in main page
Faculty views registered student details
Mark Present/Absent for each student
Download option (PDF) for the list

COMPLETE WORK FLOW: