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PROJECT ID	21
PROJECT TITLE	ACADEMIC LAB SLOT BOOKING
STACK	SPRING BOOT

INTRODUCTION:

Managing laboratory schedules effectively in academic institutions is crucial for maximizing resource utilization and ensuring that students and faculty can conduct their experiments and research without conflicts. This project aims to design an application for academic lab slot booking using Spring Boot, catering to the distinct needs of students and faculty. Students can book available lab slots according to the lab capacity. This mode will ensure that students have a streamlined and transparent process for reserving lab time, preventing conflicts and optimizing lab usage. Faculty members will have enhanced capabilities to manage lab schedules. They can modify existing bookings, change the time or venue of lab sessions, and update details about the experiments. This mode provides faculty with the flexibility to adapt the lab schedule to meet educational objectives and respond to unforeseen changes.

SCOPE OF PROJECT:

1. User Management and Authentication:

→ User Registration: System will allow students and faculty to register and create accounts.

→ Authentication: Secure login system using username and password, with role-based access control to differentiate between student and faculty users.

2. Student Mode Features:

- Slot Booking: Students can view available lab slots and book them based on lab capacity.
- Booking History: Students can view their past and upcoming bookings.
- Booking Modification: Students can cancel or modify their existing bookings within allowed time frames.
- Notifications: Automated email or SMS notifications for booking confirmations, reminders, and cancellations.

3. Faculty Mode Features:

- Schedule Management: Faculty can view, create, and modify lab schedules.
- Slot Modification: Faculty can change the time, venue, and details of the experiments for booked slots.
- Capacity Management: Faculty can set and adjust the capacity for each lab session.
- Approval System: Faculty can approve or reject booking requests if required.

4. Admin Dashboard:

- Overview: Comprehensive dashboard for administrators to monitor lab usage, upcoming bookings, and cancellations.
- Reports and Analytics: Generate reports on lab utilization, user activity, and booking patterns.
- User Management: Administrators can manage user accounts, including adding or removing users and assigning roles.

5. Real-time Availability and Conflict Management:

- Real-time Tracking: Up-to-date display of available and booked slots.
- Conflict Prevention: System will prevent double-booking and highlight any scheduling conflicts.

6. Notification and Alerts System:

- Automated Notifications: Send email or SMS notifications for booking confirmations, reminders, cancellations, and any changes made by faculty.
- Alerts for Conflicts: Notify users immediately if there is a scheduling conflict or if their booking needs adjustment.

7. Integration and Compatibility:

- Calendar Integration: Sync with academic calendars and personal calendars of users.
- System Integration: Compatibility with existing academic management systems for seamless data exchange.

8. User Interface and Experience:

- Intuitive UI: User-friendly interfaces for both students and faculty, ensuring ease of use.
- Mobile Compatibility: Responsive design for access via smartphones and tablets.

9. Security and Data Protection:

- Secure Data Handling: Ensure all user data and booking information are securely stored and transmitted.
- Role-based Access Control: Implement stringent access controls to protect sensitive data.

10. Testing and Deployment:

→ Comprehensive Testing: Rigorous testing to ensure the system functions correctly under various scenarios.

→ Deployment: Deployment of the application in the institution's IT infrastructure with appropriate training for users.

USERS:

The assessment interface features two distinct user roles: Faculty and Student, each with specific privileges and functionalities.

1.Faculty:

The Faculty role, endowed with high-level privileges, allows them to add new experiments or delete existing experiments and manage lab schedules.

2.Student:

The Student role , who can book available lab slots and complete the not completed experiments. This mode will ensure that students have a streamlined and transparent process for reserving lab time, preventing conflicts and optimizing lab usage.

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1.Faculty:



2.Student:

