

DATABASE MANAGEMENT SYSTEMS

LAB RESCHEDULING MANAGEMENT SYSTEM DATABASE PROJECT

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GROUP CG04

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LAB RESCHEDULING MANAGEMENT SYSTEM

DATABASE PROJECT

INTRODUCTION

In academic institutions, laboratory sessions are critical components of technical education that require precise scheduling and coordination among multiple stakeholders. The Lab Rescheduling Management System addresses the challenges of traditional manual processes by providing a comprehensive database-driven solution that automates the entire rescheduling workflow. The Lab Rescheduling Management System leverages database technology to automate and streamline the process of requesting, approving, and tracking lab rescheduling, enhancing operational efficiency and communication among all stakeholders. This system facilitates seamless communication between students, subject coordinators, and lab instructors while maintaining detailed logs of all activities and ensuring optimal utilization of laboratory resources.

PROBLEM STATEMENT

The current manual approach to lab rescheduling creates numerous operational inefficiencies and communication gaps. Students face difficulties when they need to reschedule lab sessions due to conflicts or emergencies, often resulting in delayed approvals and missed notifications. Subject coordinators struggle to track multiple rescheduling requests, verify approval letters from faculty, and coordinate with lab instructors effectively. Lab instructors lack visibility into incoming rescheduling requests and have limited tools to manage lab availability and capacity. This fragmented process leads to scheduling conflicts, poor resource utilization, communication breakdowns, and inadequate tracking of lab usage patterns, ultimately affecting the quality of technical education.

AIM

The primary aim of this project is to design and implement a robust Lab Rescheduling Management System that streamlines the entire rescheduling process through automated workflows, real-time notifications, and comprehensive data management. The system seeks to enhance operational efficiency by providing role-based access control for different user types, maintaining detailed logs of all rescheduling activities, generating comprehensive reports on lab usage and scheduling patterns, and ensuring seamless communication between all stakeholders throughout the approval process.

PROBLEM SOLUTION

The Lab Rescheduling Management System provides a centralized digital platform that automates the complete rescheduling workflow from request submission to final approval. The Lab Rescheduling Management System offers a digital platform where students can submit rescheduling requests, subject coordinators can review and approve requests, and lab instructors can manage lab allocations. The system automatically notifies relevant users about the status of requests via email, maintains comprehensive logs of all activities, and generates detailed reports on lab usage and rescheduling history. This approach minimizes manual intervention, reduces errors, and ensures all stakeholders are promptly informed.

KEY CHALLENGES

- Designing a flexible database schema to accommodate various user roles and dynamic lab schedules
- Implementing a multi-step approval workflow with secure role-based access control
- Ensuring real-time synchronization and notification for all stakeholders
- Handling concurrent requests and avoiding scheduling conflicts
- Maintaining comprehensive logs and generating accurate usage and rescheduling reports.

The development of this system presented several significant technical and operational challenges. Creating a flexible database schema that accommodates multiple user roles while maintaining data integrity across concurrent transactions required careful normalization and constraint implementation. Designing a multi-step approval workflow with secure role-based authentication posed challenges in ensuring proper access controls and maintaining audit trails.

Implementing real-time notification systems that reliably deliver status updates to all relevant parties required integration with email services and careful error handling. Managing concurrent rescheduling requests while preventing scheduling conflicts demanded sophisticated conflict detection algorithms and transaction management. Ensuring data consistency across multiple tables while maintaining system performance during peak usage periods required optimization of database queries and indexing strategies.

INTERFACES

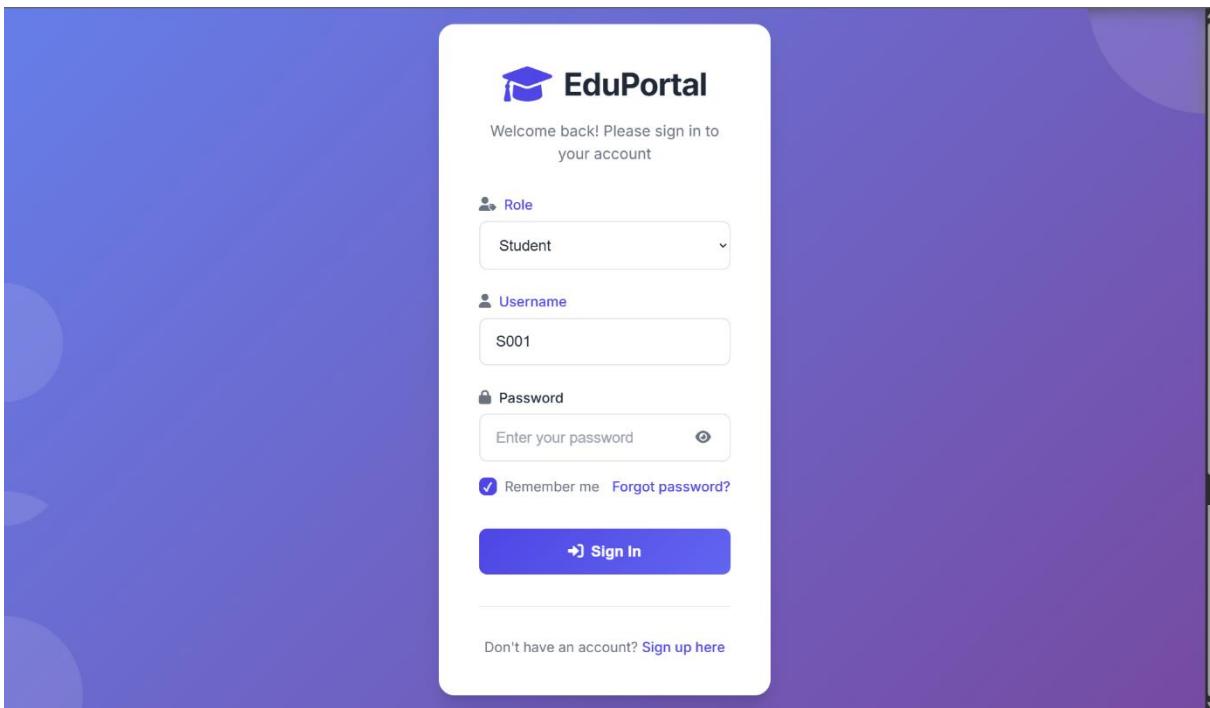


FIGURE 01: LOGIN PAGE

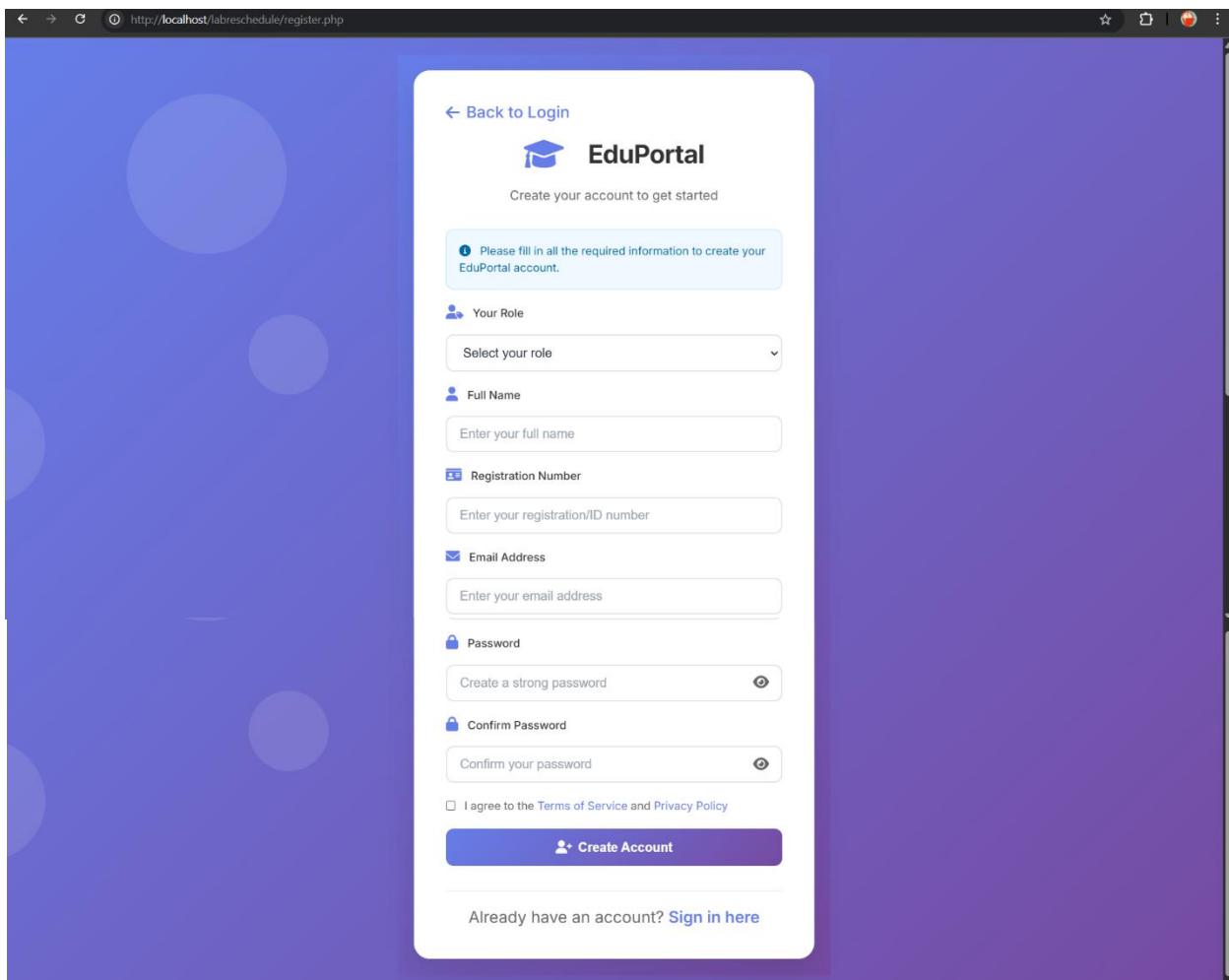


FIGURE 02: SIGN UP PAGE

http://localhost/labreschedule/pages/student_dashboard.php

EduPortal Dashboard Request Reschedule Notifications 6 Dilanka Bandara

Manage your lab schedules and reschedule requests

+ NEW REQUEST LOGOUT

TOTAL REQUESTS 25 **PENDING** 0 **APPROVED** 15 **NOTIFICATIONS** 6

Available Lab Schedules

LAB	DATE & TIME	INSTRUCTOR	STATUS	ACTIONS
Computer Lab 1 ID: SCH07	Jun 30, 2025 9:00 AM - 10:00 AM	Mrs. Kamala	SCHEDULED	REQUEST
Computer Lab 1 ID: SCH04	Aug 06, 2025 10:00-12:00	Mrs. Kamala	SCHEDULED	REQUEST
Computer Lab 1 ID: SCH09	Aug 07, 2025 8:00 AM - 11:00 AM	Mr. Joseph	SCHEDULED	REQUEST
Fabrication Lab 1 ID: SCH10	Aug 29, 2025 8:00 AM - 11:00 AM	Mr. Joseph	SCHEDULED	REQUEST
Computer Lab 1 ID: SCH05	Dec 06, 2025 9:00-10:00	Mr. Joseph	SCHEDULED	REQUEST

Recent Reschedule Requests

REQUEST ID	SCHEDULE	DATE	STATUS	ACTIONS
RQ685c4284	Computer Lab 1 10:00-12:00	Jun 26, 2025 12:00 AM	APPROVED	VIEW
RQ685c4600	Computer Lab 2 10:00-12:00	Jun 26, 2025 12:00 AM	APPROVED	VIEW
RQ685c4ef7	Computer Lab 2 10:00-12:00	Jun 26, 2025 12:00 AM	APPROVED	VIEW
RQ685c57de	Computer Lab 03 9:00 AM - 10:00 AM	Jun 26, 2025 12:00 AM	APPROVED	VIEW
RQ685c5849	Computer Lab 03 9:00 AM - 10:00 AM	Jun 26, 2025 12:00 AM	REJECTED	VIEW

Quick Overview

Recent Notifications

VIEW ALL

- 1 Jun 21, 2025 9:09 AM

EduPortal
Professional Lab Rescheduling Management System

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FIGURE 03: STUDENT DASHBOARD PAGE

http://localhost/labreschedule/pages/instructor_dashboard.php

EduPortal Dashboard View Schedules Mark Attendance Mr. Joseph

Manage your lab schedules and track student progress [LOGOUT](#)

Instructor Information

Email: joseph@univ.edu
Specialization: Networking

Your Lab Schedules

LAB NAME	LOCATION	DATE	TIME SLOT	STATUS
Computer Lab 1 ID: SCH05	Block A	Dec 06, 2025	9:00-10:00	SCHEDULED
Fabrication Lab 1 ID: SCH10	Block D	Aug 29, 2025	8:00 AM - 11:00 AM	SCHEDULED
Computer Lab 1 ID: SCH09	Block A	Aug 07, 2025	8:00 AM - 11:00 AM	SCHEDULED
Computer Lab 03 ID: SCH03	Block C	Jun 24, 2025	10:00-12:00	SCHEDULED
Computer Lab 03 ID: SCH06	Block C	Jun 24, 2025	9:00 AM - 10:00 AM	SCHEDULED
Computer Lab 03 ID: SCH004	Block C	Jun 20, 2025	9:00 AM - 10:00 AM	SCHEDULED
Computer Lab 1 ID: SCH01	Block A	Jun 10, 2025	10:00-12:00	SCHEDULED

Recent Reschedule Log

LOG ID	REQUEST ID	ACTION	TIMESTAMP
	RQ685d89af	Approved	Jun 26, 2025 11:52 PM
LOG68565bd	RQ68565ba5	Decision made: Approved	Jun 21, 2025 12:44 PM
LOG6856588	RQ6856577a	Decision made: Approved	Jun 21, 2025 12:30 PM
LOG6856558	RQ68565566	Decision made: Approved	Jun 21, 2025 12:17 PM
LOG6856554	RQ68565525	Decision made: Rejected	Jun 21, 2025 12:16 PM
LOG6856554	RQ68565525	Decision made: Rejected	Jun 21, 2025 12:16 PM

Recent Attendance Records

STUDENT ID	SCHEDULE ID	DATE	PRESENT
S004	SCH01	Aug 06, 2025	YES
S001	SCH05	Jul 03, 2025	YES
S003	SCH05	Jul 03, 2025	YES
S004	SCH05	Jul 03, 2025	YES
S004	SCH10	Jun 26, 2025	YES

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FIGURE 04: INSTRUCTOR DASHBOARD

The screenshot shows the 'Attendance Mark Page' from the EduPortal system. At the top, there's a header with the EduPortal logo, a 'Back to Dashboard' link, and a 'Logout' button. Below the header, a dark banner says 'Select lab schedule and mark student attendance'. On the left, a sidebar has a 'Select Lab Schedule' section with a date picker set to '06/27/2025' and a 'GET STUDENTS' button. To the right, a main panel shows 'Computer Lab 1' at 'Block A' on 'Saturday, Dec 06, 2025 - 9:00-10:00' in 'SCH05'. It lists 'Student Attendance (4 students)' with four entries: Dilanka Bandara (Present), Isuru Upendra (Present), Prabath Desahan (Absent), and Sithum Sathmina (Absent). Each entry has a toggle switch. Below the list is a note to 'Click the toggle switches to mark attendance' and a 'SAVE ATTENDANCE' button. At the bottom, the EduPortal logo and copyright information are visible.

FIGURE 05: ATTENDANCE MARK PAGE

The screenshot shows the 'Forgot Password Page' from the EduPortal system. At the top, there's a header with the EduPortal logo, a 'Back to Login' link, and a 'Forgot Password' icon. Below the header, a note says 'Enter your details below to reset your password'. The form contains four fields: 'Your Role' (dropdown menu 'Select your role'), 'Full Name' (text input 'Enter your full name'), 'Registration Number' (text input 'Enter your registration/ID number'), and 'Email Address' (text input 'Enter your email address'). At the bottom is a blue 'Submit Reset Request' button.

FIGURE 06: FORGOT PASSWORD PAGE

http://localhost/labreschedule/pages/coordinator_dashboard.php

EduPortal Dashboard Manage Schedules Dr. Meera LOGOUT

Coordinate lab schedules and manage reschedule requests

+ ADD SCHEDULE

7 TOTAL SCHEDULES 0 PENDING REQUESTS 21 APPROVED THIS MONTH 9 REJECTED REQUESTS

Pending Reschedule Requests 0 PENDING

REQUEST ID	STUDENT	LAB SCHEDULE	REASON	DATE	ACTIONS
No pending requests					

Quick Overview

Recent Lab Schedules + ADD NEW

SCHEDULE ID	LAB	INSTRUCTOR	DATE & TIME	STATUS
SCH05	Computer Lab 1 Block A	Mr. Joseph	Dec 06, 2025 9:00-10:00	SCHEDULED
SCH10	Fabrication Lab 1 Block D	Mr. Joseph	Aug 29, 2025 8:00 AM - 11:00 AM	SCHEDULED
SCH04	Computer Lab 1 Block A	Mrs. Kamala	Aug 06, 2025 10:00-12:00	SCHEDULED
SCH03	Computer Lab 03 Block C	Mr. Joseph	Jun 24, 2025 10:00-12:00	SCHEDULED
SCH06	Computer Lab 03 Block C	Mr. Joseph	Jun 24, 2025 9:00 AM - 10:00 AM	SCHEDULED

Recent Activity

- Request ID: RQ68565ba5, Approved, Jun 21, 2025 12:44 PM
- Request ID: RQ68563b0f, Pending, Jun 21, 2025 10:47 AM
- Request ID: RQ68563ac5, Pending, Jun 21, 2025 10:47 AM
- Request ID: RQ001, Pending, Jun 21, 2025 9:09 AM
- Request ID: RQ68562384, Pending, Jun 21, 2025 9:09 AM

Recent Approved & Rejected Requests

REQUEST ID	STUDENT	LAB SCHEDULE	STATUS	DECISION DATE
RQ685c4284	Dilanka Bandara ID: S001	Computer Lab 1 Jun 10, 2025 - 10:00- 12:00	APPROVED	Jun 26, 2025 12:00 AM
RQ685bf76f	Dilanka Bandara ID: S001	Computer Lab 03 Jun 20, 2025 - 9:00 AM - 10:00 AM	APPROVED	Jun 25, 2025 12:00 AM
RQ685c1f1e	Sithum Sathmina ID: S002	Computer Lab 03 Jun 20, 2025 - 9:00 AM - 10:00 AM	APPROVED	Jun 25, 2025 12:00 AM
RQ685c1f94	Sithum Sathmina ID: S002	Computer Lab 03 Jun 24, 2025 - 9:00 AM - 10:00 AM	APPROVED	Jun 25, 2025 12:00 AM
RQ685c2010	Sithum Sathmina ID: S002	Computer Lab 03 Jun 20, 2025 - 9:00 AM - 10:00 AM	REJECTED	Jun 25, 2025 12:00 AM

System Notifications

- Request ID: RQ68565ba5, Approved, Jun 21, 2025 12:44 PM
- Dilanka Bandara Jun 21, 2025 9:09 AM

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FIGURE 07: COORDINATOR DASHBOARD

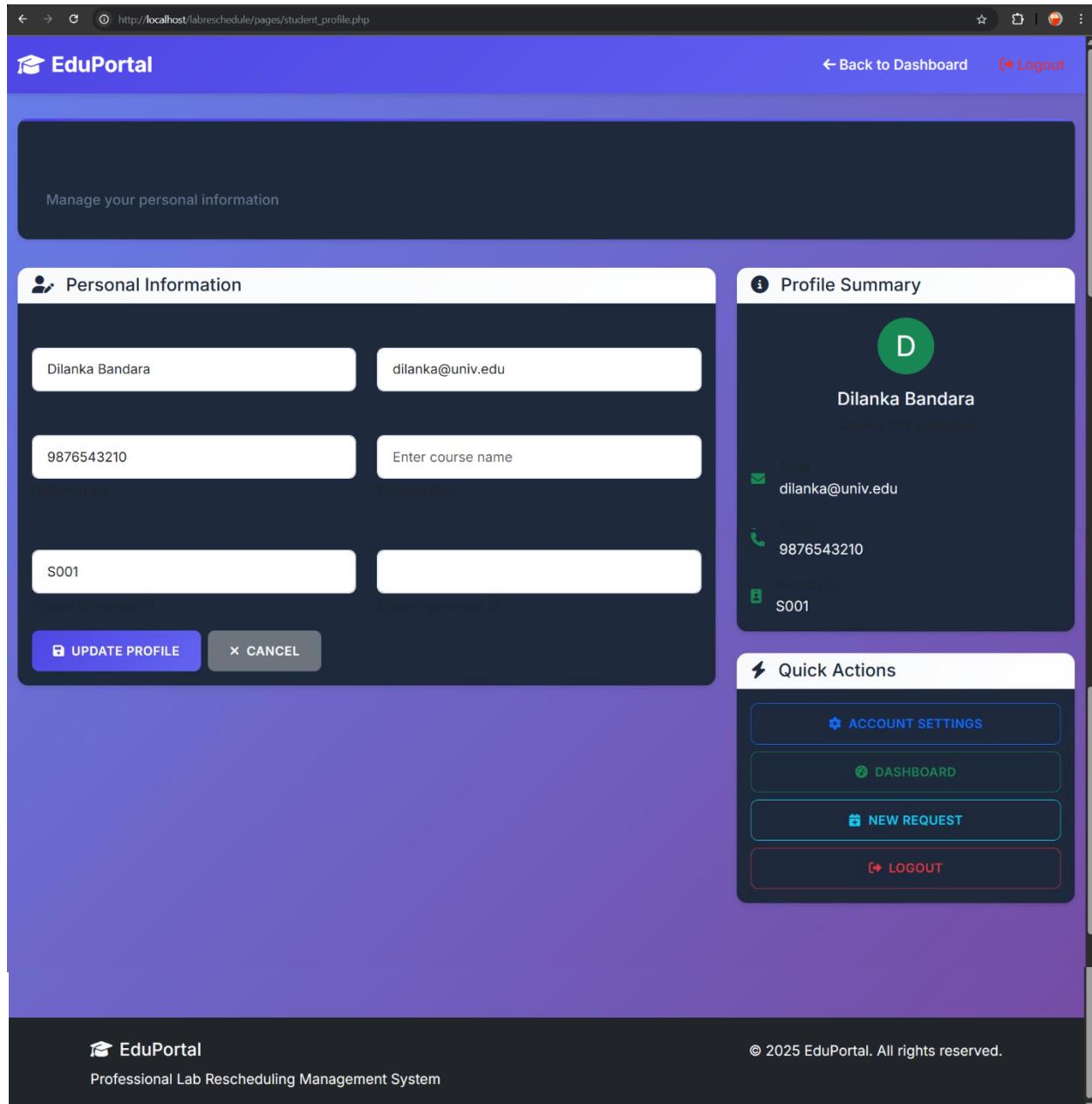


FIGURE 08: ATTENDANCE MARK PAGE

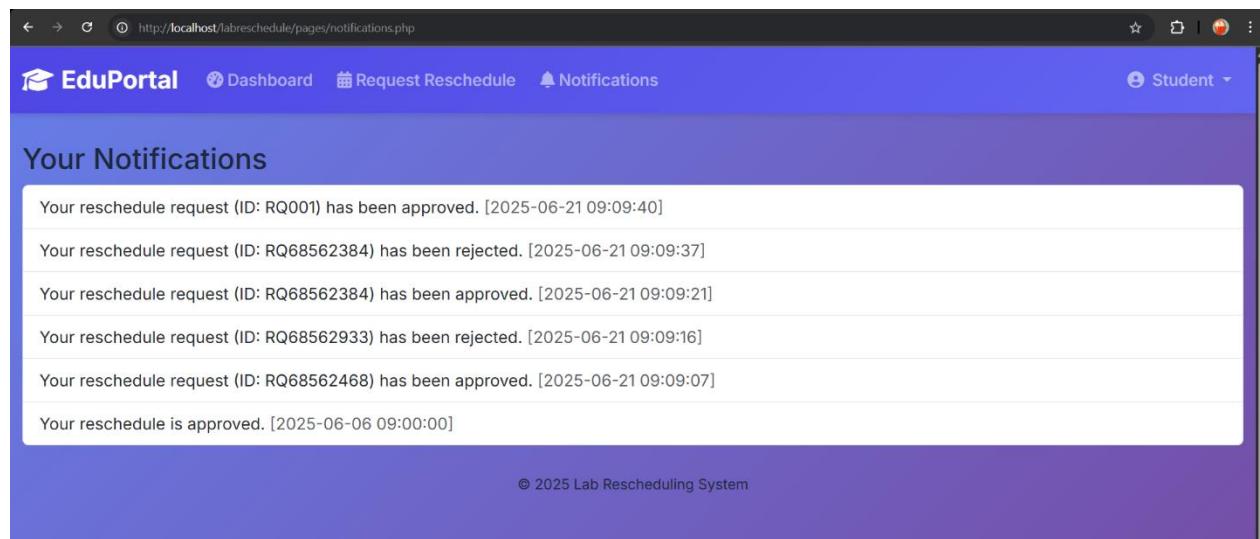


FIGURE 09: NOTIFICATION PAGE

Manage your account settings and preferences

Change Password

>Password must be at least 8 characters long

CHANGE PASSWORD

Notification Preferences

Email Notifications
Receive reschedule updates via email

SMS Notifications
Receive urgent notifications via SMS

Push Notifications
Receive push notifications on your device

Schedule Reminders
Get reminders about upcoming lab sessions

UPDATE PREFERENCES

Account Information

Name: Dilanka Bandara

Email: dilanka@univ.edu

Course: Not specified

Student ID: S001

Phone: 9876543210

EDIT PROFILE

System Information

Last Login: Jun 27, 2025 8:45 PM

Account Status: ACTIVE

Role: STUDENT

Total Requests: 25

System Version: EduPortal v2.0

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FIGURE 10: SETTING PAGE

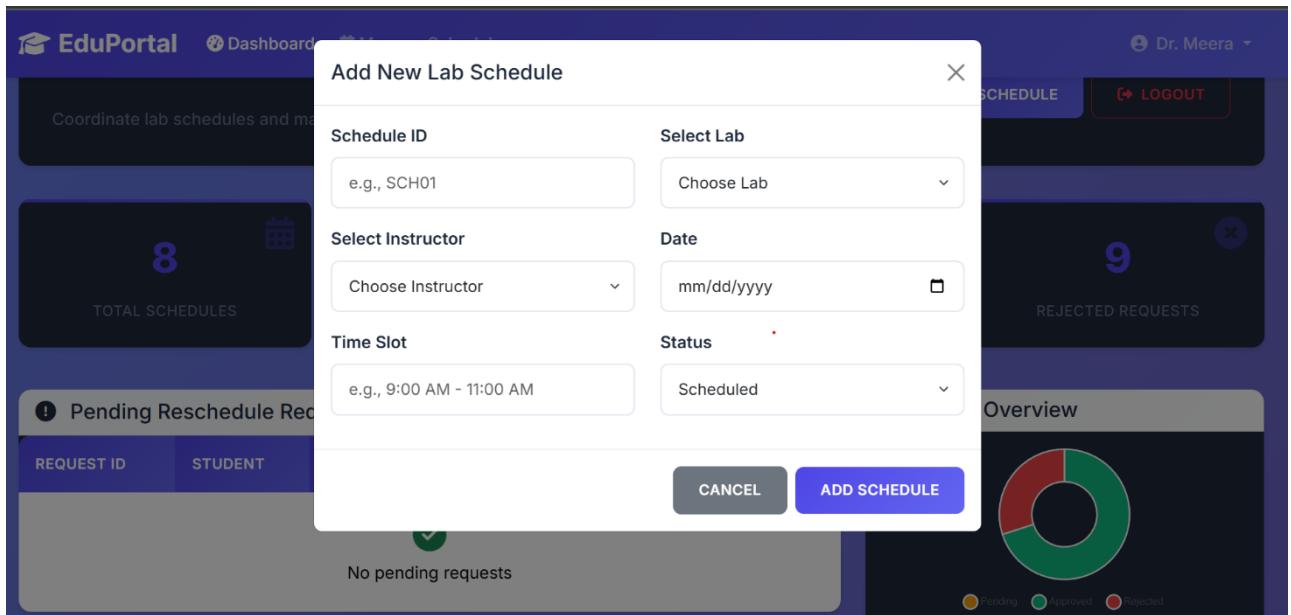


FIGURE 11: INTERFACE TO ADD NEW LAB SCHEDULE

The screenshot shows the "Request Lab Reschedule" page. It includes a dropdown menu for "Select Lab Schedule to Reschedule" containing "SCH02 - Computer Lab 2 on 2025-06-12 at 10:00-12:00". A text area for "Reason for Rescheduling" contains the text "I was ill.". At the bottom is a blue "SUBMIT REQUEST" button. The footer of the page reads "© 2025 Lab Rescheduling System".

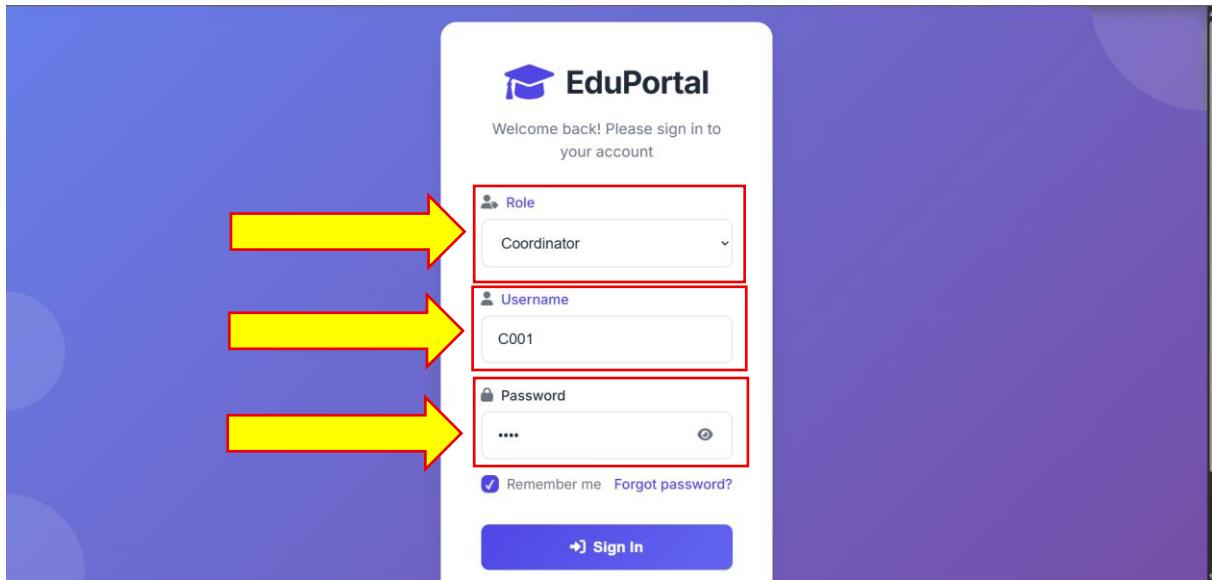
FIGURE 12: INTERFACE TO REQUEST LAB RECHEDULE

FUNCTIONS

1) Login According to the Role

Description:

When the user wants to the login the user first visit to the Login page then he/she can select their roles and add them user_id(username) and password then if the user_id(username) , role, password is matched the user will forward to the particular dashboard according to their Role.

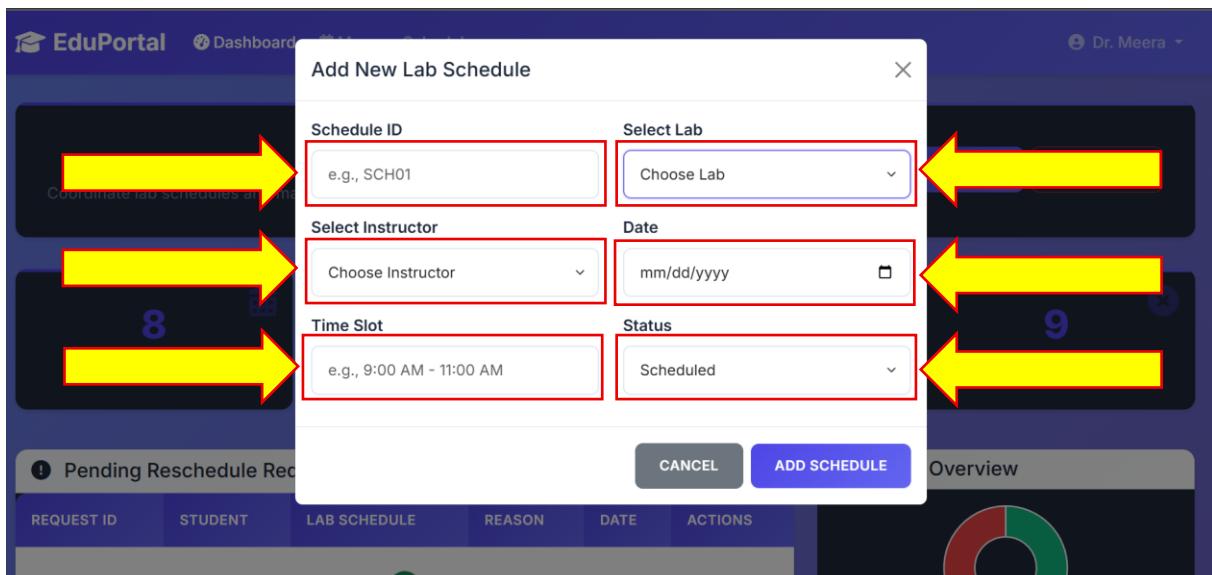


2. Lab Schedule Creation

Description:

When the subject coordinator login to the dashboard. Subject coordinators can create and manage the initial lab schedules, specifying lab details, time slots. They can choose the specific lab, choose the instructor, date and time, and the status of the lab.

User Role: Subject Coordinator



3. Submit Rescheduling Request

Description:

Students can submit requests to reschedule their lab sessions, giving the particular reason. Then they can send the request to the coordinator.

User Role: Student

EduPortal Dashboard Request Reschedule Notifications Student

Request Lab Reschedule

Select Lab Schedule to Reschedule

SCH02 - Computer Lab 2 on 2025-06-12 at 10:00-12:00

Reason for Rescheduling

I was ill.

SUBMIT REQUEST

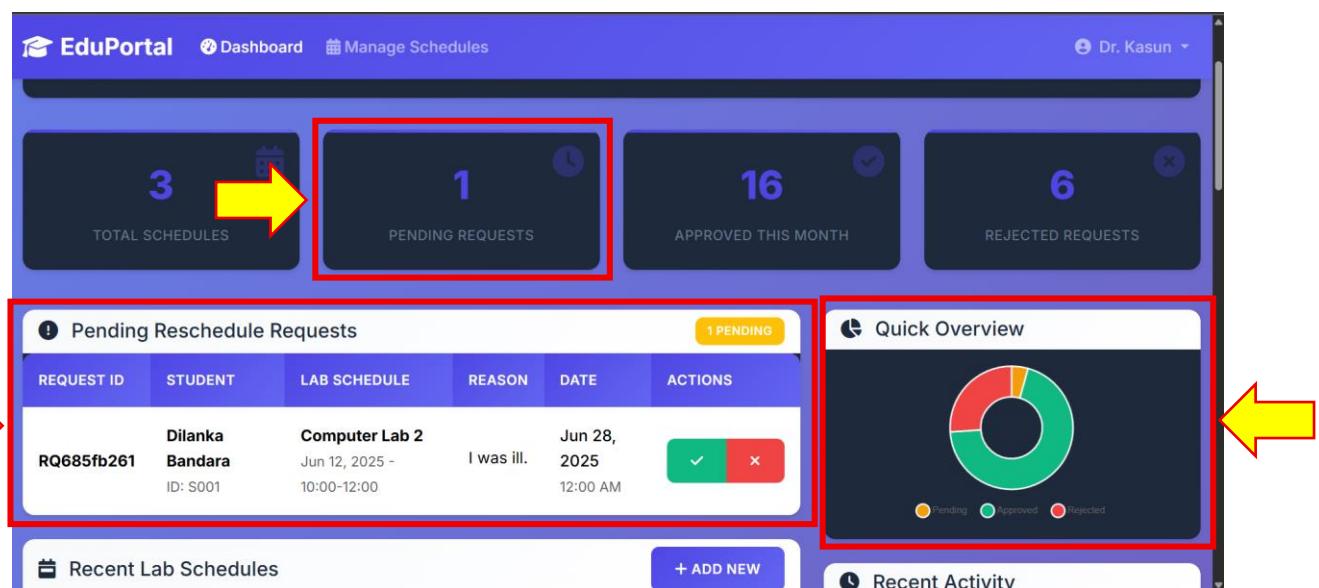
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4. Approval Workflow

Description:

When the student submit the request it shows a notification in the coordinator dashboard and the Quick Overview chart also update. Subject coordinators review rescheduling requests and attach approval letters. If approved, A notification will send to the instructor dashboard and the approved lab saved on the coordinator dashboard.

User Role: Subject Coordinator, Lab Instructor



5. Notification System

Description:

Automatic notifications are sent to students when the student accept or rejected and show all the previous request also . The notification log shows those requests whether accept, reject or pending.

User Role: Student

The screenshot shows the EduPortal interface. At the top, there are navigation links: EduPortal, Dashboard, Request Reschedule, Notifications (with 6 notifications), and Dilanka Bandara. The main area displays 'Recent Reschedule Requests' with a table. A red box highlights the first five rows of the table, which list requests for Computer Lab 2 and Computer Lab 1 with various statuses (Rejected, Pending, Approved). To the right, a sidebar shows a notification log with a message from Dilanka Bandara about a recent approval, dated Jun 21, 2025 9:09 AM. A yellow arrow points from the notification to the sidebar.

6. Attendance Recording

Description:

After rescheduling, students attend the lab at the new time, and attendance is recorded in the system for tracking and reporting. The instructor can choose the lab, date, and mark the attendance of the students.

User Role: Lab Instructor

The screenshot shows the EduPortal interface for a lab instructor. At the top, a dark header bar says 'Select lab schedule and mark student attendance'. Below it, a 'Select Lab Schedule' section is highlighted with a red box and a yellow arrow pointing to it. It shows a dropdown for 'Fabrication Lab 1 - Aug 29, 2025 (8:00 AM)' and a date input field set to '06/28/2025'. A 'GET STUDENTS' button is below. To the right, a 'Fabrication Lab 1' section shows details: Block D, Friday, Aug 29, 2025 - 8:00 AM - 11:00 AM, and a code 'SCH10'. Below these, a 'Student Attendance (4 students)' section is highlighted with a red box and a yellow arrow pointing to it. It lists four students: Dilanka Bandara (Present), Isuru Upendra (Present), Prabath Desahan (Present), and Sithum Sathmina (Absent). Each student has a toggle switch next to their name. A note at the bottom says 'Click the toggle switches to mark attendance' and a 'SAVE ATTENDANCE' button is at the bottom right.

7. Reporting and Logs

Description:

The system tracks lab usage and maintains a history of all rescheduling requests, approvals, and lab attendance. Reports can be generated for analysis.

User Role: Subject Coordinator, Lab Instructor,

This screenshot shows two panels side-by-side. The left panel is titled 'Recent Reschedule Log' and lists three entries: RQ685d89af (Approved, Jun 26, 2025 11:52 PM), LOG6856558 (Decision made: Approved, Jun 21, 2025 12:17 PM), and LOG6856554 (Decision made: Rejected, Jun 21, 2025 12:16 PM). The right panel is titled 'Recent Attendance Records' and lists three entries: S004 (SCH01, Aug 06, 2025, YES), S001 (SCH05, Jul 03, 2025, YES), and S004 (SCH10, Jun 26, 2025, YES). Both panels have red borders around them. A large yellow arrow points upwards from the bottom of the left panel towards the top of the right panel.

This screenshot shows two panels. The left panel is titled 'Recent Reschedule Requests' and lists five entries: RQ685eeaf4 (Computer Lab 2, Jun 28, 2025 12:00 AM, REJECTED), RQ685fb261 (Computer Lab 2, Jun 28, 2025 12:00 AM, PENDING), RQ685c4284 (Computer Lab 1, Jun 26, 2025 12:00 AM, APPROVED), RQ685c4600 (Computer Lab 2, Jun 26, 2025 12:00 AM, APPROVED), and RQ685c4ef7 (Computer Lab 2, Jun 26, 2025 12:00 AM, APPROVED). The right panel shows notifications for Dilanka Bandara: 'Jun 21, 2025 9:09 AM - Your request for Computer Lab 2 has been rejected.' and 'Jun 21, 2025 9:09 AM - Your request for Computer Lab 2 has been approved.' A large yellow arrow points upwards from the bottom of the left panel towards the top of the right panel.

The screenshot displays the EduPortal web application interface. On the left, a red box highlights the "Recent Approved & Rejected Requests" section. This section contains a table with the following data:

REQUEST ID	STUDENT	LAB SCHEDULE	STATUS	DECISION DATE
RQ685c4284	Dilanka Bandara ID: S001	Computer Lab 1 Jun 10, 2025 - 10:00-12:00	APPROVED	Jun 26, 2025 12:00 AM REQUEST TIME
RQ685c57de	Dilanka Bandara ID: S001	Computer Lab 03 Jun 20, 2025 - 9:00 AM - 10:00 AM	APPROVED	Jun 26, 2025 12:00 AM REQUEST TIME
RQ685c6782	Dilanka Bandara ID: S001	Computer Lab 03 Jun 20, 2025 - 9:00 AM - 10:00 AM	APPROVED	Jun 26, 2025 12:00 AM REQUEST TIME
RQ685c6b3e	Dilanka Bandara ID: S001	Computer Lab 03 Jun 24, 2025 - 10:00-12:00	REJECTED	Jun 26, 2025 12:00 AM REQUEST TIME
RQ685c5ada	Isuru Upendra ID: S004	Computer Lab 03 Jun 20, 2025 - 9:00 AM - 10:00 AM	REJECTED	Jun 26, 2025 12:00 AM REQUEST TIME
RQ685bf76f	Dilanka Bandara ID: S001	Computer Lab 03 Jun 20, 2025 - 9:00 AM - 10:00 AM	APPROVED	Jun 25, 2025 12:00 AM REQUEST TIME
RQ685c1f1e	Sithum Sathmina ID: S002	Computer Lab 03 Jun 20, 2025 - 9:00 AM - 10:00 AM	APPROVED	Jun 25, 2025 12:00 AM REQUEST TIME
RQ685c1f94	Sithum Sathmina ID: S002	Computer Lab 03 Jun 24, 2025 - 9:00 AM - 10:00 AM	APPROVED	Jun 25, 2025 12:00 AM REQUEST TIME
RQ685c2010	Sithum Sathmina ID: S002	Computer Lab 03 Jun 20, 2025 - 9:00 AM - 10:00 AM	REJECTED	Jun 25, 2025 12:00 AM REQUEST TIME

On the right, a blue box highlights the "System Notifications" section. It shows four notifications from Dilanka Bandara, each with a timestamp of Jun 21, 2025, 9:09 AM. A yellow arrow points upwards from the bottom of the notifications towards the top of the page.

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URL of My github Repository

https://github.com/Dilanka-Bandara/EC5070--Database_Management-systems_INDIVIDUAL_PROJECT.git