

# Mobile Lab Booking App Project Report

**Student ID:**

**Student Name:**

## Task 1: Refining the Idea

### 1. Research and Requirement Gathering

#### **Selected Methodology:**

A survey as well as interviews and observations were conducted for understanding the major needs and likeliness of the potential users. A short brief questionnaire with multiple questions on various aspects were passed out to 25 different students and 8 different tutors across multiple departments for the survey. Additionally, a short half an hour discussion was carried out with 4 tutors and 5 students in order to understand the basic user behaviours and their expectations.

#### **Justification:**

The survey provided a significant scalable way to assess the patterns in user needs, while the discussions held helped to explore the major contextual points like double-booking dilemma, lack of transparency in availability, and poor notification system. The major insights from users, their behaviors, and their specific needs/preferences were taken into consideration and further enhancements and refinements of the application were initiated.

The processes carried out were:

1. **Requirement gathering:** This was carried out by observing and gathering the user needs/preferences and from the survey.
2. **Log Maintenance during Mobile App Development process:** This was carried out for structured documentation of key design decisions and patterns, user feedbacks to detail the design patterns for the app along with their benefits to User Experience (UX).
3. **Research:** The following are the key design decisions with rationale based on observations, interviews and the survey:

## 2. Key design decisions

### Decision 1: Use of Native Mobile Application (Android-first Approach)

- **Rationale:** Based on user data, most students and staff were Android users. A native app would ensure optimization of performance, access to features like syncing calendar, and push notifications.
- **Outcome:** With focus on android, the app is expected to achieve higher adoption rates and better user satisfaction with its performance optimization and integration to the android features resulting in better overall user experience

### Decision 2: Role-Based Interface Access

- **Rationale:** Tutors will require deeper control access and visibility into bookings, while the students require simplicity and privacy for their usage of application. For the concept of minimalistic disclosure, students will only see their own booking history, whereas tutors can view the student names as well as their lab allocations.
- **Outcome:** This role-based accessibility will improve the user satisfaction and engagement providing customized interface for users. Tutors will manage the lab sessions more effectively while students will enjoy simplified and more privacy focused experience emphasizing better user engagement.

### Decision 3: Smart Booking with Slot Assistance

- **Rationale:** Survey responses highlighted confusion in picking available slots. The feature of smart booking system with slot assistance approach addresses the user feedbacks regarding hardships in timeslots selection. Analyzing the lab usage and their availability, the system recommends optimal time for bookings which simplifies and minimizes the user's confusion.
- **Outcome:** This system is expected to smoothen the booking process, making it easier, and quicker for users to find and make reservations. This will lead to better user experience and satisfaction, efficient lab usage and optimal resource management.

### **3. User Scenarios:**

#### **Scenario 1: Student Booking a Lab Equipment Slot**

**Context:** XYZ is a biology student and needs to prepare for an upcoming practical test. So, she needs access to the microscope in a lab at Campus B

**Steps:**

1. Open application
2. Select campus ( Campus B)
3. Filter Equipment (Microscope)
4. Choose Time slot
5. Confirm Booking

**Resolution:** XYZ's booking is added to her bookings list within the app successfully. She receives a confirmation notification to notify her reservation slot with necessary equipment for her test.

#### **Scenario 2: Conflict Resolution by Admin**

**Context:** There seems to be an overlapping booking for the same equipment at Campus C. The admin needs to recover this conflict to make sure that there is smooth operation in the system.

**Steps:**

1. Identify Overlapping Bookings
2. Error Identification
3. Contact Students
4. Reschedule Booking

**Resolution:** Resolving the conflict for booking schedules ensures smooth operation at labs at Campus C preventing potential issues with equipment access and usage. The students will be notified through notification about rescheduled booking and ensure optimal lab resources utilization.

#### **Scenario 3: Bookings Management for a session by Tutors**

**Context:** Mr. ABC, a physics tutor wants to prepare for an upcoming lab session and wants review the bookings ensuring all necessary lab kits are available.

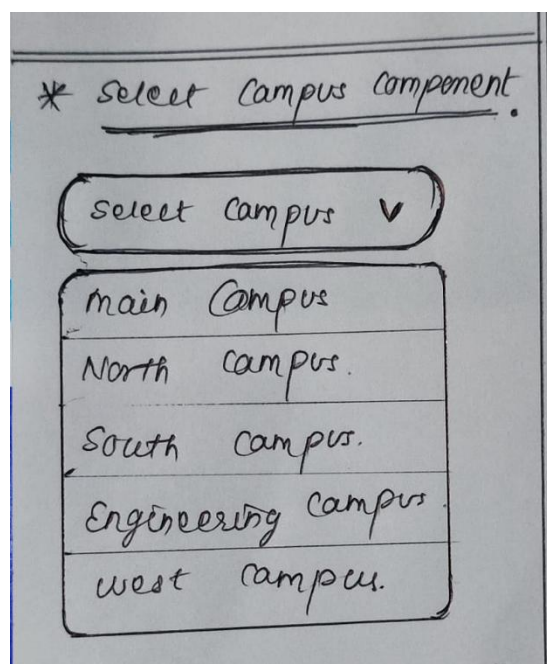
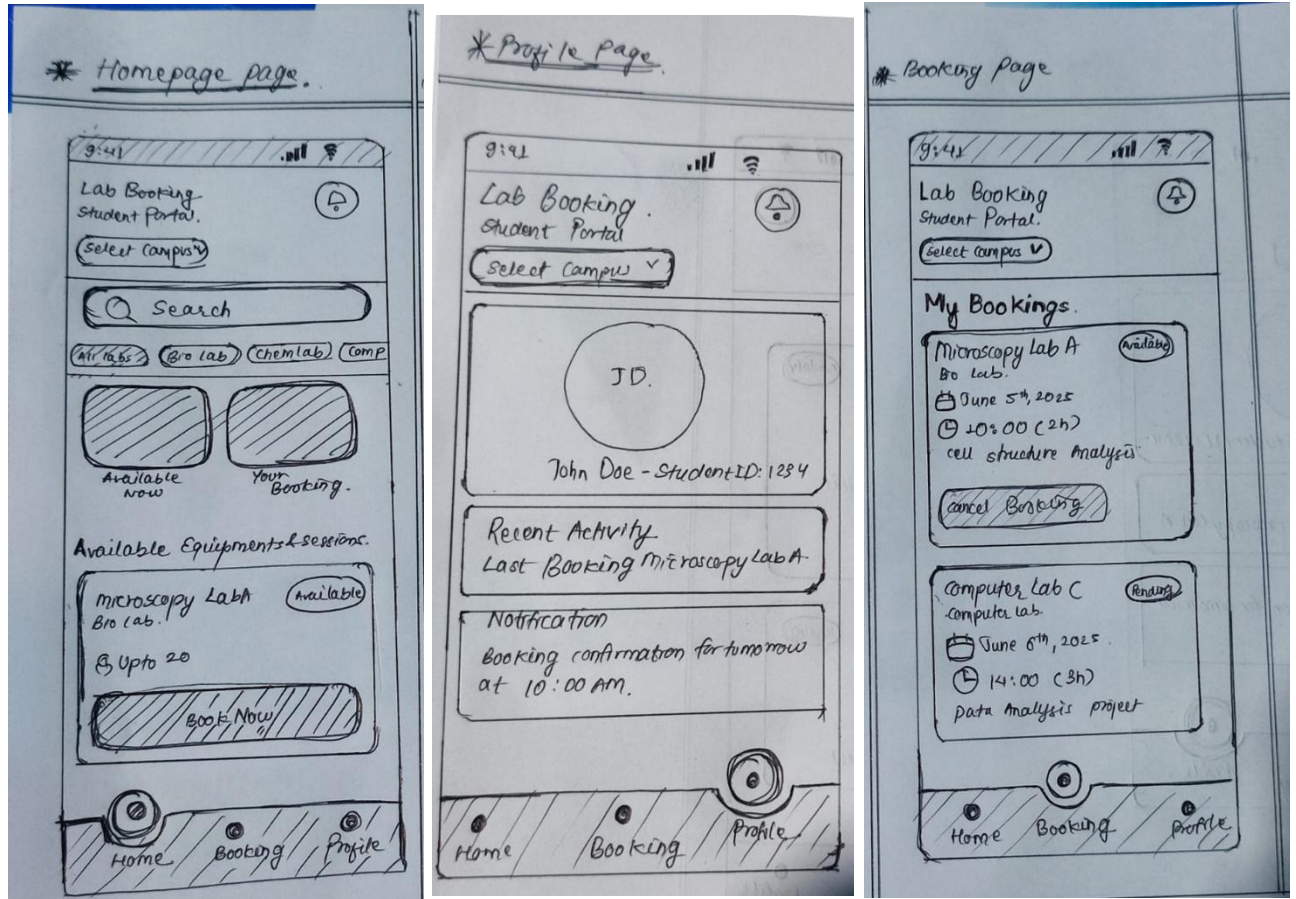
**Steps:**

1. Login using tutor credentials
2. View Upcoming Sessions
3. Filter Bookings
4. Access student details
5. Download booking summary for lab resources management

**Resolution:** Access to the booking details and summary helps MR.ABC to manage and arrange the necessary lab kits and prepare for the session ensuring materials are available efficiently.

# Task 1: Wireframe and Prototype

## Sketches:



## Design Patterns:

The design patterns implemented in the mobile application is explained in this section, explaining how the UX and efficiency can be enhanced.

### 1. User Interface and Accessibility:

#### ○ Students Login Screen :

##### ▪ Fields:

1. **Username/Email:** Allows students to input their unique identifier or email address.
2. **Passwords:** Secure entry for the user's password.

##### ▪ Options:

1. **Remember Me:** Option to save login credentials for future access.
2. **Login Button:** Primary action button to access the student portal.

### 2. Navigation and Layout:

#### ○ Navigation Menu :

- **Location:** Accessible at the bottom of the screen across different views.

##### ▪ Sections:

1. **Home:** Directs users to the main dashboard.
2. **Bookings:** Allows users to view and manage their lab bookings.
3. **Profile:** Provides access to user profile information and settings.

##### ▪ Benefits:

1. Keeps the primary screen uncluttered.
2. Ensures easy access to different parts of the app.
3. Maintains consistency across views, improving navigational flow.

### 3. Search Functionality:

#### ○ Search Bar:

- **Location:** Positioned at the middle of the dashboard.

##### • Functionality:

1. Enables users to quickly locate specific labs or equipment.
2. Enhances efficiency by reducing the need to scroll through long lists.

- **User Experience:**
  1. Saves time by allowing direct searches.
  2. Keeps the interface clean and user-friendly.

#### 4. Content categorization:

- **Tab Navigation:**
  - **Tabs:**
    1. All Labs: Displays all available labs.
    2. Biology Lab: Filters labs specific to biology.
    3. Chemistry Lab: Filters labs specific to chemistry.
    4. Computer Lab: Filters labs specific to computer science.
  - **Benefits:**
    1. Provides an intuitive way to filter content.
    2. Minimizes the need for complex filtering procedures.
    3. Organizes information into simpler categories.

#### 5. Scheduling and Availability:

- **Calendar View:**
  - **Features:**
    1. Allows users to quickly check and manage their schedules.
    2. Provides a high-level view of bookings and availability.
    3. Encourages intuitive interaction with dates and bookings.

#### 6. Information presentation:

- **Card Layout:**
  - **Details:**
    1. Each lab or booking is presented as a separate card.
    2. Includes details such as lab name, date, time, and availability status.
  - **User Experience:**
    1. Improves readability by presenting information in a visually appealing manner.
    2. Helps users distinguish between different bookings or sessions quickly.
    3. Enhances interaction by making actions (e.g., Book Now, Cancel Booking) immediately available.

#### 7. Action buttons:

- **Button Placement and Layout:**
  - **Primary Actions:**
    1. Book Now: Allows users to book a lab session.
    2. Cancel Booking: Allows users to cancel an existing booking.
    3. Confirm Booking: Confirms the booking details and finalizes the reservation.
  - **User Experience:**
    1. Ensures essential actions are prominently displayed and easily accessible.
    2. Promotes a consistent and familiar experience.
    3. Enhances efficiency by reducing cognitive load.

## **8. Booking Management:**

- **My Bookings Section:**
  - **Features:**
    1. Displays current and past bookings.
    2. Provides options to cancel bookings.
  - **Details:**
    1. Lab Name: Identifies the specific lab booked.
    2. Date and Time: Specifies the scheduled time for the lab session.
    3. Purpose: Describes the purpose or activity planned for the session.

## **9. Notifications and updates:**

- **Recent Activity and Notifications:**
  - **Features:**
    1. Provides updates on recent activities, such as booking confirmations.
    2. Sends reminders for upcoming sessions.
  - **User Experience:**
    1. Keeps users informed about their bookings and any changes.
    2. Enhances user engagement and awareness.

## **10. Lab Details:**

- **Lab Information:**
  - **Details:**



1. Capacity: Indicates the number of users the lab can accommodate.
2. Equipment: Lists available equipment (e.g., microscopes).

- **User Experience:**

1. Provides comprehensive information to help users make informed decisions.
2. Enhances the overall booking experience by offering detailed lab descriptions.

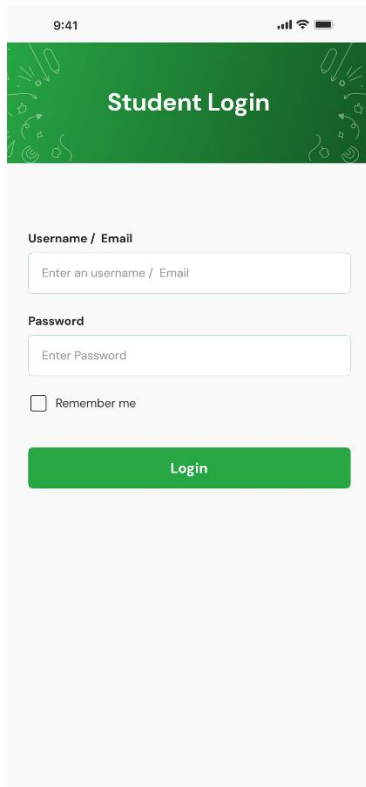
## Wireframes:

Figma tool:



# Prototype:

Link: <https://www.figma.com/design/0jN0mv0xDvfVECRszMPz38/Assignment?node-id=53-514&t=5oUNhy0DOmwj8s3z-0>



9:41

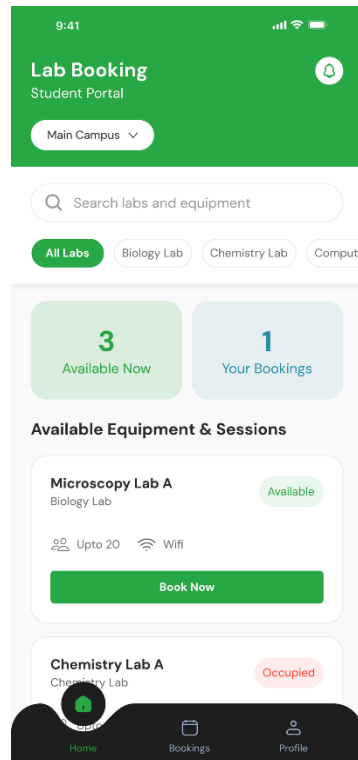
## Student Login

Username / Email

Password

☐ Remember me

Login



9:41

## Lab Booking

Student Portal

Main Campus ▾

Search labs and equipment

All Labs Biology Lab Chemistry Lab Compute

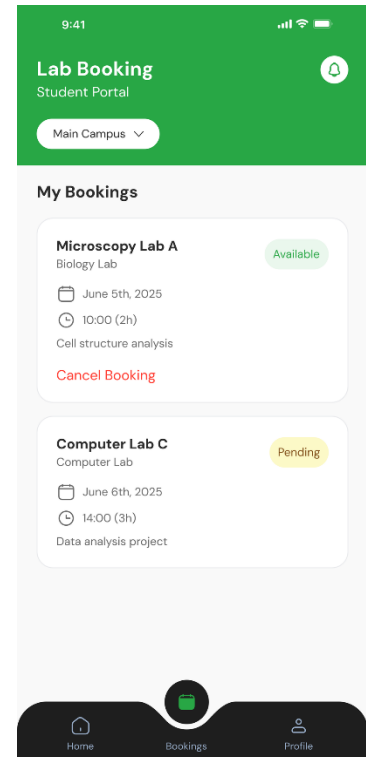
3 Available Now 1 Your Bookings

### Available Equipment & Sessions

**Microscopy Lab A** Available  
Biology Lab  
Upto 20 Wifi  
Book Now

**Chemistry Lab A** Occupied  
Chemistry Lab

Home Bookings Profile



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## Lab Booking

Student Portal

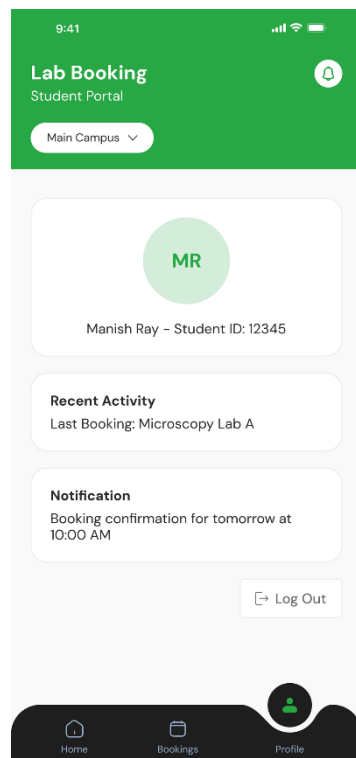
Main Campus ▾

### My Bookings

**Microscopy Lab A** Available  
Biology Lab  
June 5th, 2025  
10:00 (2h)  
Cell structure analysis  
Cancel Booking

**Computer Lab C** Pending  
Computer Lab  
June 6th, 2025  
14:00 (3h)  
Data analysis project

Home Bookings Profile



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## Lab Booking

Student Portal

Main Campus ▾

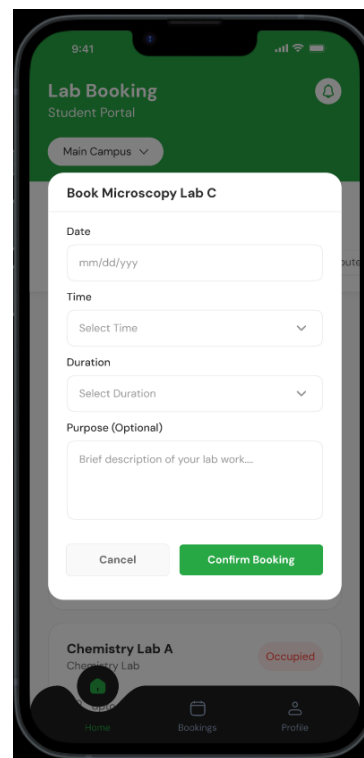
MR  
Manish Ray - Student ID: 12345

**Recent Activity**  
Last Booking: Microscopy Lab A

**Notification**  
Booking confirmation for tomorrow at 10:00 AM

Log Out

Home Bookings Profile



9:41

## Lab Booking

Student Portal

Main Campus ▾

### Book Microscopy Lab C

Date  
mm/dd/yyyy

Time  
Select Time ▾

Duration  
Select Duration ▾

Purpose (Optional)  
Brief description of your lab work...

Cancel Confirm Booking

**Chemistry Lab A** Occupied  
Chemistry Lab

Home Bookings Profile

The wireframes were designed using Figma displaying:

1. **Login Screen:** Displays a form for authentication and login
2. **Home Screen:** Displays a filter button for campus filtering, search button, metrics cards, and cards for booking with “Book now” button
3. **My Bookings Screen:** Displays the bookings list
4. **Profile Screen:** Displays the user credentials and cards with their recent activities and the notifications

**Booking Workflow:** A four-step process:

Select Campus → Select Lab/Equipment  
→ Pick Date & Time → Confirm.

# Task 3: User Feedback and Improvements

## Testing Strategy

### Approach:

To gather actionable feedback, I used **task-based testing** followed by a short **user satisfaction survey**. 10 participants (7 students and 3 tutors) interacted with the prototype built in Figma for observation purposes.

**Observation:** We gave each participant a set of tasks to be completed, such as making a booking, navigating through different views, and managing their bookings

**Questionnaire:** After testing, participants filled out a questionnaire questioning them about their overall experience with each of the features, any difficulties faced in between, and any additional suggestions for improvement.

**Context and Questions:** A brief introduction to the purpose of application was given to the users along with its core functionalities, and specific features relevant to their user type (student or tutor). They were then asked to complete tasks and answer questions such as:

- How intuitive did you find the booking workflow?
- Did the role-based data visibility meet your expected needs?
- Was the app responsive and clear on your mobile phone?
- What are your thoughts on the overall UI and layout of the application?
- Is there anything you would like to change or improve in our current design?

### Key Observations:

- Students found the multi-step booking intuitive but wanted quicker ways to repeat bookings.
- Tutors requested color-coded booking indicators for different courses.
- Some users missed bookings due to lack of immediate reminders.

# Feedback Summary

## Observing User Reactions

During testing, we analysed how participants were interacting with each feature. Key observations included:

- **Booking Workflow:** Students found the multi-step booking intuitive but expressed a need for quicker ways to repeat bookings.
- **Role-Based Data Visibility:** Tutors requested color-coded booking indicators for different courses.
- **Mobile Responsiveness and Clarity:** Some users missed bookings due to a lack of immediate reminders.
- **Overall Aesthetic and Layout Preferences:** Users appreciated the clean interface and simple booking flow.

## User Feedback and Suggested Modifications

After analysing the user feedback, here are the key findings and potential modifications:

### 1. Enhanced Booking Display

- Feedback: Users expressed that it would be better to have a calendar view to see all their bookings at once.
- Modification: Addition of a monthly calendar view for visualizing all bookings at a glance.

### 2. Improved Navigation & Filters

- Feedback: Some students found it difficult to switch between different campuses.
- Modification: Include a campus selector on every screen and allow filtering labs by building or department with a visible campus flag/icon in the header to avoid confusion.

### 3. Booking Management

- Feedback: Tutors asked for a feature to allow them to cancel or modify existing bookings.
- Modification: Implementation of “Edit” and “Cancel” options for bookings and the ability for tutors to remove a student’s booking.

### 4. Push Notifications

- Feedback: Users suggested improving the confirmation dialog to clearly show the time zone and lab location.
- Modification: In addition to email, enable real-time push notifications for booking confirmations and cancellations.

## **5. Calendar Integration**

- Feedback: Better integration with device calendars was suggested for improved user experience.
- Modification: Allow users to export confirmed bookings to their device calendar (Google/Apple) with one tap.

## **6. Social Features**

- Feedback: Users requested an in-app feature to contact other students for group projects.
- Modification: As an additional goal, we consider adding an optional chat/messaging feature or group invite for students in the same lab session.