Design Document

for

DBMS

Version 1.2

Prepared by

Group 5: Group Name: DevDynamos

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Course: CS253

Mentor TA: Bharat

DATE: 10-02-2024

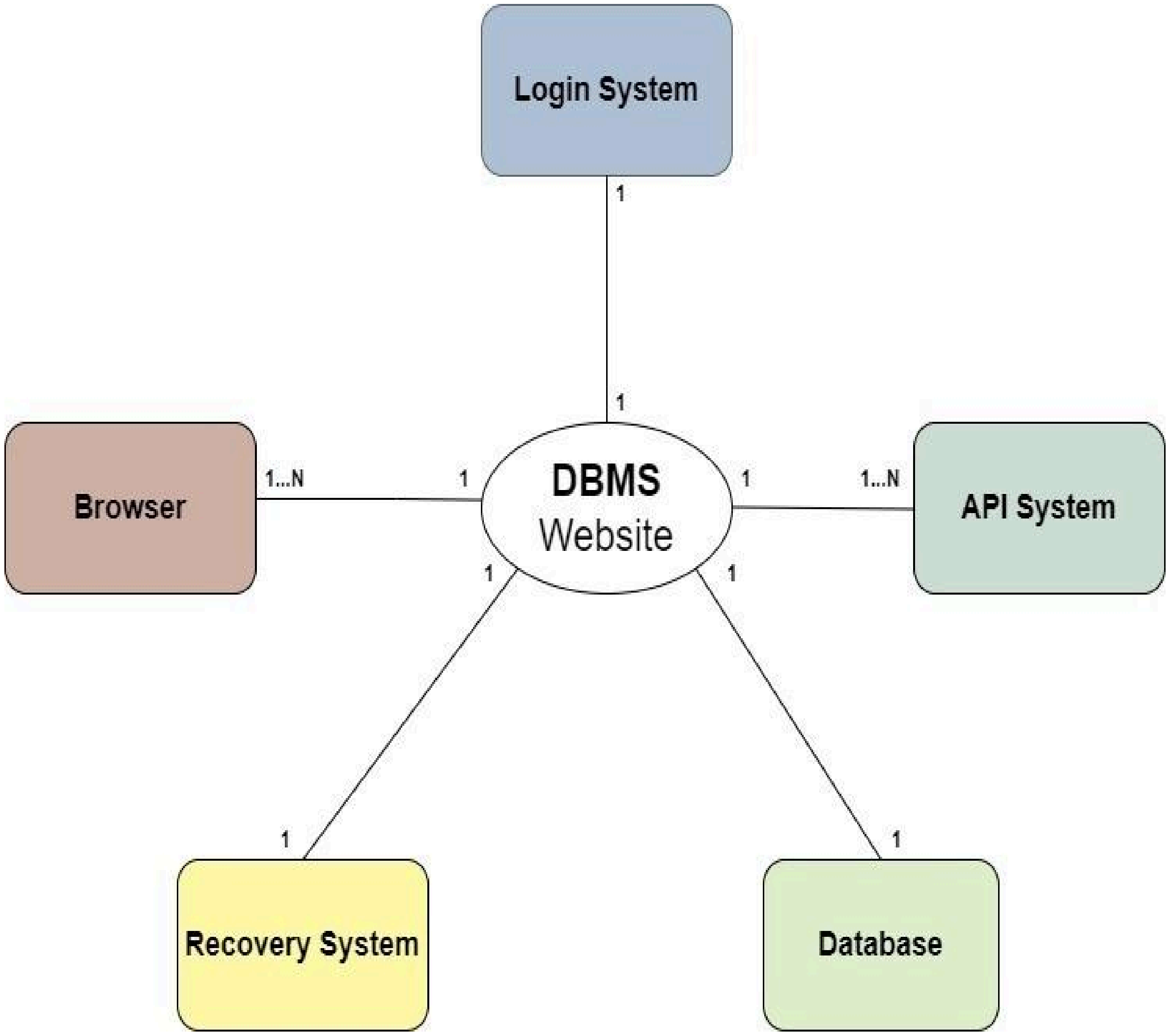
Content

Revisions

Version	Primary Author(s)	Description of Version	Date Completed
1.1	**Group 5 - DevDynamos**	- UI details and Architecture design were discussed in details and work was divided within group.	27/01/24
1.2	**Group 5 - DevDynamos**	-Work on Context diagram and design started - UI design finalized and work on Figma started.	01/02/24
1.3	**Group 5 - DevDynamos**	-Architecture Design was completed. Project planning was done and included. - Object oriented design discussed.	04/02/24
1.4	**Group 5 - DevDynamos**	-Object Oriented design completed and final document was formalized.	09/02/24

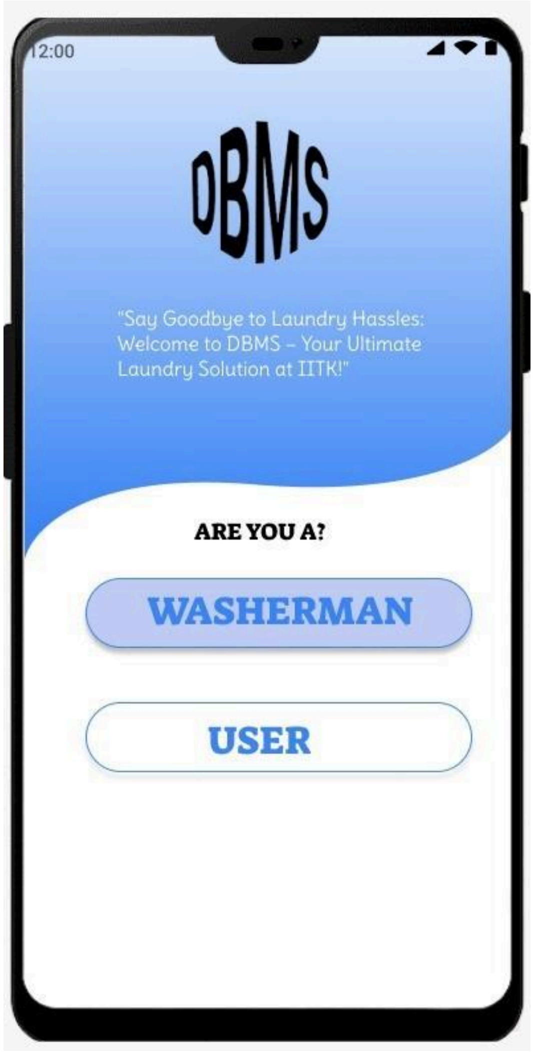
1 Context Design

1.1 Context Model

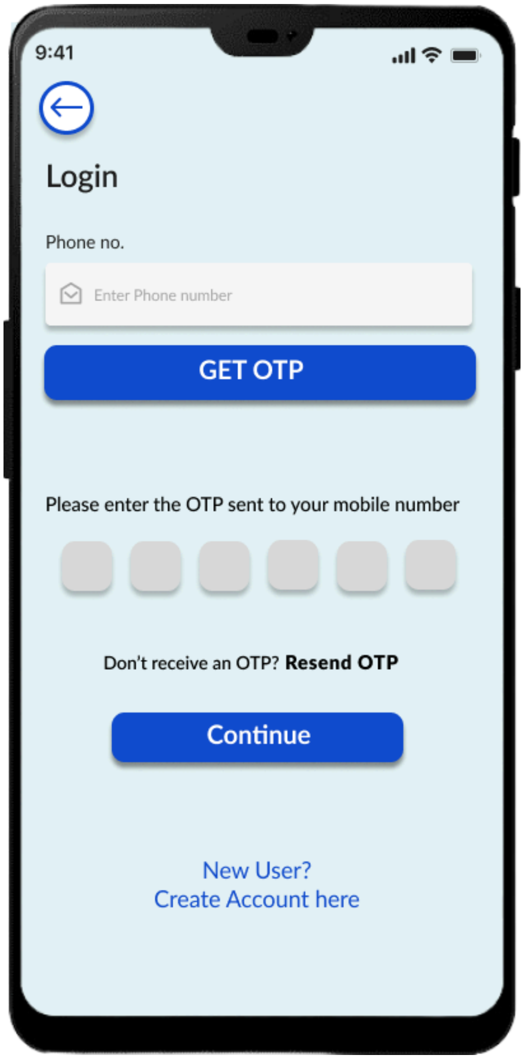


1.2 Human Interface Design

a) Interface for washerman



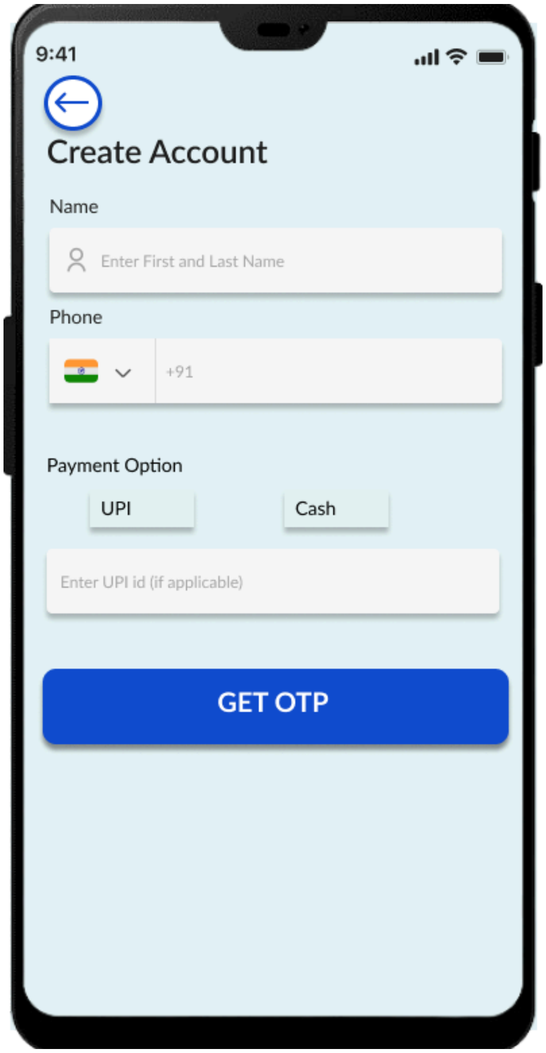
"Say Goodbye to Laundry Hassles: Welcome to DBMS – Your Ultimate Laundry Solution at IITK!"



Please enter the OTP sent to your mobile number

Don't receive an OTP? **Resend OTP**

b) Account creation for washerman



9:41

Create Account

Name

Enter First and Last Name

Phone

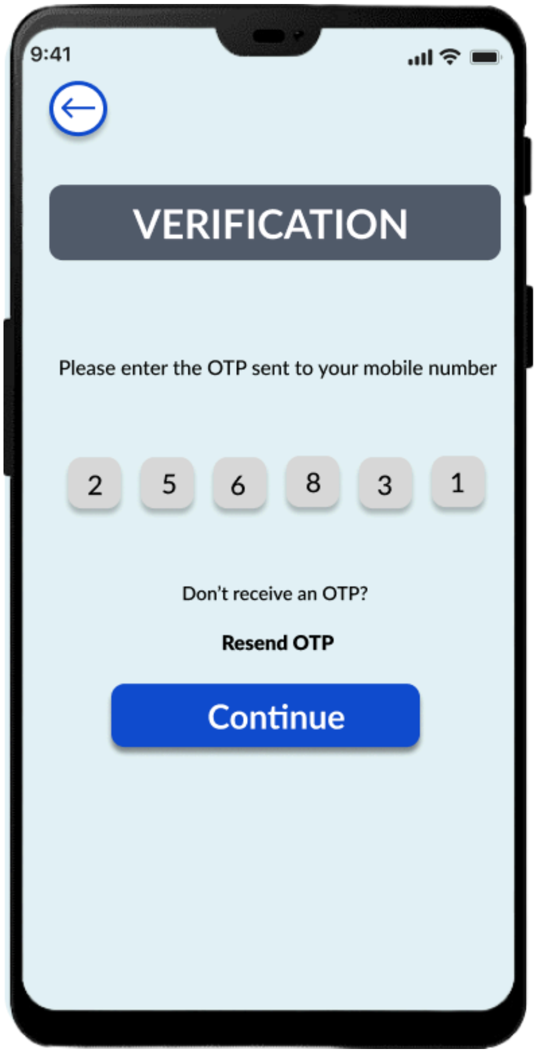
+91

Payment Option

UPI

Cash

Enter UPI id (if applicable)



9:41

VERIFICATION

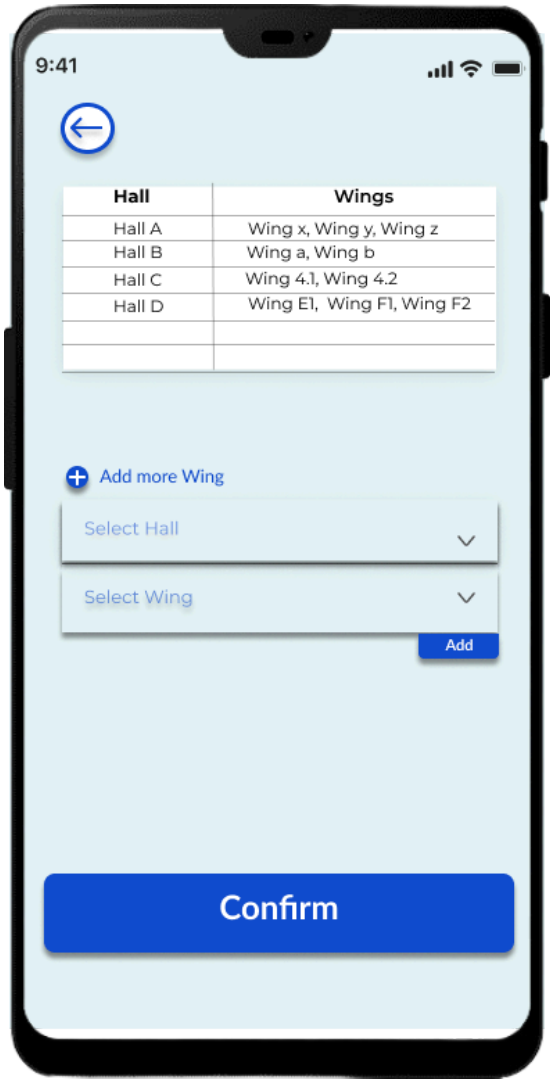
Please enter the OTP sent to your mobile number

2 5 6 8 3 1

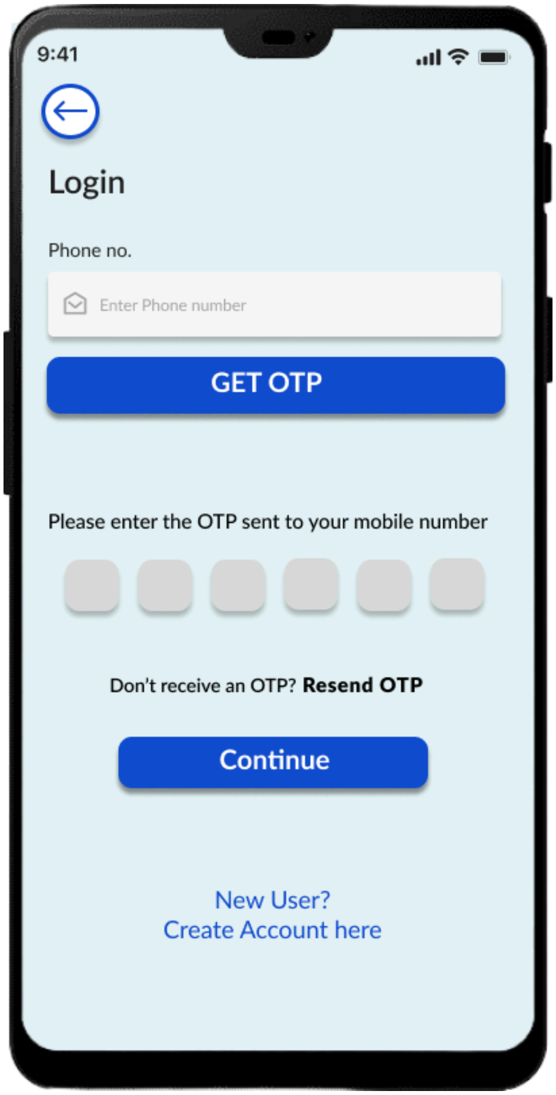
Don't receive an OTP?

Resend OTP

c) Hall and wing selection by Washerman



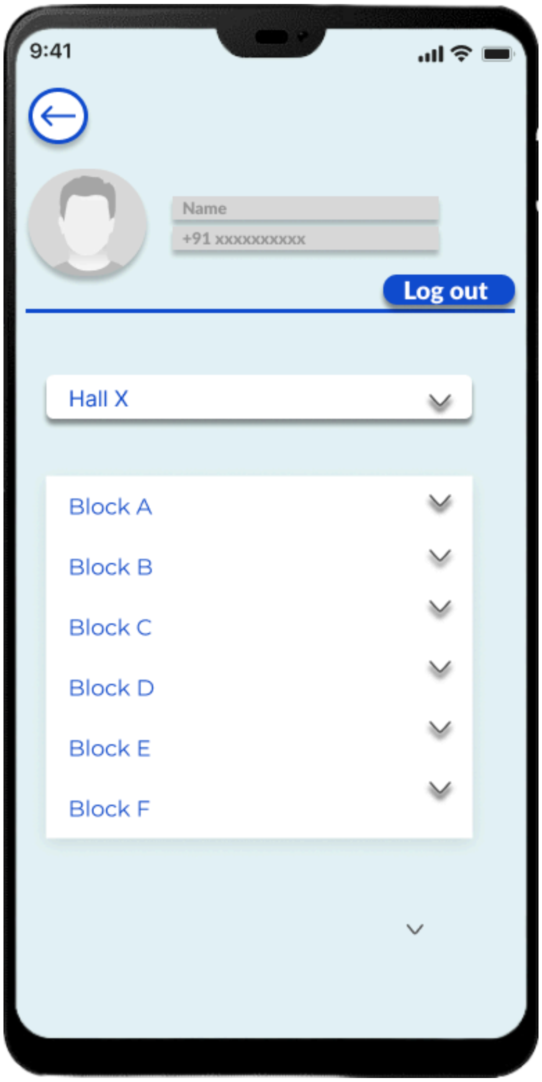
Hall	Wings
Hall A	Wing x, Wing y, Wing z
Hall B	Wing a, Wing b
Hall C	Wing 4.1, Wing 4.2
Hall D	Wing E1, Wing F1, Wing F2

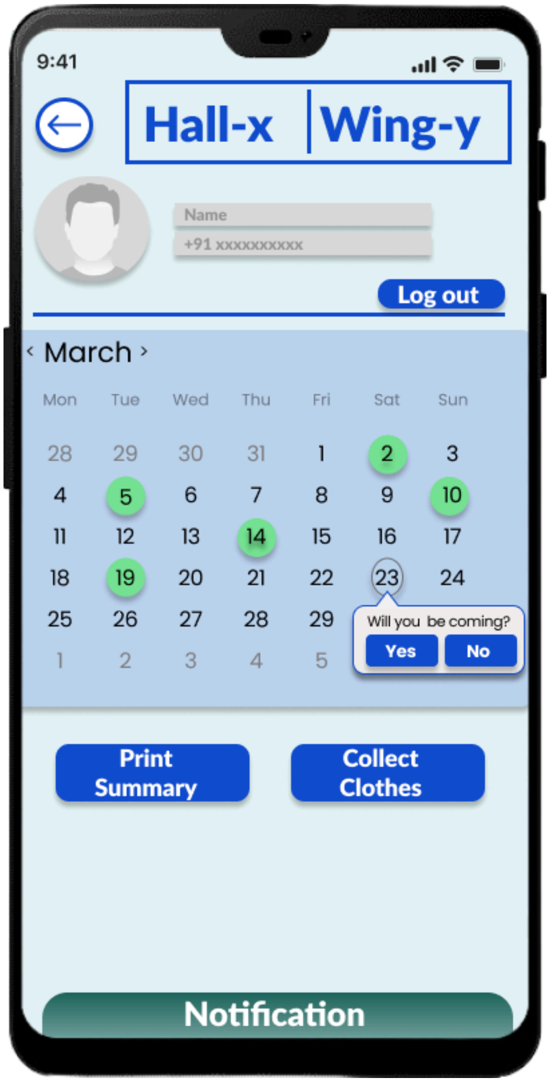


Please enter the OTP sent to your mobile number

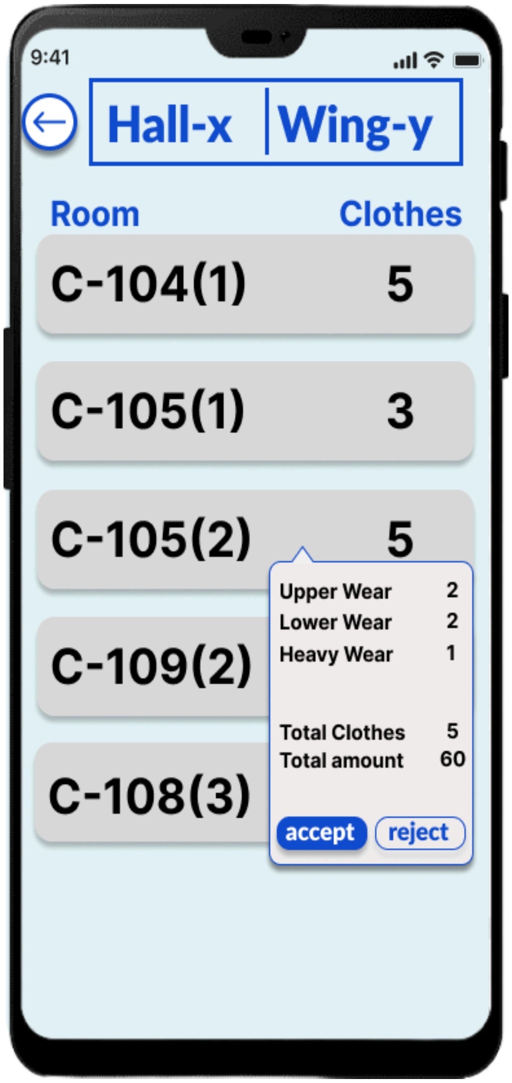
Don't receive an OTP? **Resend OTP**

d) Dashboard for Washerman





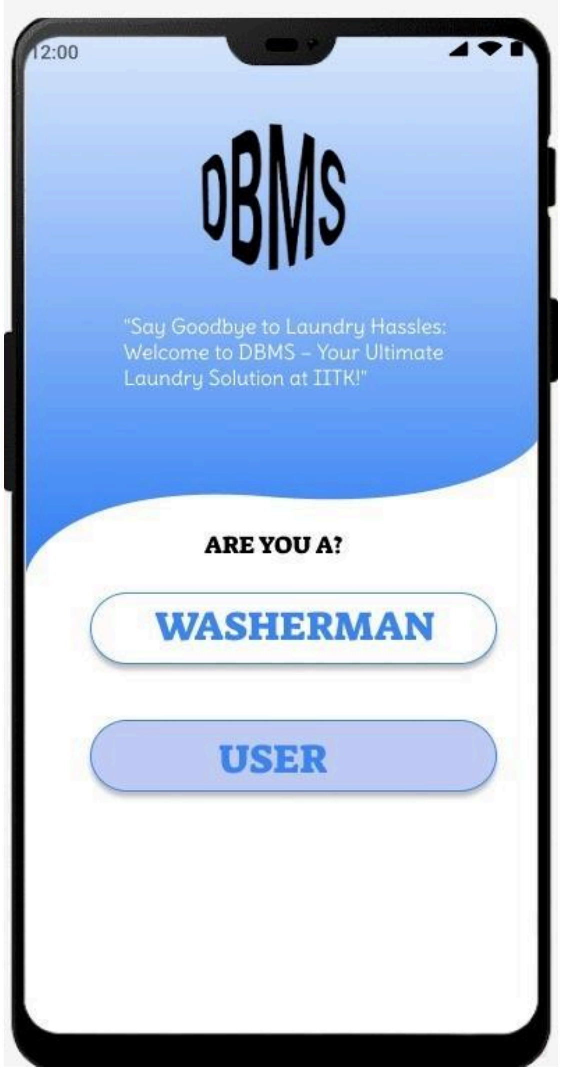
e) Room wise report for washerman



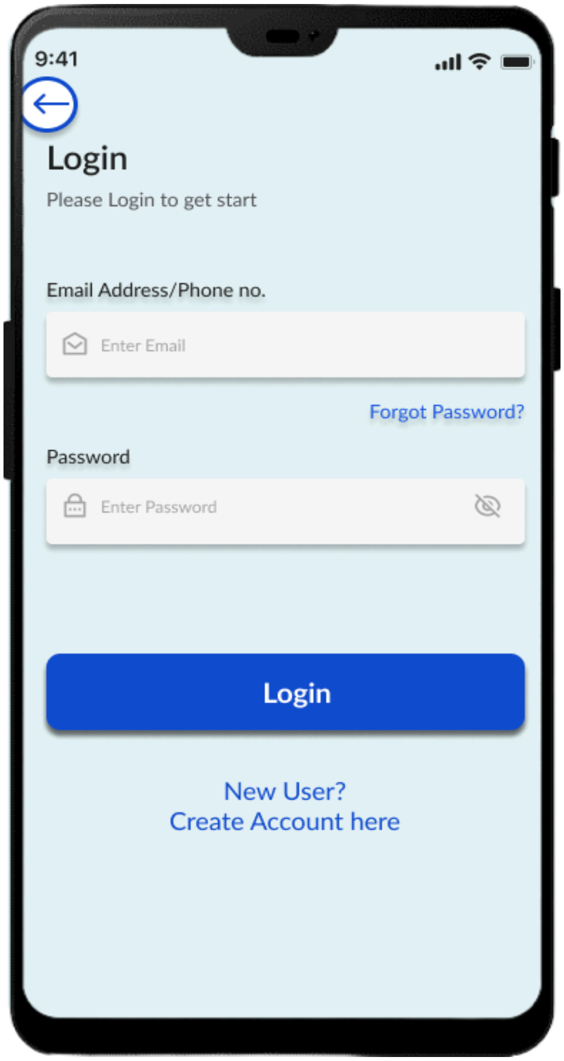
Room	Clothes
C-104(1)	5
C-105(1)	3
C-105(2)	5
C-109(2)	
C-108(3)	

Upper Wear	2
Lower Wear	2
Heavy Wear	1
Total Clothes	5
Total amount	60

f) Interface for User

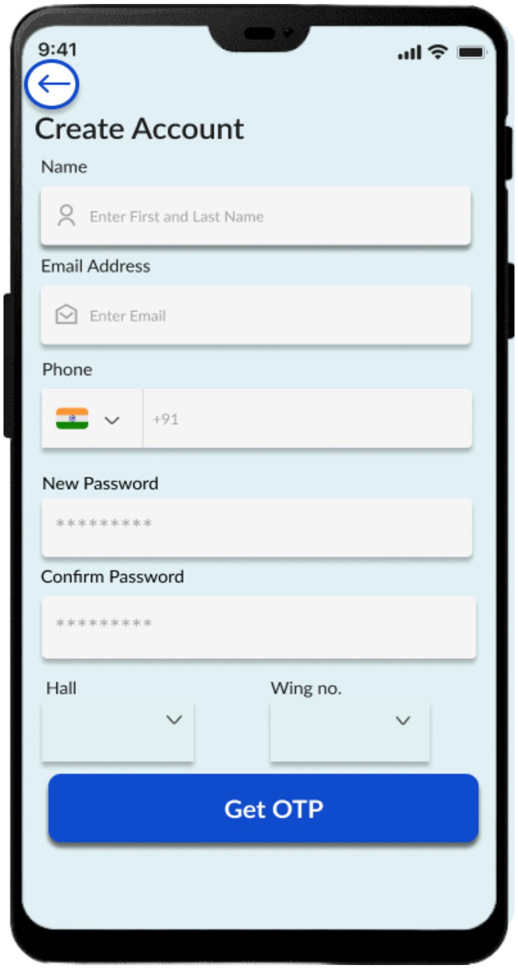


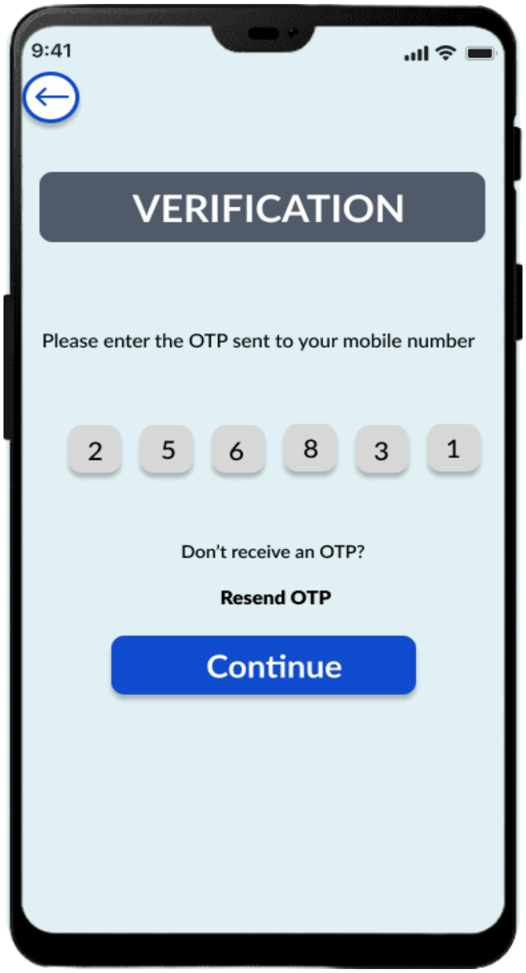
"Say Goodbye to Laundry Hassles: Welcome to DBMS – Your Ultimate Laundry Solution at IITK!"



Please Login to get start

g) Account creation for student



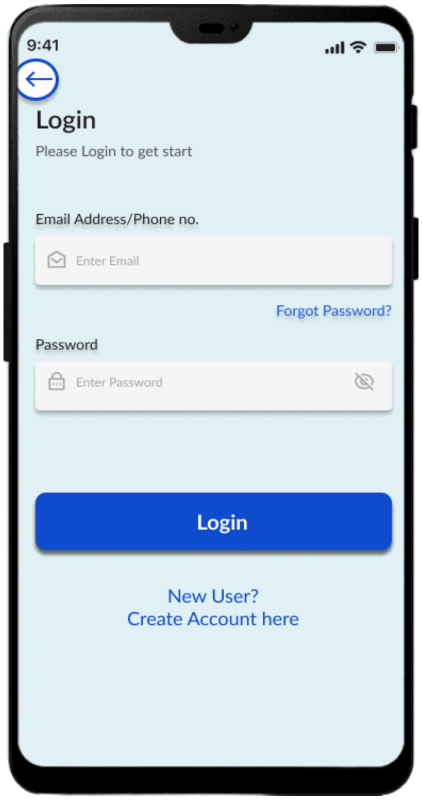


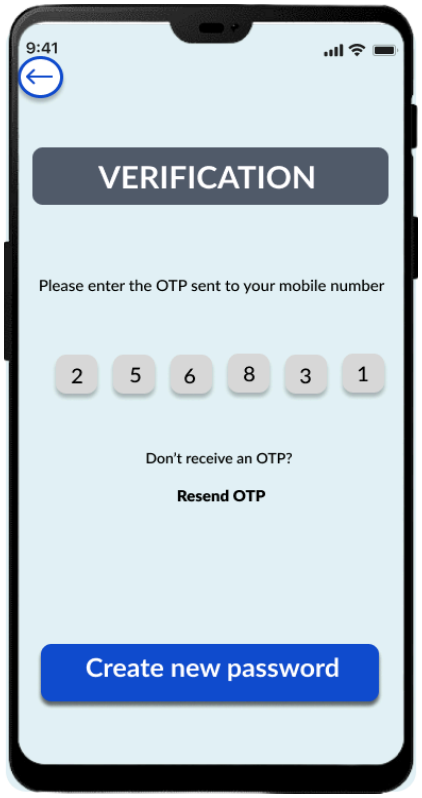
Please enter the OTP sent to your mobile number

2 5 6 8 3 1

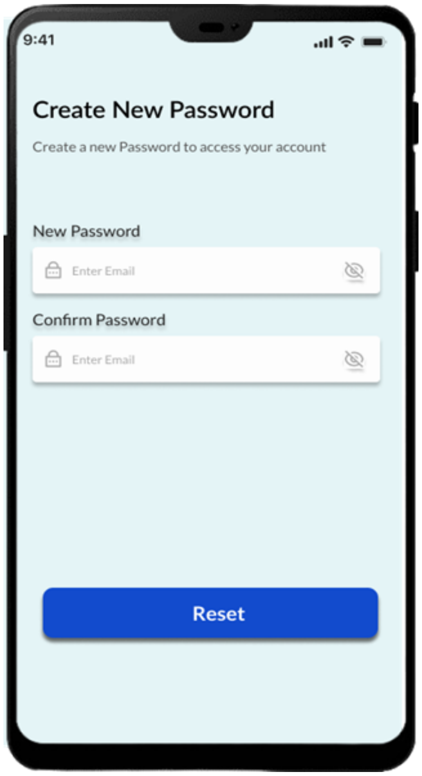
Don't receive an OTP?

h) Forgot password interface for student



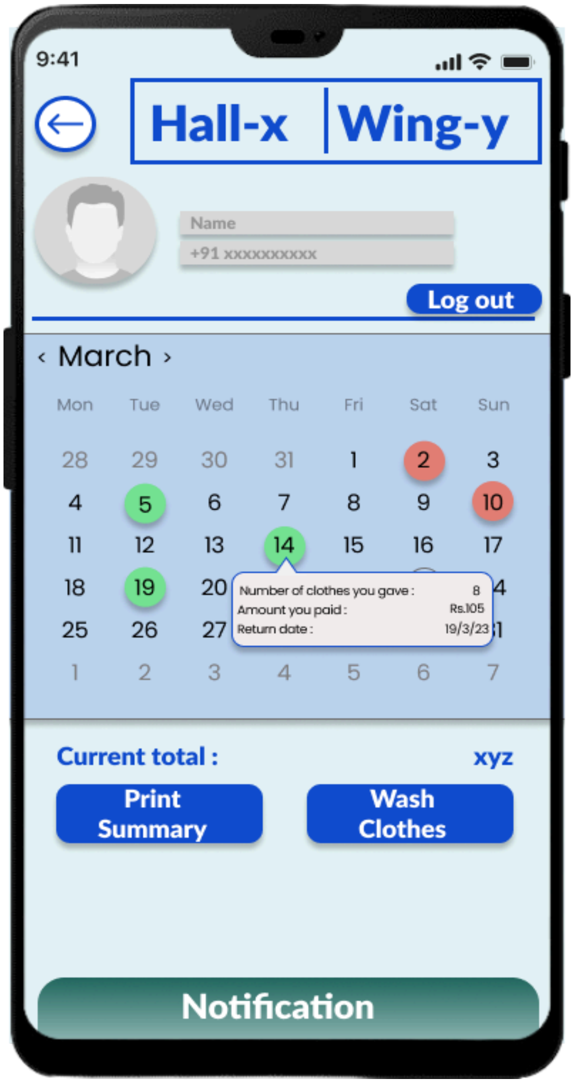


Please enter the OTP sent to your mobile number



Create a new Password to access your account

i) Dashboard for student

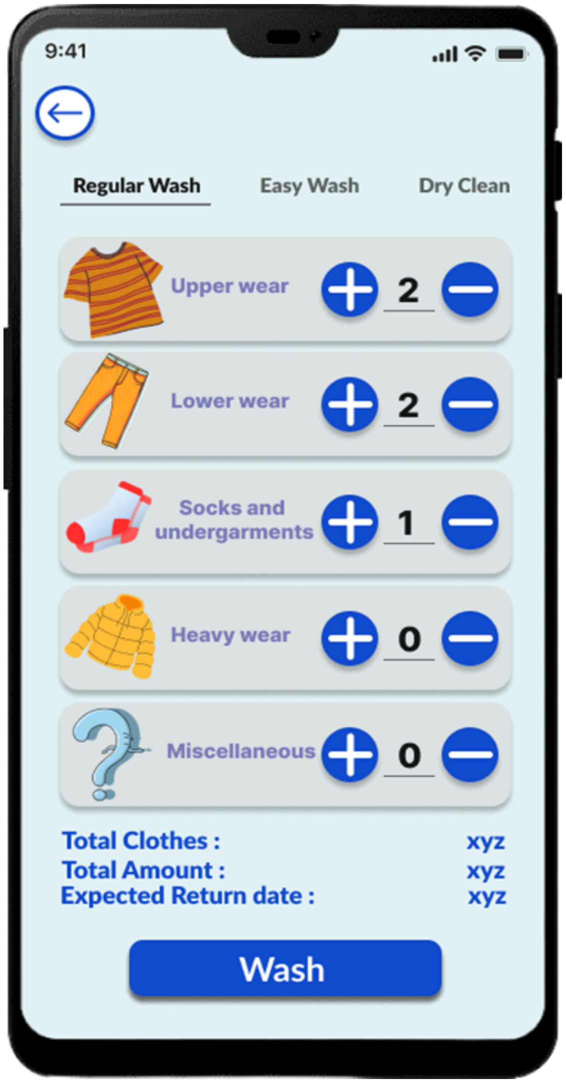


Name
+91 xxxxxxxxxx

Mon	Tue	Wed	Thu	Fri	Sat	Sun
28	29	30	31	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20				4
25	26	27				1
1	2	3	4	5	6	7

Number of clothes you gave : 8
Amount you paid : Rs.105
Return date : 19/3/23

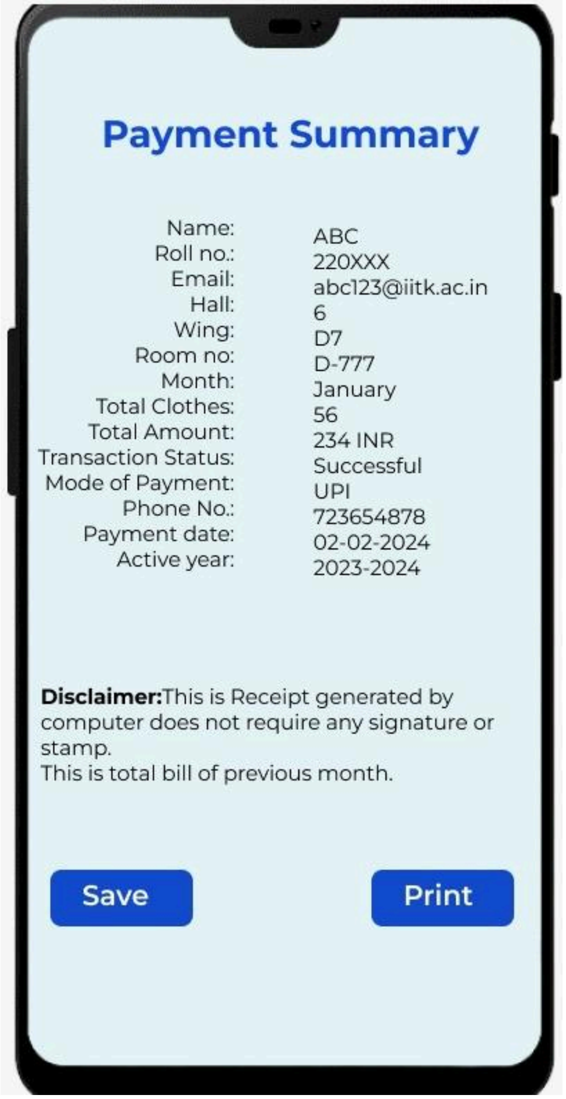
Current total : xyz



Upper wear 2
Lower wear 2
Socks and undergarments 1
Heavy wear 0
Miscellaneous 0

Total Clothes : xyz
Total Amount : xyz
Expected Return date : xyz

j) Monthly payment receipt



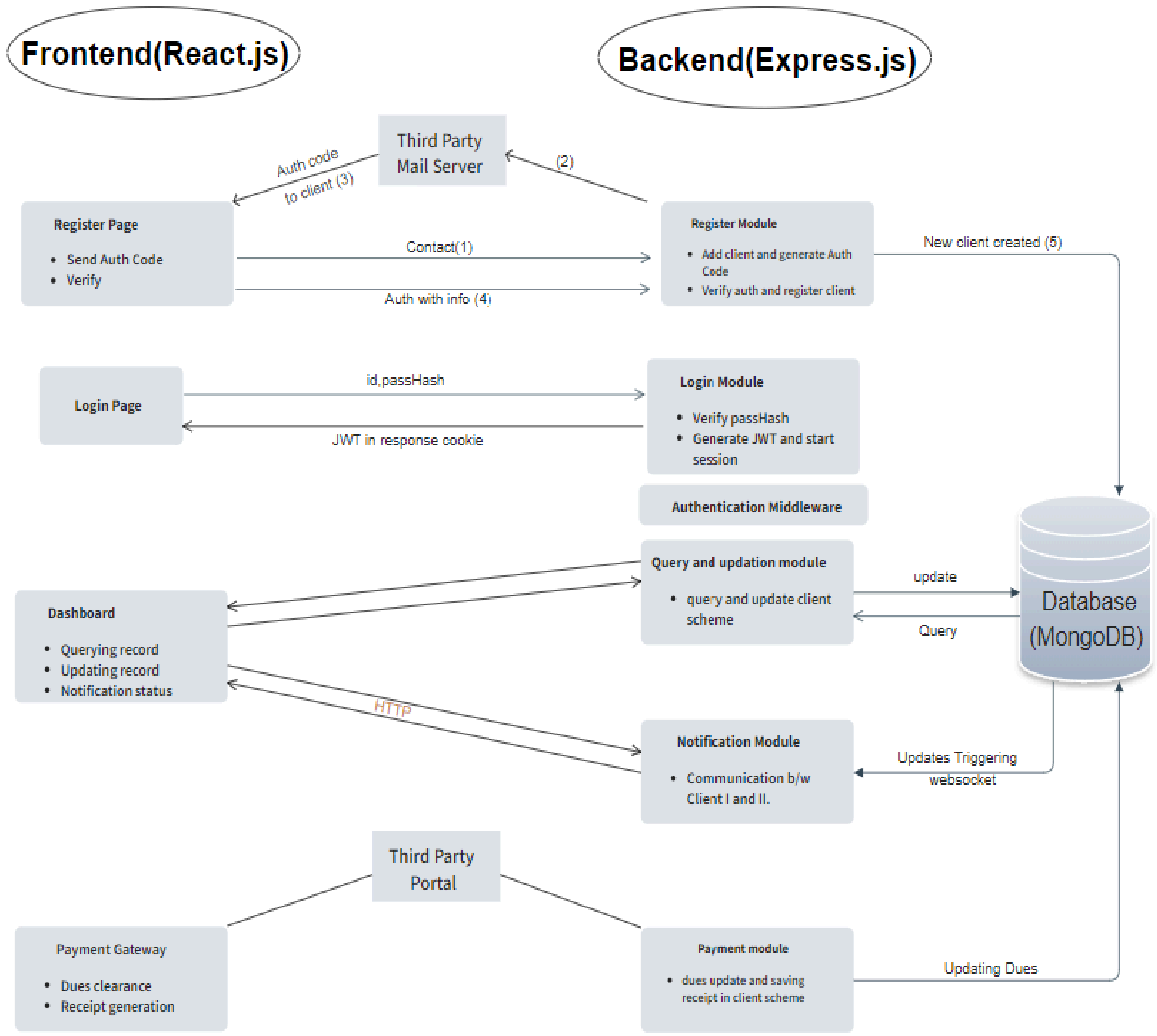
Payment Summary

Name:	ABC
Roll no.:	220XXX
Email:	abc123@iitk.ac.in
Hall:	6
Wing:	D7
Room no:	D-777
Month:	January
Total Clothes:	56
Total Amount:	234 INR
Transaction Status:	Successful
Mode of Payment:	UPI
Phone No.:	723654878
Payment date:	02-02-2024
Active year:	2023-2024

Disclaimer: This is Receipt generated by computer does not require any signature or stamp.
This is total bill of previous month.

The above UI design are just for reference the actual design of the software can vary.

2 Architecture Design



- Our Frontend server is used by both users (Client 1) and washerman (Client 2).
- Auth code means Authentication code here.

1) Registration

a. The Registration process of both types of client is similar. An Auth code generated on the server is sent to the client which then verifies the client details for registration.

b. User can use his email for Auth code and the washerman can receive his Auth code through mobile messaging.

c. We will use third party mailing / messaging service for the same.

4) Authentication and Authorization

a. We send the hash of the user password during registration. Hash is done on the frontend server.

b. During login Authentication is done by clients id and Hashed password.

c. For Authorization and maintaining session we will use JWT(Json web token)

3) Dashboard

a. The Dashboard functionality of both Clients is different but for both all requests are of type query or update record. Record here means all kinds of client data.

b. Dashboard also uses a notification module. This module will be implemented using HTTP and essentially facilitates communication between the user and the washerman. When the user submits their clothes and enters the data, the washerman will receive a notification through HTTP as the database is updated.

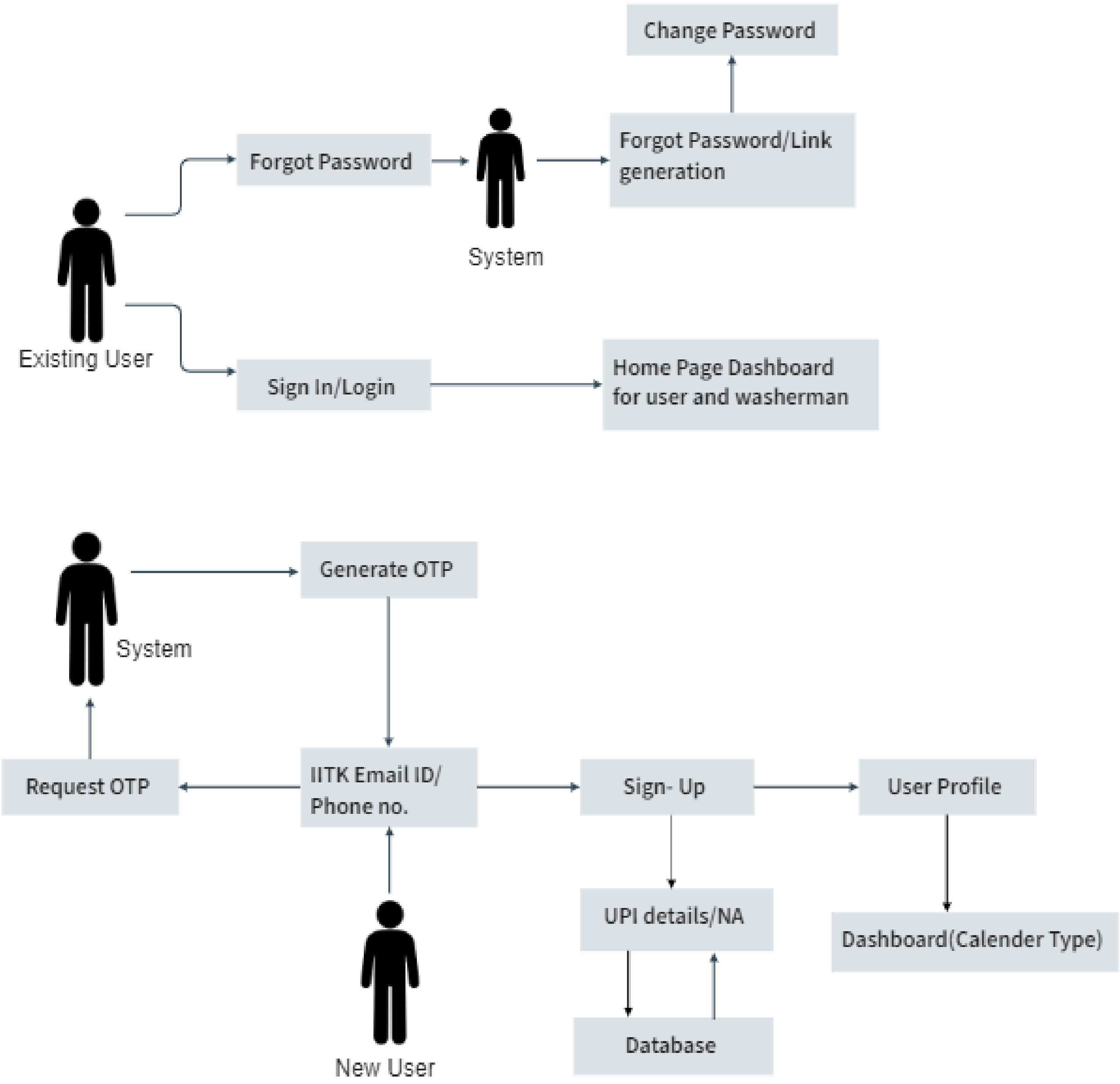
4) Payment Gateway

a. Payment will be done using a third party portal. Database will not get updated until it receives confirmation from the portal. Along with confirmation we will also store receipt of payment in Database.

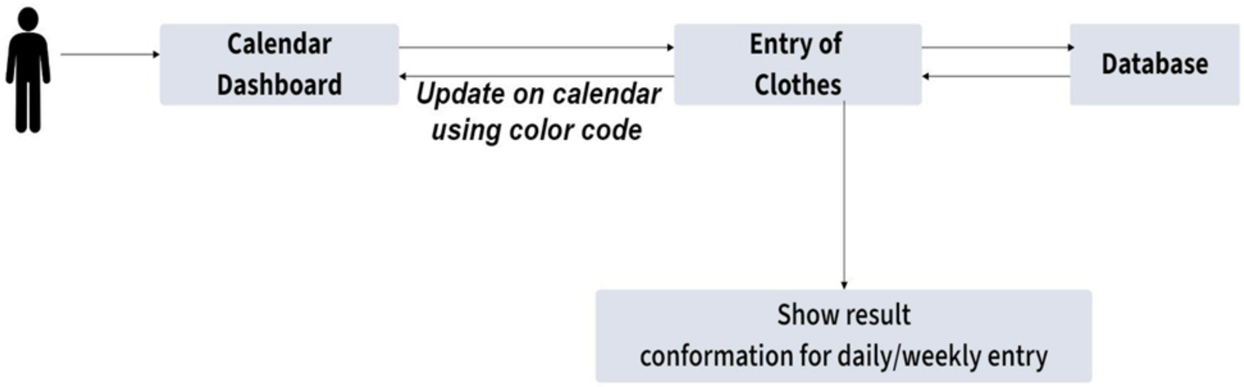
3 Object Oriented Design

3.1 Use Case Diagrams

3.1.1 Use case#1(Authentication)

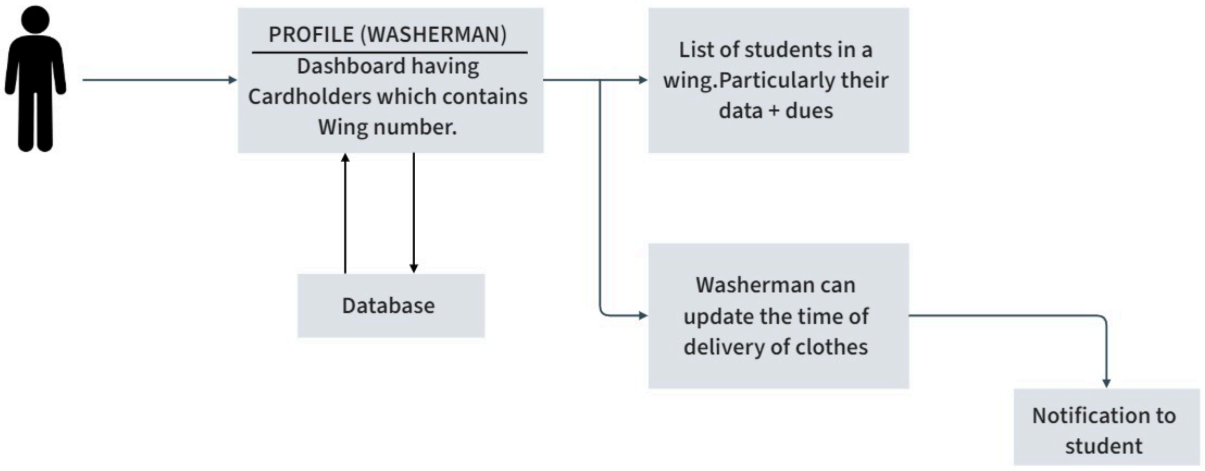


3.1.2 Use case#2(IITK User-end)

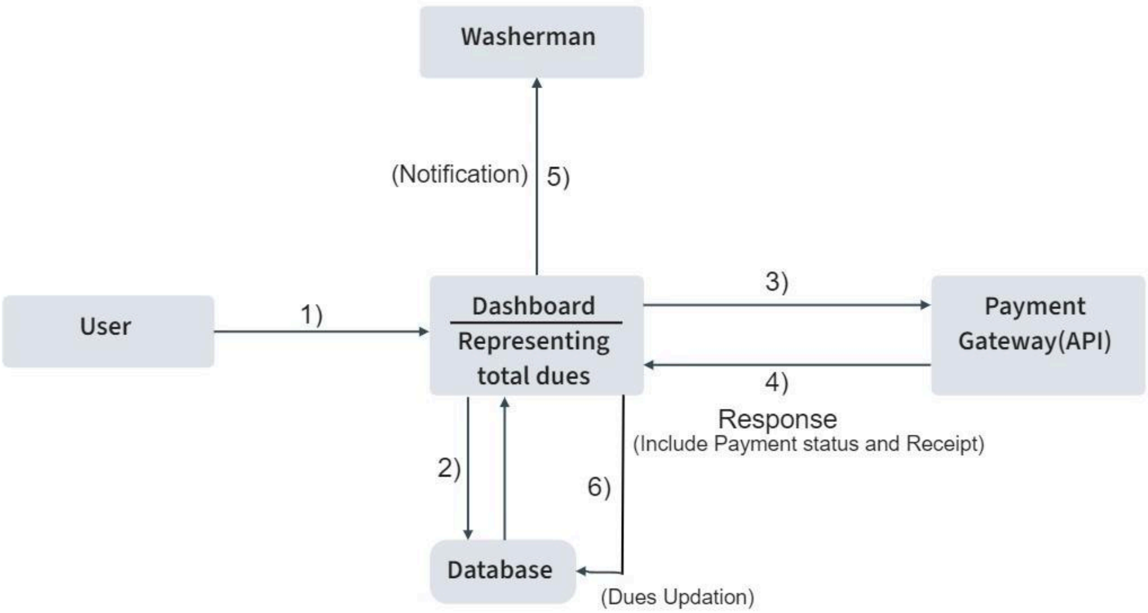

Calendar Dashboard
Entry of Clothes
Database
Update on calendar using color code
Show result conformation for daily/weekly entry

3.1.3 Use case#3 (Washerman end)

Use Case Model - 3 (WASHERMAN USAGE OF SYSTEM)

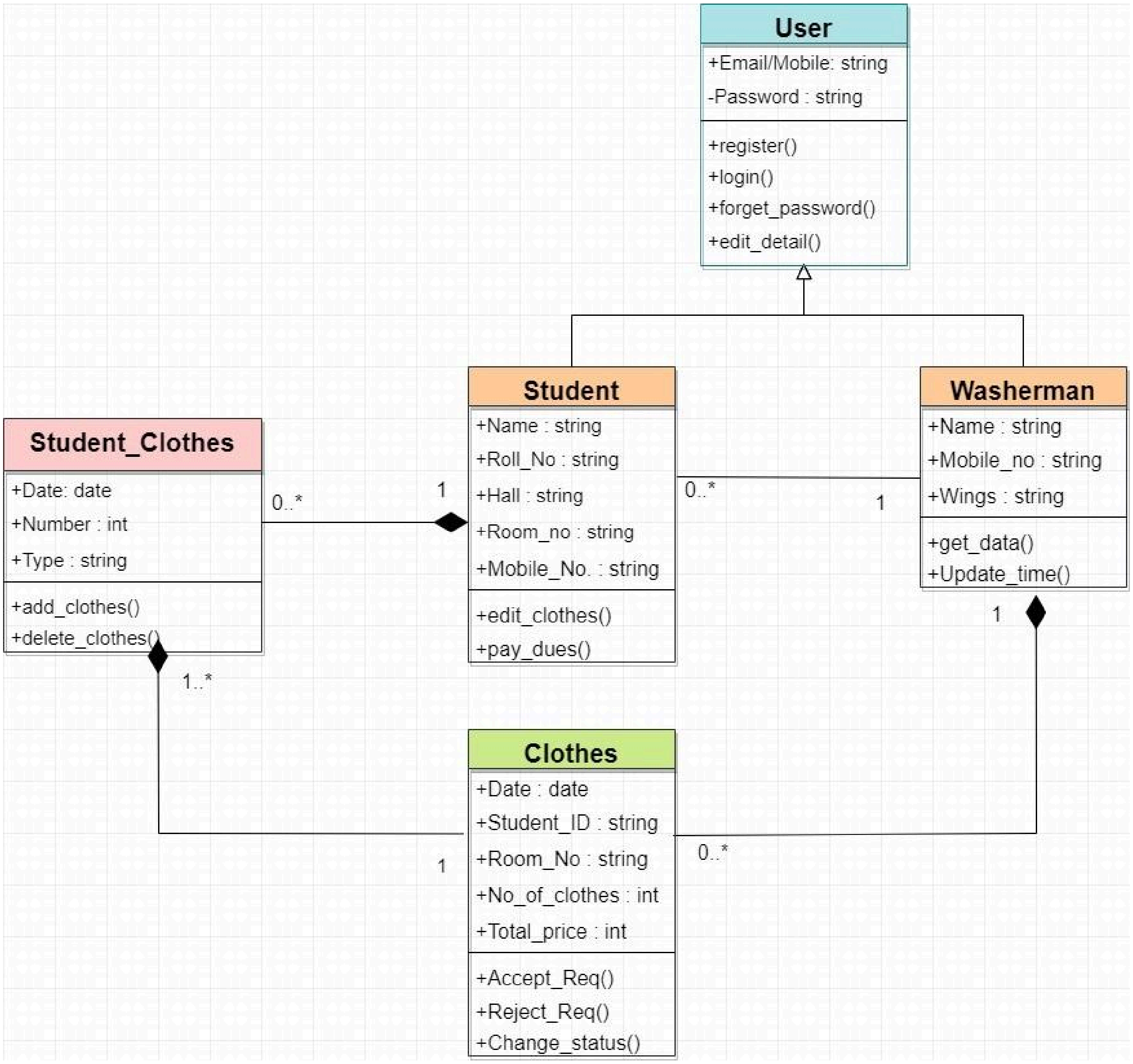

PROFILE (WASHERMAN)
Dashboard having Cardholders which contains Wing number.
List of students in a wing.Particularly their data + dues
Database
Washerman can update the time of delivery of clothes
Notification to student

3.1.4 Use case#4(Payment)



◉ Server is the implicit middleware in all the above communication channels

3.2 Class Diagrams



1. **User**: This the base class for all end users of the application.
    - **Data Members**
        - **Email/Mobile:** It stores the unique field with which user will login.
        - **Password:** It stores the Password of the user.
    - **Member Functions**
        - **register():** Used by a new user to create a profile on the application.
        - **login():** Used by a registered user to log into the application.

  - **forget_password():** This will be used by the user in case they forget their existing password and want to create a new one.
  - **edit_details():** Will be used by the user to edit their details.
  -

2. **Student:** This is the derived class for all students who will use the application.
   - **Data Members**
     - **Name:** It stores the name of the student.
     - **Roll_No:** It stores the roll number of the student.
     - **Hall:** It stores the Hall of residence to which the student belongs.
     - **Room_no:** It stores the room number of the student.
     - **Mobile_No:** It stores the mobile number of the student.
   - **Member Functions**
     - **edit_clothes():** Used by a student to edit the clothes that they give.
     - **pay_dues():** Used by a student to pay their current dues.

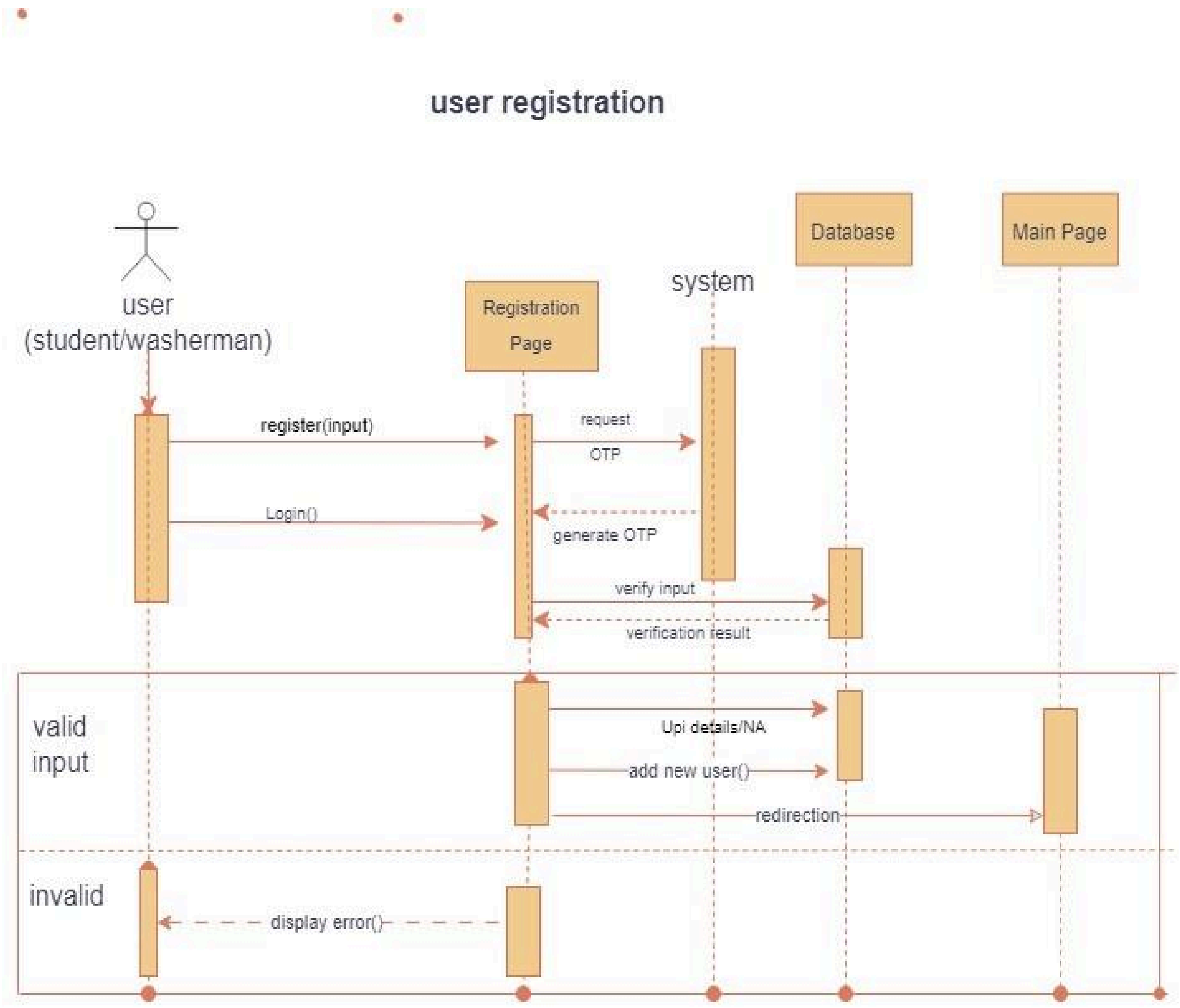
3. **Washerman:** This the derived class for all washermen/washerwomen who will use the application.
   - **Data Members**
     - **Name:** It stores the name of the washerman/washerwomen.
     - **Mobile_No:** It stores the mobile number of the student.
     - **Wings:** Will be used to store the floors which are allotted to the washerman/washerwoman.
   - **Member Functions**
     - **get_data():** Used by the washerman/washerwomen to access data related to clothes.
     - **Update_time():** Used by a washerman/washerwoman to update the time of their visit.

4. **Student_Clothes:** This class represents the entry of clothes submitted by the student on the application.
   - **Data Members**
     - **Date:** Stores the date on which the entry was made.
     - **Number:** Stores the number of clothes given.
     - **Type:** Stores the type of clothes given.
   - **Member Functions**
     - **add_clothes:** Will be used to add the clothes.
     - **delete_clothes:** Will be used to delete the entry of clothes.

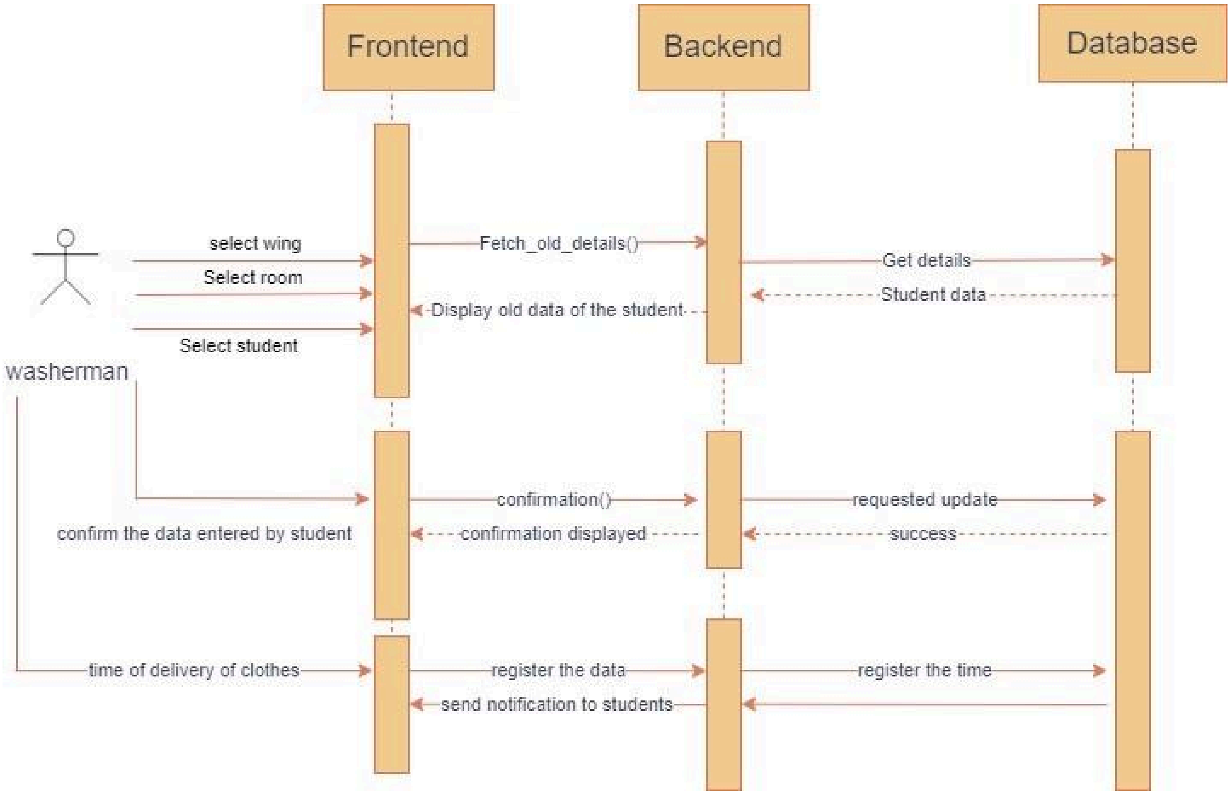
5. **Clothes:** This class represents the entry of clothes given to the washerman/washerwoman on the application.
   - **Data Members**
     - **Date:** Stores the date on which the entry was made.
     - **Student_ID:** Stores a unique id of the student whose entry it is.
     - **Room_No:** Stores the room number of the student.
     - **No_of_clothes:** Stores the total number of clothes given.
     - **Total_price:** Stores the total amount owed by the student.
   - **Member Functions**
     - **accept_Req():** Will be used by washerman/washerwoman to accept the request made by the student.
     - **reject_Req():** Will be used by washerman/washerwoman to reject the request made by the student.
     - **Change_status():** Will be changed when the clothes have been returned by the washerman/washerwoman.

3.3 Sequence Diagrams

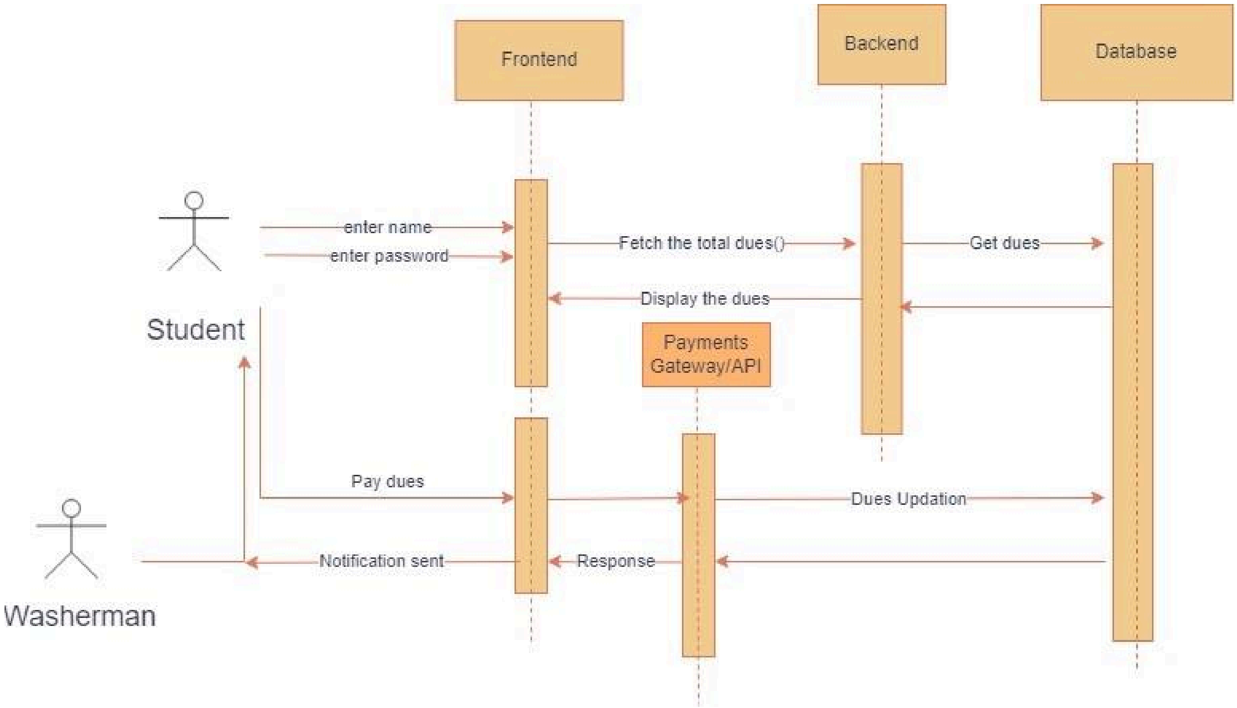
3.3.1 Authentication



3.3.2 Washerman-system interaction

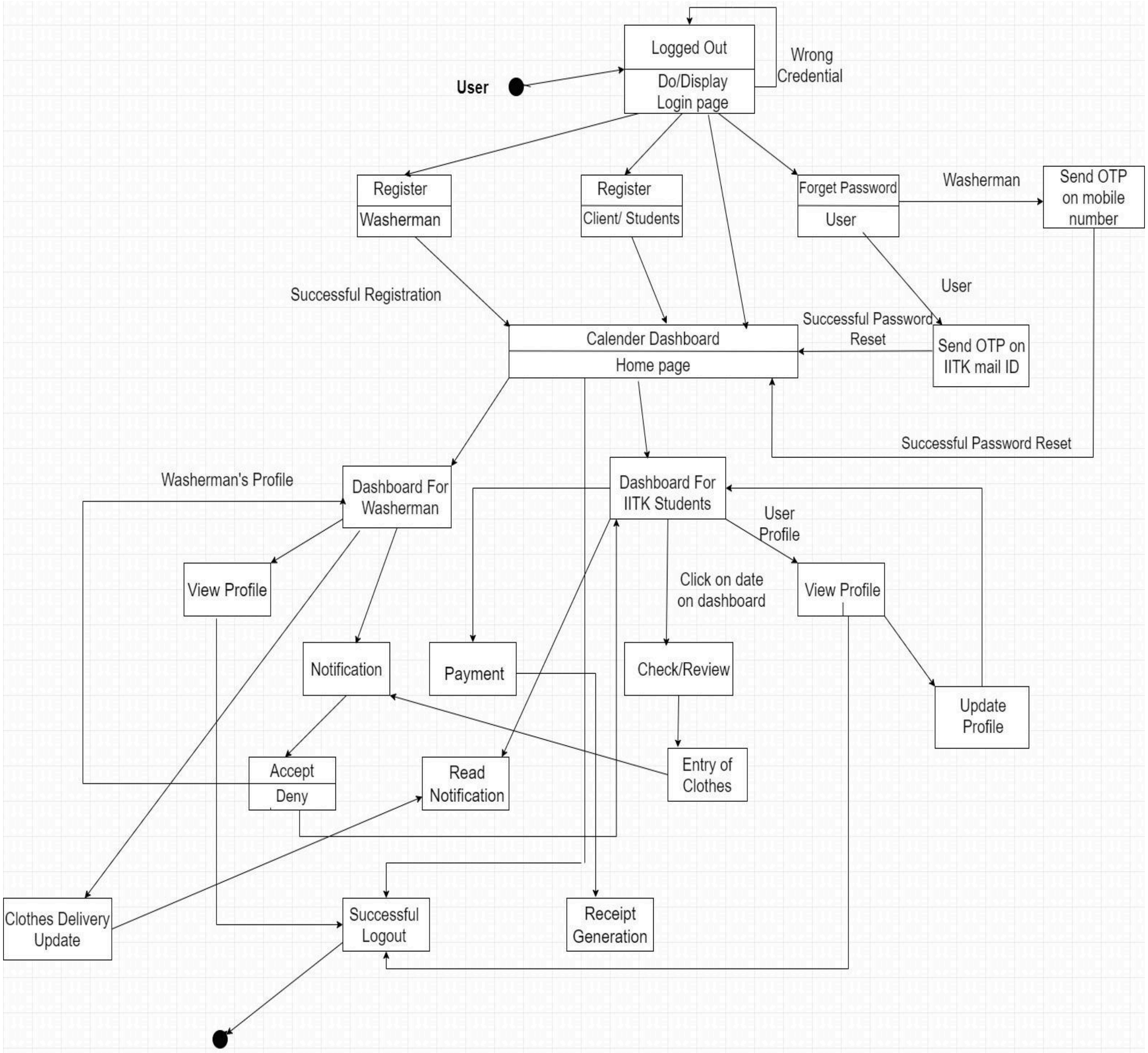


3.3.3 IITK Student – System interaction (with Payment)



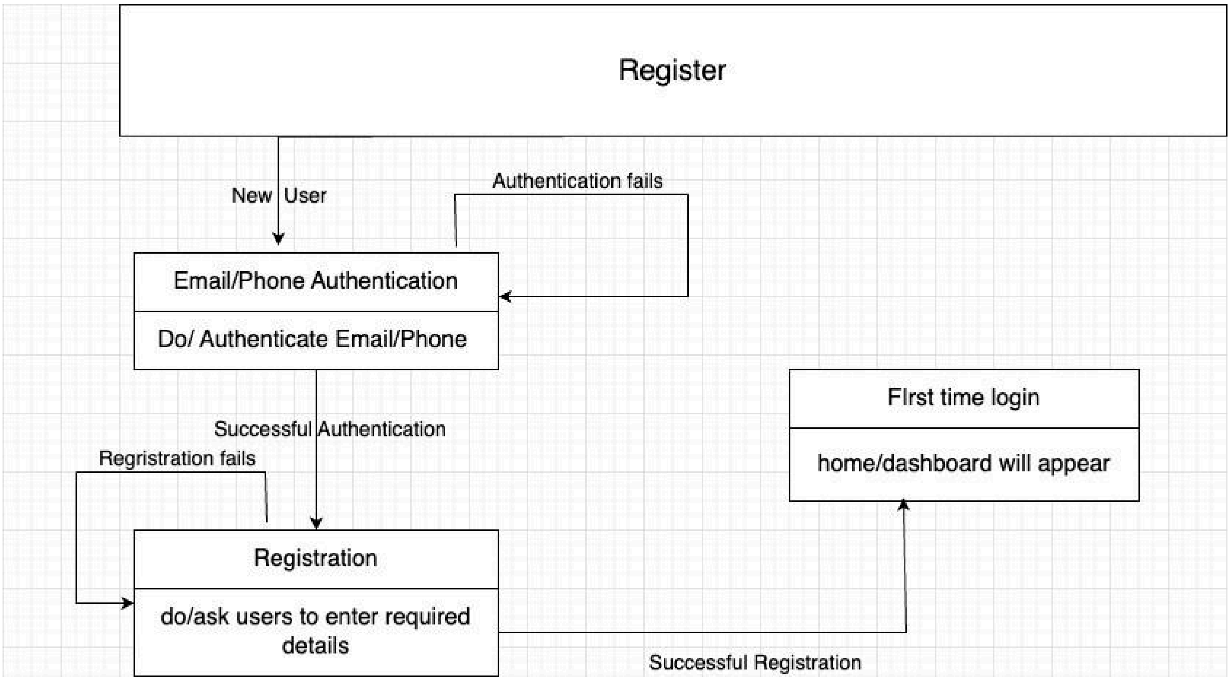
3.4 State Diagrams

3.4.1 Overall State Diagram



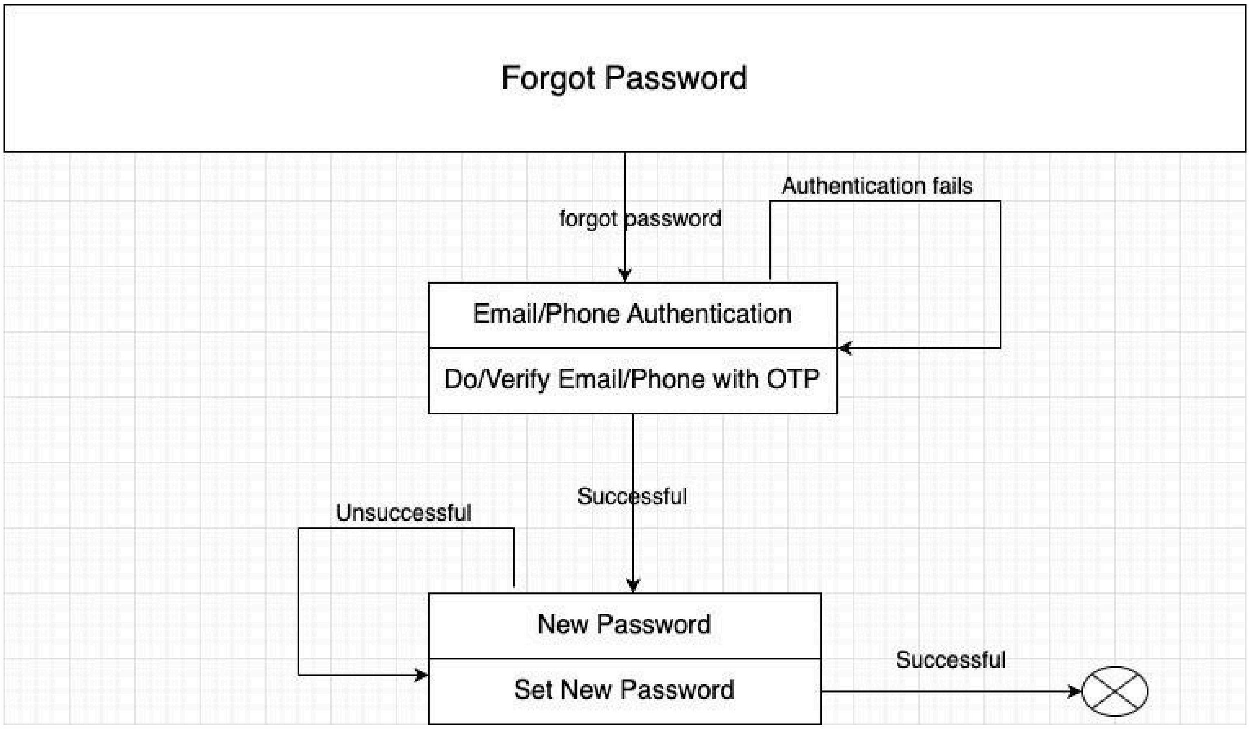
EXIT

3.4.2 Registration


Register
New User
Authentication fails
Email/Phone Authentication
Do/ Authenticate Email/Phone
Successful Authentication
Regristration fails
FIrst time login
home/dashboard will appear
Registration
do/ask users to enter required details
Successful Registration

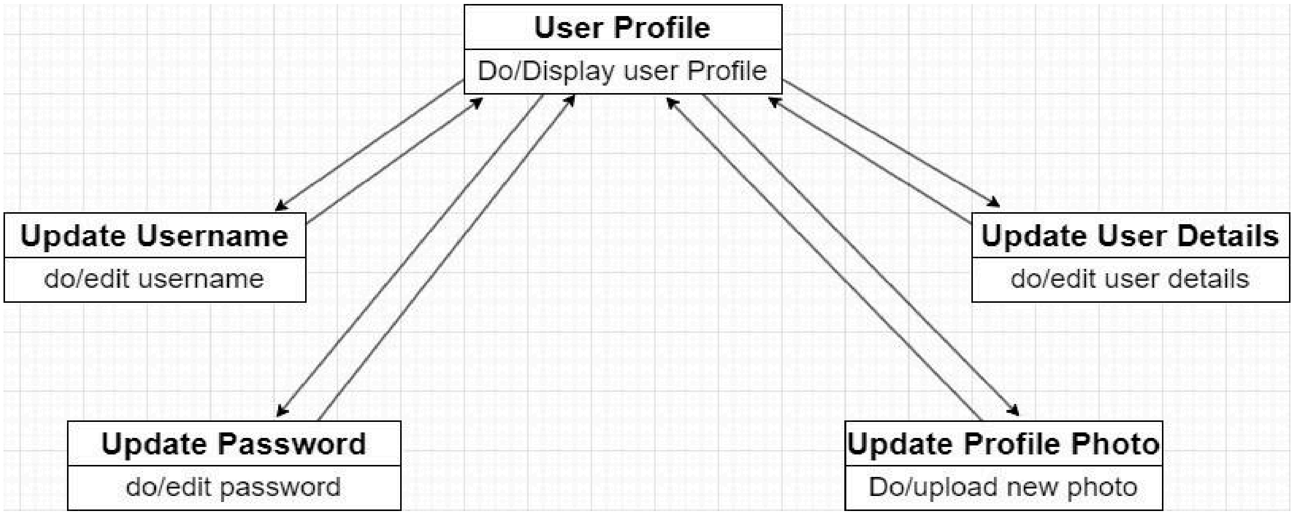
New users can register using email (in case of students) and phone (in case of washerman). In case of successful authentication with OTP, they need to share the required details. In case of successful registration, they will be logged in and dashboard will appear.

3.4.3 Forgot Password



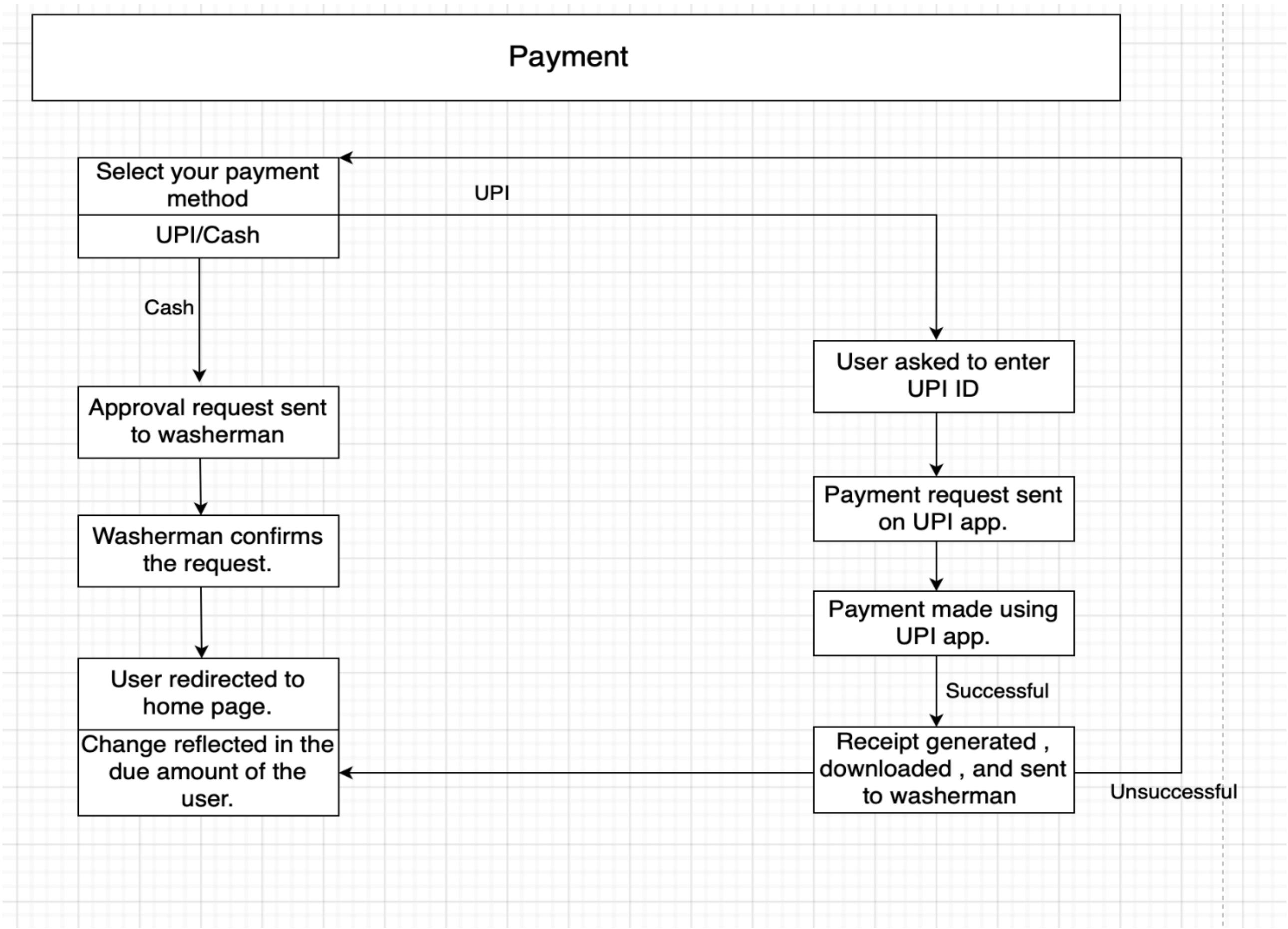
In case the user forgets the password, they need to authenticate phone/email with OTP and set a new password.

3.4.4 Profile Management



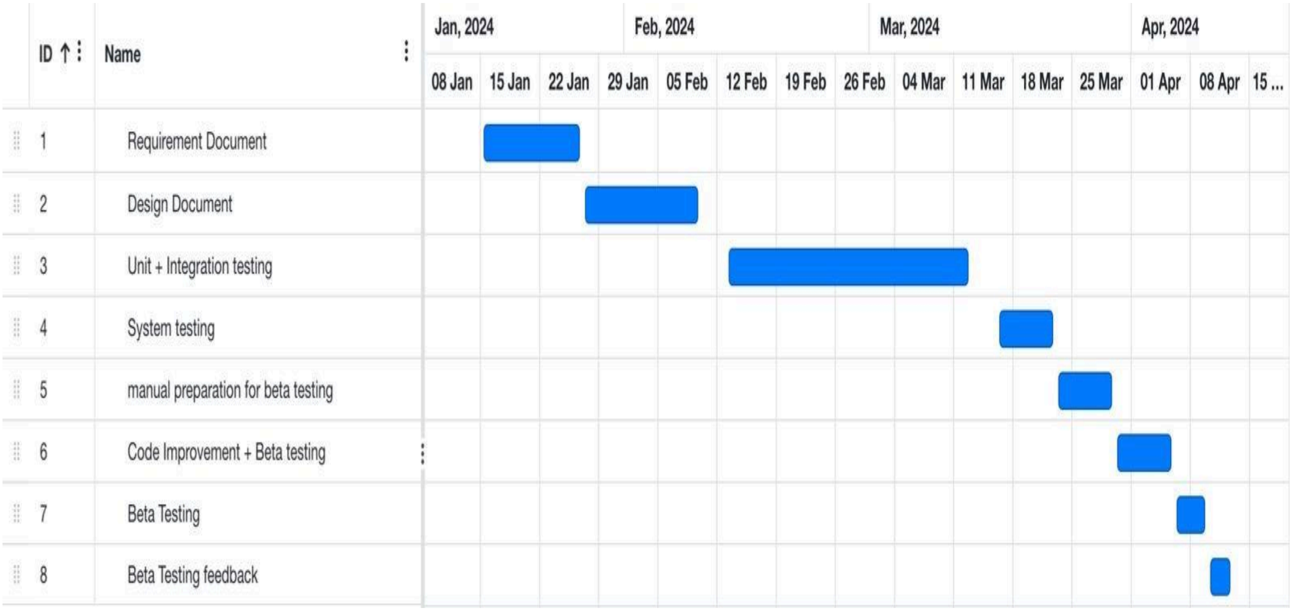
Users can change their username and password. They can also update their profile picture and user details**.**

3.4.5 Payment


Payment
Select your payment method
UPI/Cash
UPI
Cash
Approval request sent to washerman
Washerman confirms the request.
User redirected to home page.
Change reflected in the due amount of the user.
User asked to enter UPI ID
Payment request sent on UPI app.
Payment made using UPI app.
Successful
Receipt generated , downloaded , and sent to washerman
Unsuccessful

Students can pay directly to the washerman using UPI/cash. In case s/he wants to pay cash, they simply need to send an approval request to the washerman and the washerman will subsequently confirm the request. In case s/he wants to pay using UPI, they will need to enter their UPI ID. The payment request will be sent to the UPI app where they can make payment as usual. The receipt will be generated and sent to the washerman**.**

4 Project Plan



ID ↑	Name
1	Requirement Document
2	Design Document
3	Unit + Integration testing
4	System testing
5	manual preparation for beta testing
6	Code Improvement + Beta testing
7	Beta Testing
8	Beta Testing feedback

Name	Work
Vishal Kumar	Full-stack implementation, System testing, code improvement
Shriya Garg	Full-stack Implementation, Code Improvement, Beta Testing
Yash Pratap Singh	Backend, System testing, code improvement
Aditya Gupta	Backend, Designing, Beta testing, Documentation
Nandini Akolkar	Full-stack Implementation, Code Improvement, Beta Testing
Rishikesh Sahil	Full-stack implementation, System testing, code improvement
Anshu Yadav	Beta testing,backend,System testing Documentation
Kushagra Singh	Backend, Beta testing, code improvement
Udbhav Singh Sikarwar	Front end, Beta testing, code improvement
Abhishek Kumar	Full-stack implementation, unit testing, Beta testing, Manual for beta testing

5 Other Details

Some tools used:-

1) https://www.figma.com/
2) http://draw.io/
3) https://moqups.com/

Appendix A - Group Log

SL no.	Date	Timings	Venue	Description
1	27 January 2024	2 pm -3pm	CCD	Go through the template to get a basic understanding.
2	30 January 2024	9pm -10pm	Google Meet	Distributed the work amongst the team members. Also distributed the team according to the development roles.
3	01 February 2024	8pm- 9pm	Google Meet	Met the TA to share our planning and took his invaluable suggestions.
3	02 February 2024	4pm-5pm	RM building	Met in person with the group members and collaboratively proceeded with the sections of the design document.
4	07 February 2024	9pm -11:00pm	RM building	Redistributed the remaining work and reviewed the progress of the design document
5	07 February 2024	11pm-11:30 pm	Google Meet	Met the TA to discuss our doubts and took valuable suggestions.
6	08 February 2024	9pm-11 pm	RM building	Completed the first draft of the Software Design Document.
7	08 February 2024	11pm-12pm	Google Meet	TA saw the first draft of the document and corrected our errors.
8	09 February 2024	3pm-6pm	RM building	Finalized the draft of the document while clearing each other's doubt.