Software Requirements Specification

for

NITC Conference Room Booking System

Version 1.1

Prepared by

Team Number: 12

Rajkumar Rajput	**M210666 CA**	**rajkumar_m210666ca@nitc.ac.in**
Joel Lalrinnunga Ralte	**M210694 CA**	**joel_m210694ca@nitc.ac.in**
Arham Siddiki	**M210695 CA**	**arham_m210695ca@nitc.ac.in**

Project Owner: **ABHINAV SUDHANSHU**

Course: **CS4096D Software Engineering Laboratory**

Date: **28/01/2023**

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Version	Primary Author(s)	Description of Version	Date Completed
2.0	Rajkumar Rajput Joel Lalrinnunga Ralte Arham Siddik	This document is intended to describe the requirements for the product in development.	28/01/2023
2.0	Anuj Singh Kushwah Komal Gupta Sandeep Gupta	Design Document is added	09/02/2023

1 Introduction

NITC conference room booking system is a software application that allows clubs/societies/committies to book the institute's conference room for any official purpose.

1.1 Document Purpose

This document specifies SRS of the intended project submitted alongside, Functional requirements, product overview, interfaces and product design is attached with this document

1.2 Product Scope

The NITC conference room booking system aims for the students & community of faculty members, staff, team of students' meetings to run more smoothly. The rooms are quiet, private spaces where people feel happy sharing information and ideas. They also provide a comfortable and professional setting.

1.3 Intended Audience and Document Overview

This document is intended to NITC students, faculty members individuals or community of students, faculty members, departments intending to use this product. They can use it to understand more about this product.
It generally states the following:
1. Various definition and acronyms used in the product and document itself.
2. Overview about the product and design constraints.
3. Use case model for the product.
4. Performance and security requirements.

1.4 Definitions, Acronyms and Abbreviations

1. Admin – A person or group of people assigned to manage the interactions of the user with the product.
2. System – The hardware interface of the product.
3. User – The person or community who uses this portal.
4. Application – When a person or community requests for a conference room.
5. Identity number – A unique number assigned to a person or an organization by the government. For example-SSN, Aadhar Number, etc.
6. CRBS : Conference Room Booking System.
7. NITC : National Institute of Technology, Calicut

1.5 Document Conventions

1. Topics are center aligned at top of the page followed by their sequence number.
2. Topics are styled font family “Times New Roman” size 21.
3. Sub-Topics are starting with bold font and sequentially numbered in size 14 written in “Times New Roman”.
4. Context followed by sub-topics have the font family “Times New Roman” and a size is 12
5. In context bullets are used and they are written in “Times New Roman” with size 12.
6. Page breaks are given before coming on another topic.

1.6 References and Acknowledgments

1. R. S. Pressman, Software Engineering: A Practitioner’s Approach, 6/e, McGraw Hill, 2008.
2. T. C. Lethbridge and R. Laganiere, Object Oriented Software Engineering, 1/e, Tata McGraw Hill,2004.
3. Diagrams.net : Flow Chart Maker and Online Diagram Software. https://app.diagrams.net/
4. Android for developers :Android Studio. https://developer.android.com/

2 Overall Description

2.1 Product Overview

One of the most common challenges or complaints heard in a modern office is the unavailability of a conference room when you need one. The ones available would be either too small or lack the necessary equipment. Even if you find one, the duration for which you hold it depends on your position in the hierarchy or the criticality of the meeting agenda. Else, be prepared for “sorry, we need this room now”. With the use of this application, interested members of the NITC will be able to book a conference room in advance with the date and time slots of their choice so that they do not face difficulty in occupying the room later.

2.2 Product Functionality

The product implements the following functions:

1. Login and registration interface for representatives of a community.
2. Search availability of conference rooms.
3. Book the conference room.
4. Cancel the conference room.
5. Request for rescheduling of booking.
6. Admin can :
    a. View bookings.
    b. View available slots.
    c. Cancel a booking.
    d. View/accept/reject profile requests.
    e. View users database.

2.3 Design and Implementation Constraints

Design and implementation constraints taken into consideration are:

1. Web connection is reliable.
2. Login Id and Password entered by both individuals and community is correct.
3. Database server is currently up and running.
4. Users can either be individuals or representatives of a community.
5. Users can comprehend English.
6. Users don’t book unnecessarily.
7. User’s details are verified to interact with the system.

2.4 Assumptions and Dependencies

Various assumptions and dependencies taken into consideration are as follows:

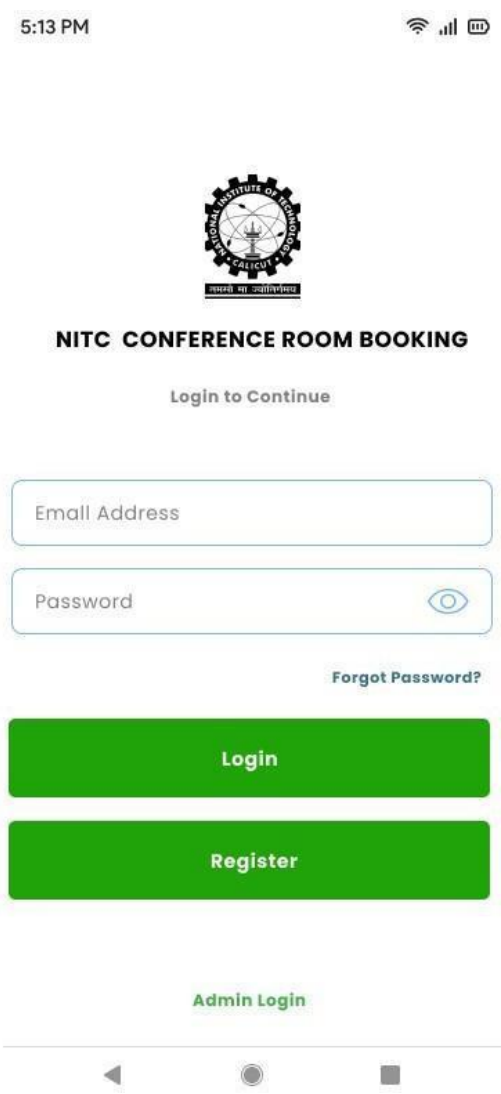
1. User has basic knowledge of using a web application.
2. User has a stable internet connection.
3. Users are aware of product deployment.
4. System runs on a supported machine and reacts to users in real time.

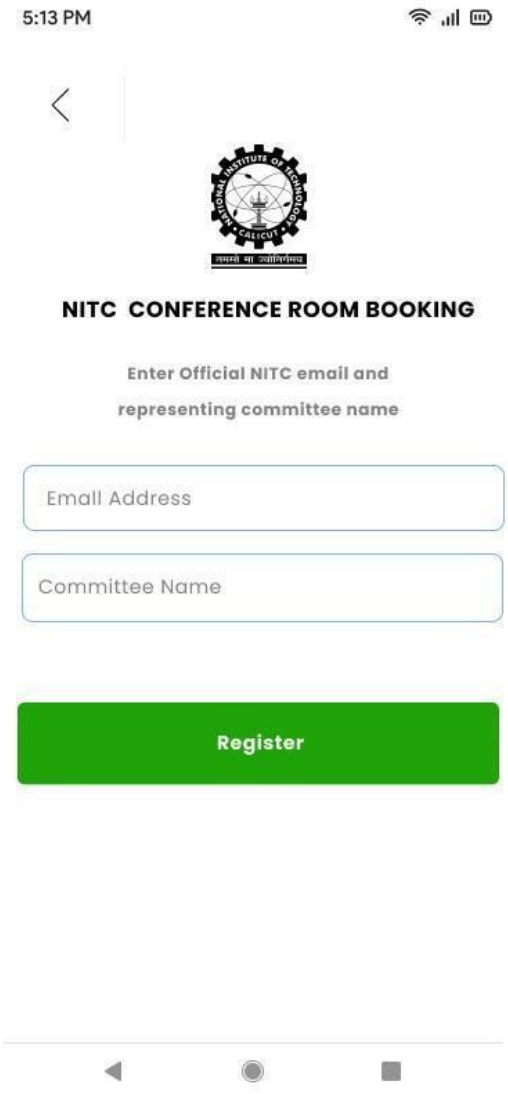
3 Specific Requirements

3.1 External Interface Requirements

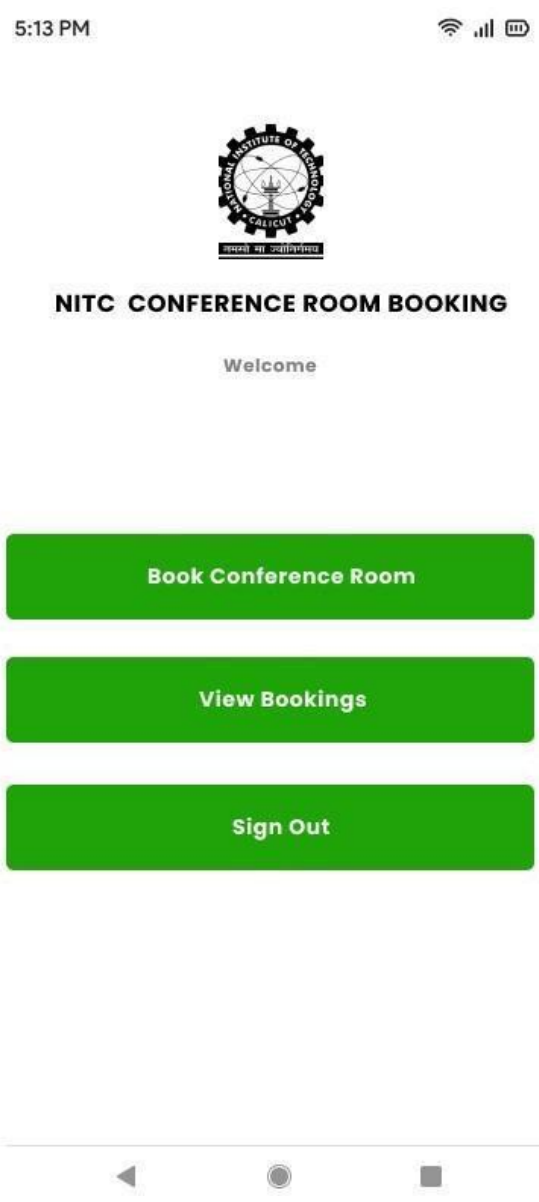
3.1.1 User Interfaces

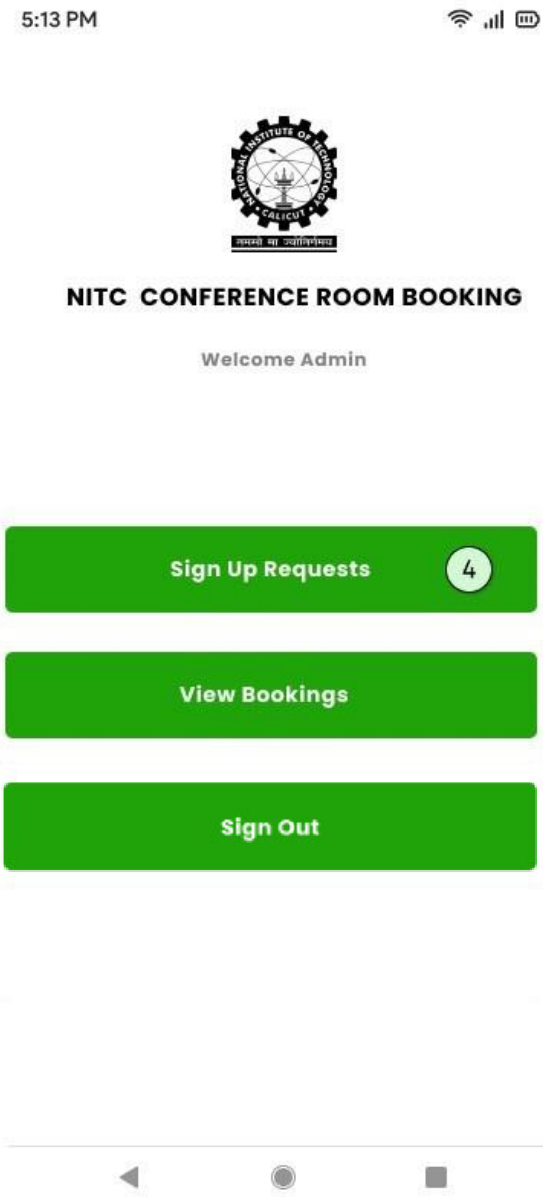
1) User Login and Registration.



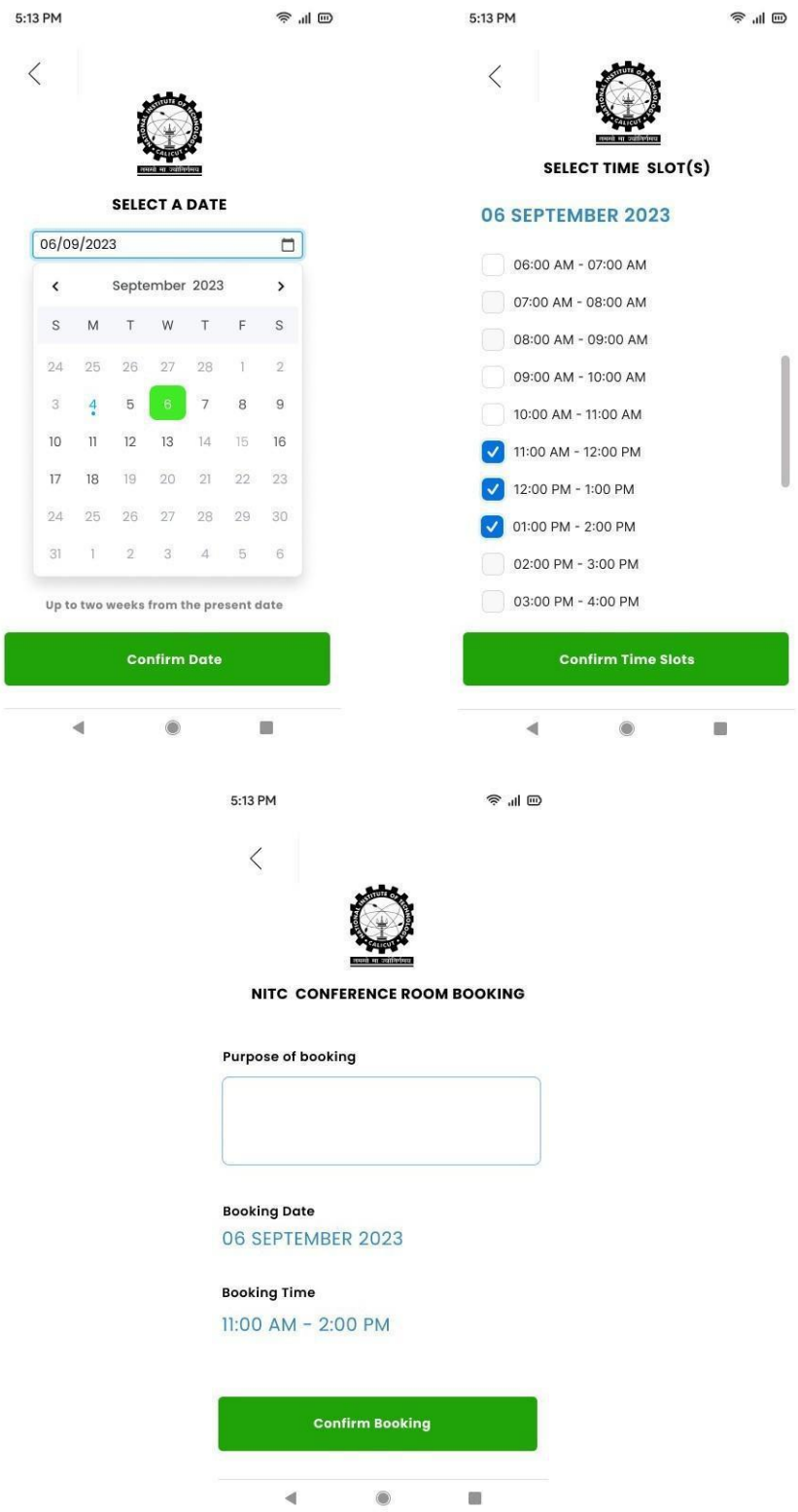


2) User Landing Page and admin landing page

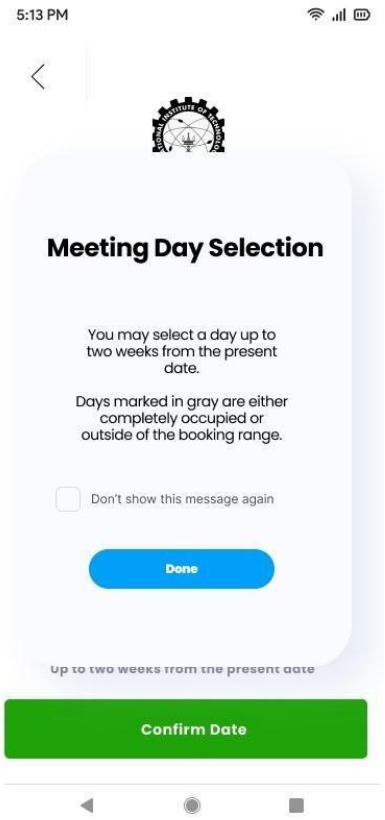


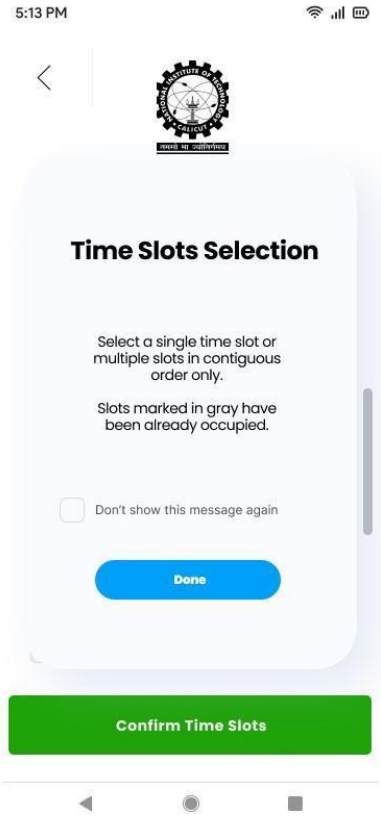


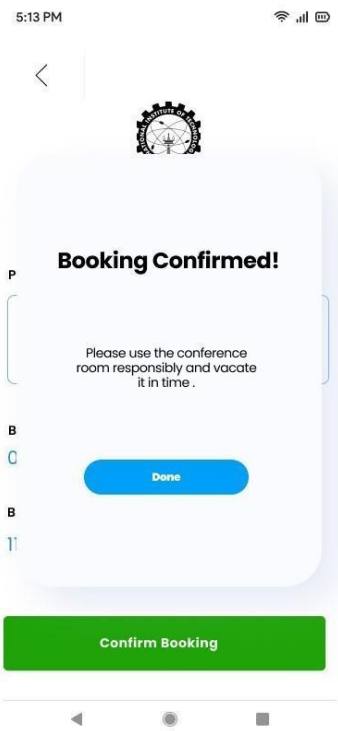
3) Room booking interface



4) Pop-up instructions for room booking process.





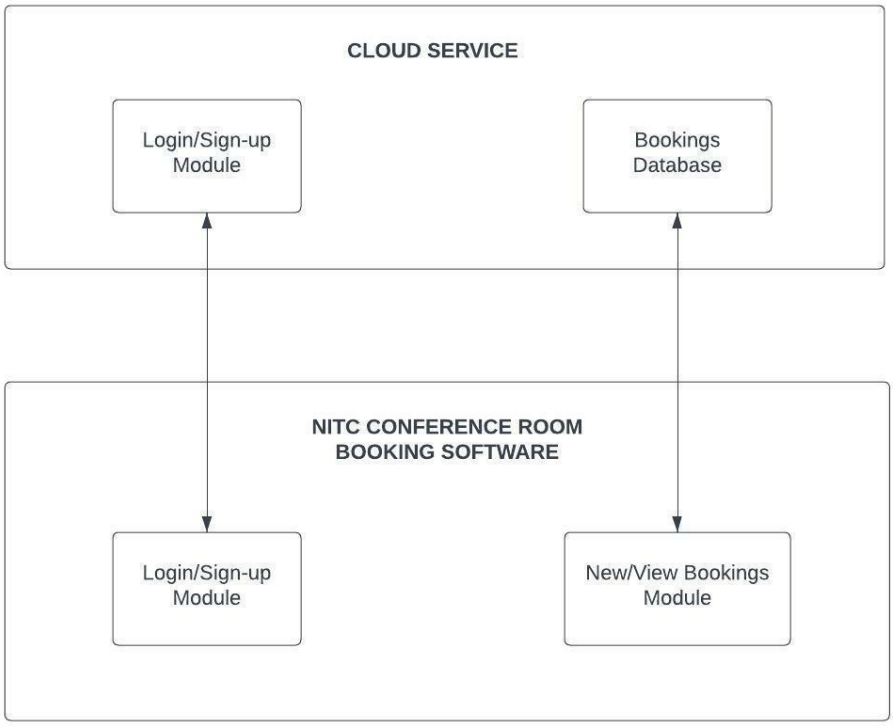


3.1.2 Hardware Interfaces

1) An Android OS supported device.

2) Functional web server to support activities of the application.

3.1.3 Software Interfaces



3.2 Functional Requirements

F1 : The system shall allow users to login/register into system.

F2 : The system shall be able to show users their upcoming bookings.

F3 : The system shall show users available slots for a day chosen.

F4 : The system shall allow users to choose multiple slots at a time for booking.

F5 : The system shall allow users to make bookings for available slots by taking appropriate details.

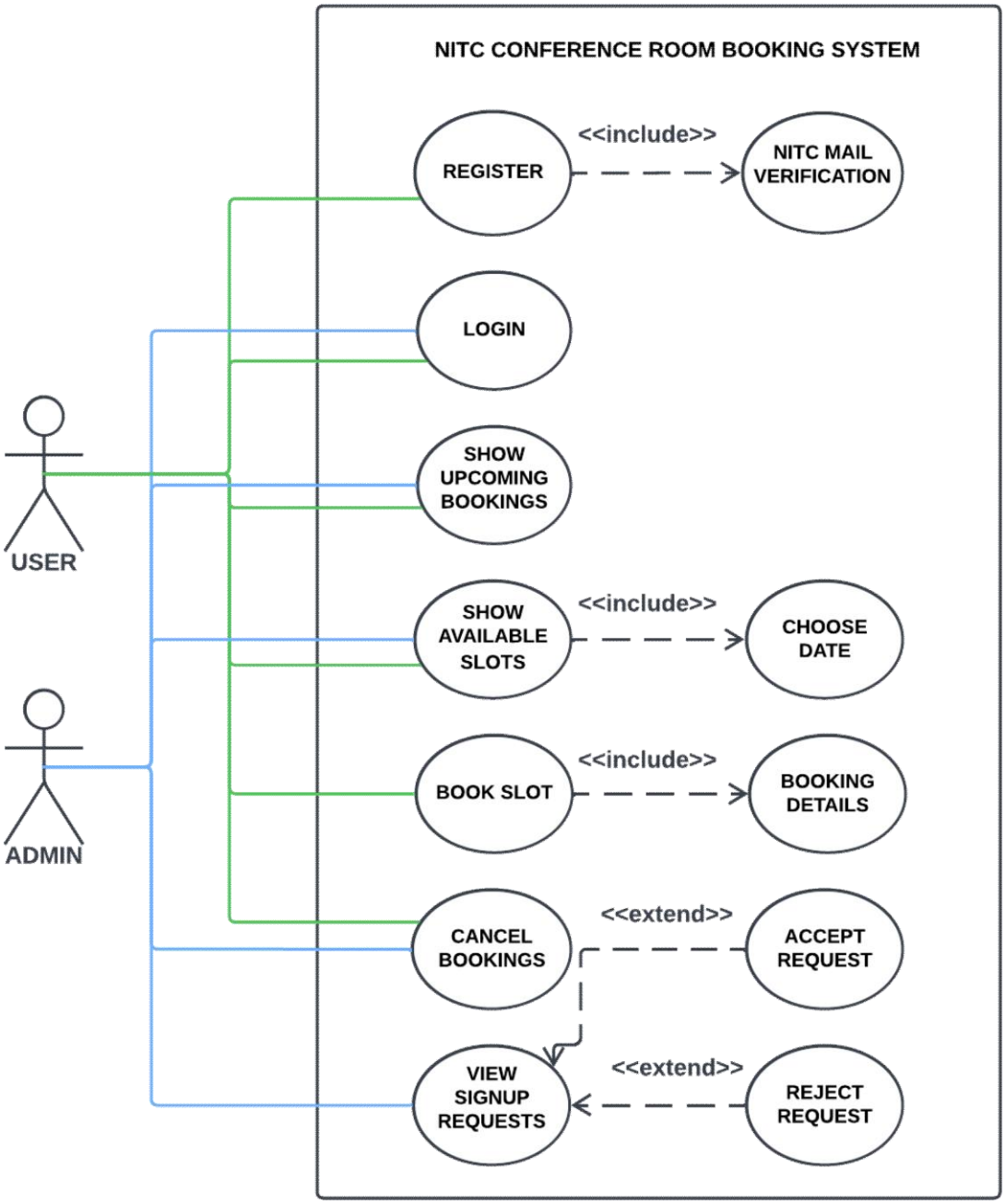
F6 : The system shall allow users/admins to cancel bookings.

F7 : The system shall allow admin to log into system.

F8 : The system shall allow admin to view upcoming bookings.

F9 : The system shall allow admin to view/accept/reject/signup requests.

3.3 Use Case Model



Use case diagram for NITC CRBS - Conference Room Booking System

3.3.1 Use Case #1 (register - U1)

Author – Arham Siddiki
Purpose - This use case aims to provide register/sign-up functionality for the system.

Requirements Traceability - F1,F7.

Priority - High. registration is a must for users to utilize the system. Without registration, they can't proceed further.

Pre-conditions - User must be a representative of a club/society/committee of the institute and must have an NITC mail ID of that club.

Post conditions - User will be registered on the system after the admin confirms his registration request.

Actors – Admin.

Flow of Events

1. Basic Flow - User will enter his club name, club email id then choose a password of at least 6 characters. Upon submitting info, his sign-up request will be received by the admin.
2. Alternative Flow - If mail is invalid or password is shorter than 6 characters, he'll have to re-enter it.

Includes - Verification of mail ID whether it's NITC group mail ID or not.

Notes/Issues - Any relevant notes or issues that need to be resolved.

3.3.2 Use Case #2 (login -

U2) Author – Arham Siddiki
Purpose - This use case aims to provide login functionality for the system.

Requirements Traceability - F1,F8.

Priority - High. Login is a must for utilization of the system. Without login, no data from the system can be extracted/viewed.

Pre-conditions - User must have login details i.e. email ID and password.

Post conditions - Users will be logged in and thus able to proceed further to next use cases.

Actors – Users, Admin.

Flow of Events

1. Basic Flow - User will enter his NITC mail id and password. Upon successful login, he'll be able to login to the system.
2. Alternative Flow - If login details are wrong, he'll be prompted to re-enter it.

Includes - Verification of mail ID whether it's NITC group mail ID or not.

3.3.3 Use Case #3 (Show upcoming bookings -

U3) Author – Rajkumar Rajput

Purpose - This use case aims to show the user the bookings he has upcoming.

Requirements Traceability - F2,F8.

Priority - Medium. Users must stay known of the bookings they've made.

Pre-conditions - Users must be logged in.

Post conditions - User will be shown his upcoming bookings. Here he can select a booking and choose it to be canceled or just view details.

Actors – Users, Admin.

Flow of Events

1. Basic Flow - User will be shown his upcoming bookings. Here he can select a booking and choose it to be canceled or just view its details.

3.3.4 Use Case #3 (Show slots -

U4) Author – Arham Siddiki

Purpose - This use case aims to provide users with details of available slots on a day.

Requirements Traceability - F3,F4.

Priority - High. For booking, users must be able to see available free slots.

Pre-conditions - Users must be logged in.

Post conditions - Users will be shown the available slots of a particular day.

Actors – Users, Admin.

Flow of Events

1. Basic Flow - User will choose a date and the system will show him the available slots for the day. Here he can choose multiple slots to be booked.

Includes - Choosing a date by user.

3.3.5 Use Case #5 (Book slots -

U5) Author – Arham Siddiki

Purpose - This use case aims to enable users to book Conference rooms.

Requirements Traceability - F4,F5.

Priority - High. Users must be able to book slots of his choice.

Pre-conditions - Users must be logged in. Slots must be selected by the user for whom booking is to be made. Users must be ready with details such as Name, Contact number, Committee, purpose of booking, etc.

Post conditions - The slots chosen will be successfully occupied by the user.

Actors – Users.

Flow of Events

1. Basic Flow - User will choose slot(s) of a particular day. Upon choosing to book, he'll be asked to supply some necessary details. After providing details, slot(s) will be confirmed for booking.

Includes - Choosing slot(s) by user.

3.3.6 Use Case #6 (Cancel booking -

U6) Author – Joel L Ralte

Purpose - This use case aims to provide the user/admin with an option canceling the booking.

Requirements Traceability - F2,F6,F8.

Priority - High. There might be chances that the purpose for booking a conference room is no longer there or there might be some changes in event plan. So booking must be flexible.

Pre-conditions - Users must be logged in.

Post conditions - Users will be able to cancel the booking.

Actors – Users./admin.

Flow of Events

1. Basic Flow - User will choose a booking then cancel it.

Includes - Choosing a booking by user/admin.

3.3.7 Use Case #7 (View signup requests -

U7) Author – Arham Siddiki

Purpose - This use case will show admin the requests made by users for signup. He can accept/reject their requests.

Requirements Traceability - F9.

Priority -High. Profile verification is mandatory as no user can use the system without verification of their profiles.

Pre-conditions - Admin must be logged in.

Post conditions - Profile will be accepted/rejected by admin. In case of acceptance, the user will be able to login to the system.

Actors – Admin.

Flow of Events

1. Basic Flow - Admin will see a list of requests. He will choose whether to accept/reject them.

Extend - Admin can cancel/accept that request.

4 Other Non-functional Requirements

4.1 Performance Requirements

Hardware Requirements

1. Viewing screen – Desktop Monitor or portable computer screen.
2. Input tools – Keyboard and Mouse.

Software Requirements

User can interact with the software through the following functionalities:

1. Viewing web pages:
   Web browsers: Chrome, Safari, Firefox etc.
2. Interaction - High speed internet connection, HTTPS, TCP

4.2 Safety and Security Requirements

- User login authentication is implemented with the user's email and password.
- User sign-up verification is not yet implemented with this version of the product. But the user should be verified with its identity number, mobile number, and email.
- Admin may delete a job provided or any user from the database if he/she finds any vulnerability with the system.
- *Users can cancel their conference room booking, before canceling booking they need to enter the reason behind canceling.*

4.3 Software Quality Attributes

4.3.1 Reliability: The system processes the queries by the user and responds in real time.
4.3.2 Secure: User is verified with their email and mobile number, hence user's security is not compromised.
4.3.3 Adaptability: As the product is independent of the platform, it requires only a web browser and secure connection to work.

Appendix A - Activity Log

19th January 2023 project discussion	2:30 PM- 4:00 AM
20th January 2023 Discussion on forms in the product to be created	12:00 PM-01:00PM
21th January 2023 SRS documentation discussion	08:00PM-9:00PM
22th January 2023 Completion of remaining work in SRS documentation	11:00AM-12:00PM
23th January 2023 SRS documentation identifying use-cases	08:00 PM-9:30 PM
28th January, 2023 SRS documentation: Re-iterating all use cases and making necessary changes.	6:00 PM-10:00 PM

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Design Document

for

NITC Conference Room Booking System

Version 2.0

Prepared by Team 15:
(Based on SRS Version 2.0 prepared by Team 12)

Anuj Singh Kushwaha	**M2106CA**	**anuj_m210661ca@nitc.ac.in**
Sandeep Gupta	**M2106CA**	**sandeep_m210669ca@nitc.ac.in**
Komal Gupta	**M2107CA**	**komal_m210703ca@nitc.ac.in**

Project Owner: **ABHINAV SUDHANSHU**

Course: **CS4096 Software Engineering Laboratory**

Date: **09-02-2023**

CONTENTS

GLOSSARY

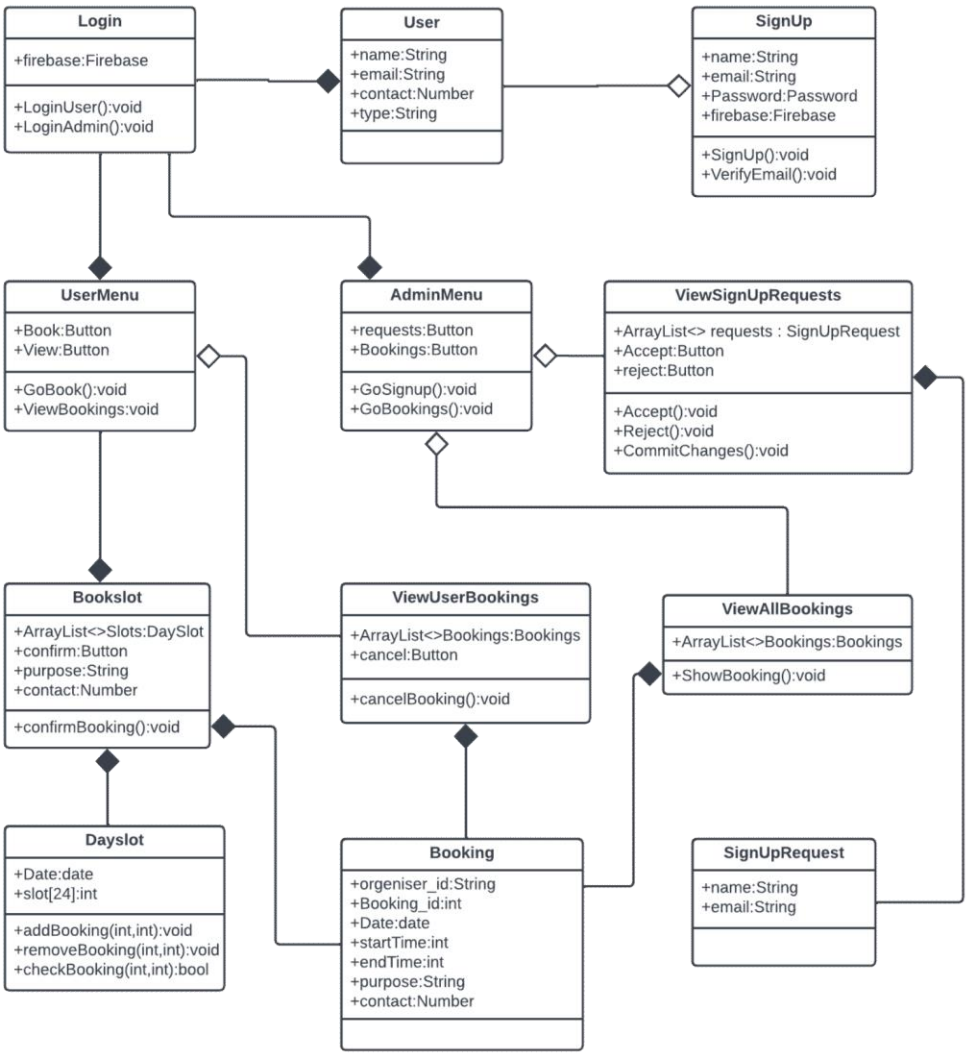
UML Diagrams	A UML diagram is a diagram based on the UML (Unified Modelling Language) with the purpose of visually representing a system along with its main actors, roles, actions, artefacts or classes, in order to better understand, alter, maintain, or document information about the system. Some of the diagrams used are- class diagram, object diagram, use case diagram, sequence diagram.
ER Diagram	An Entity Relationship (ER) Diagram is a type of flowchart that illustrates how “entities” such as people, objects or concepts relate to each other within a system
Prototyping	Prototyping is an experimental process where design teams implement ideas into tangible forms from paper to digital.
Technology Stack	A tech stack is the combination of technologies a company uses to build and run an application or project.
OOPs	Object Oriented Programming
RDBMS	Relational Database Management System
NITC	National Institute of Technology, Calicut
CRBS	Conference Room Booking System

1. Detailed Design through UML diagrams

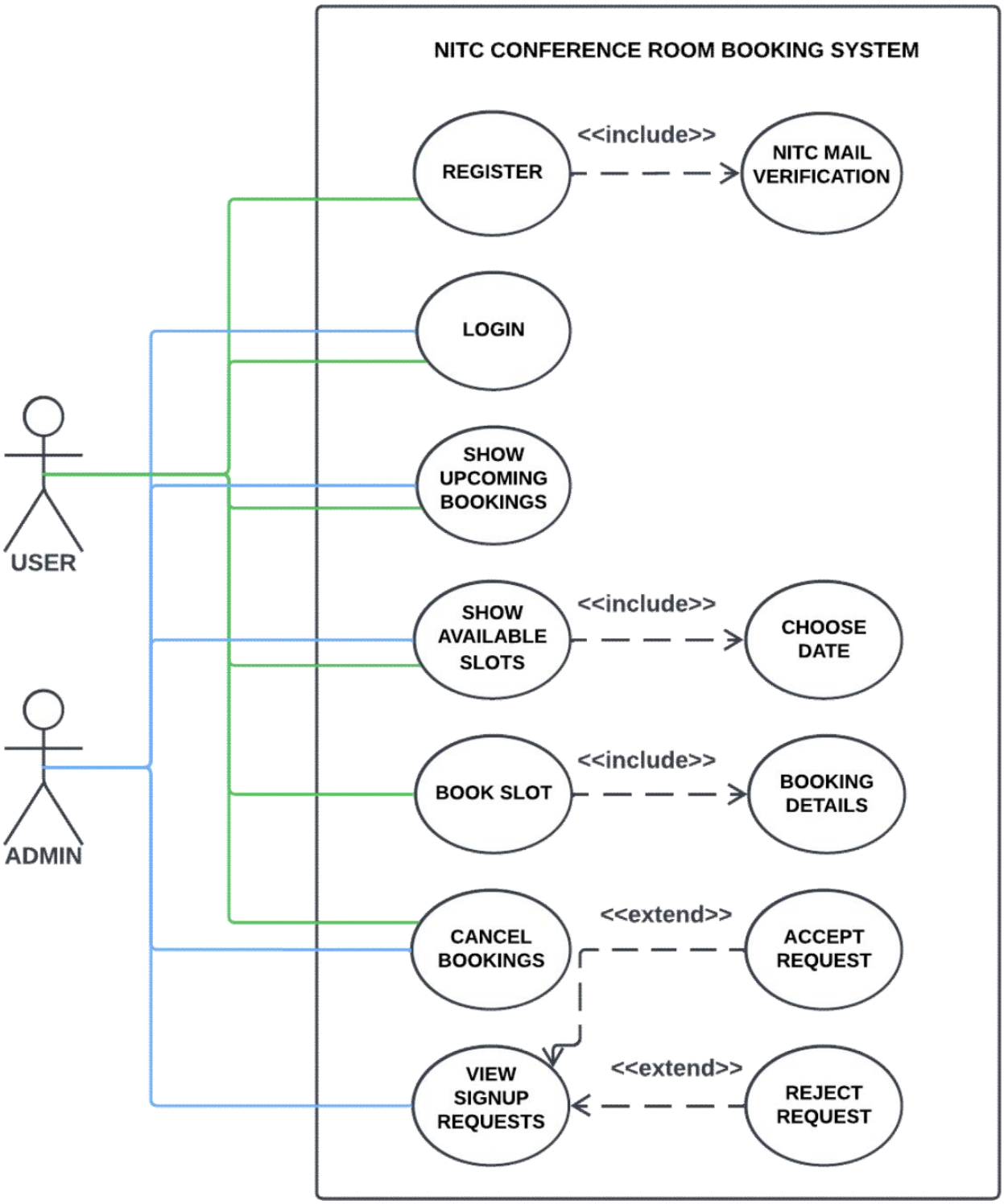
1.1 System model using Class Diagram

Class Diagram in the Unified Modelling Language is a type of static structure diagram that describes the structure of a system by showing the system's classes, their attributes, operations (or methods) and the relationships among classes.

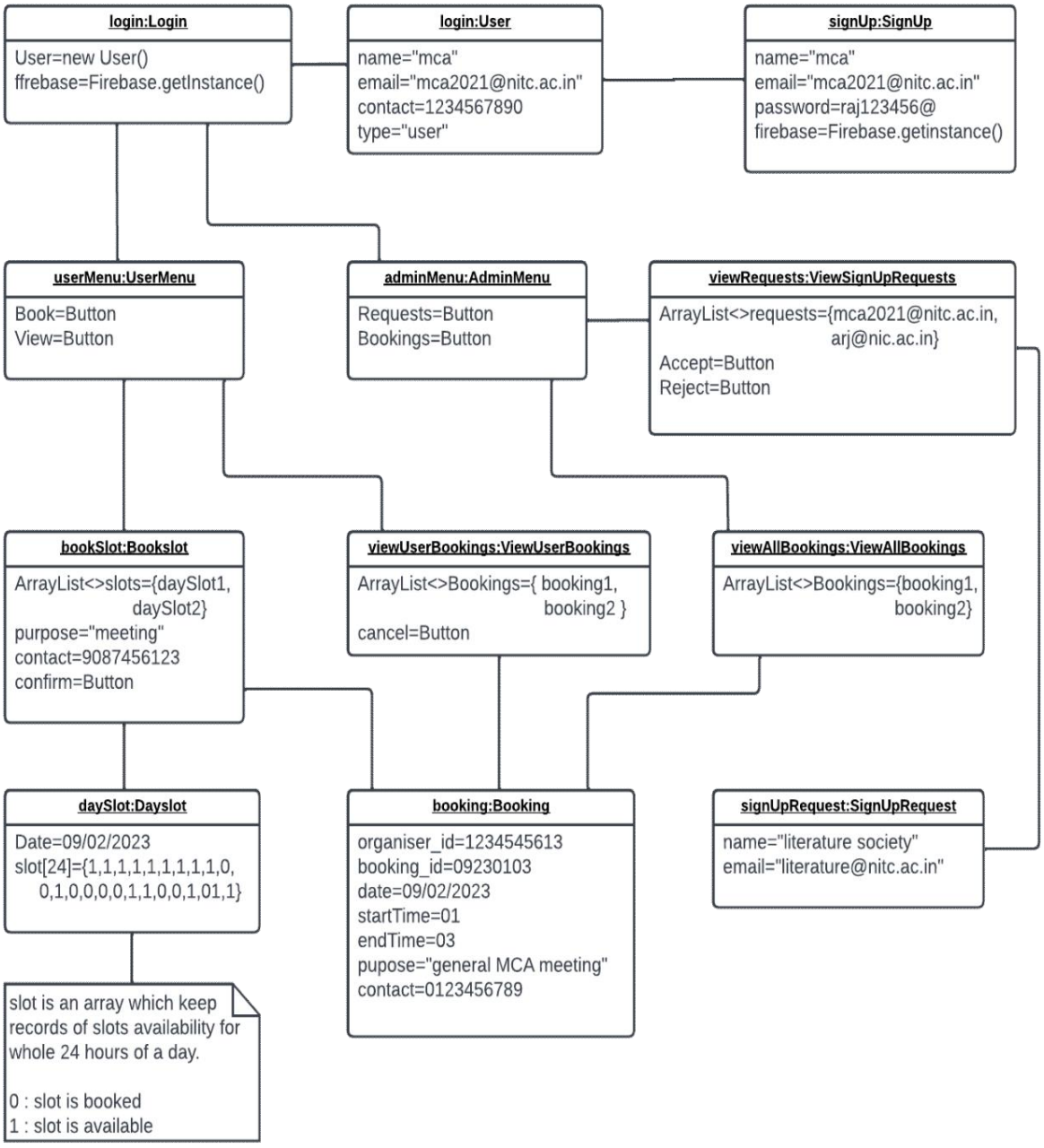
1.1.1 Class Diagram



1.2 Responsibilities - Use Case Diagram



1.3 Static snapshot of the system - Object Diagram

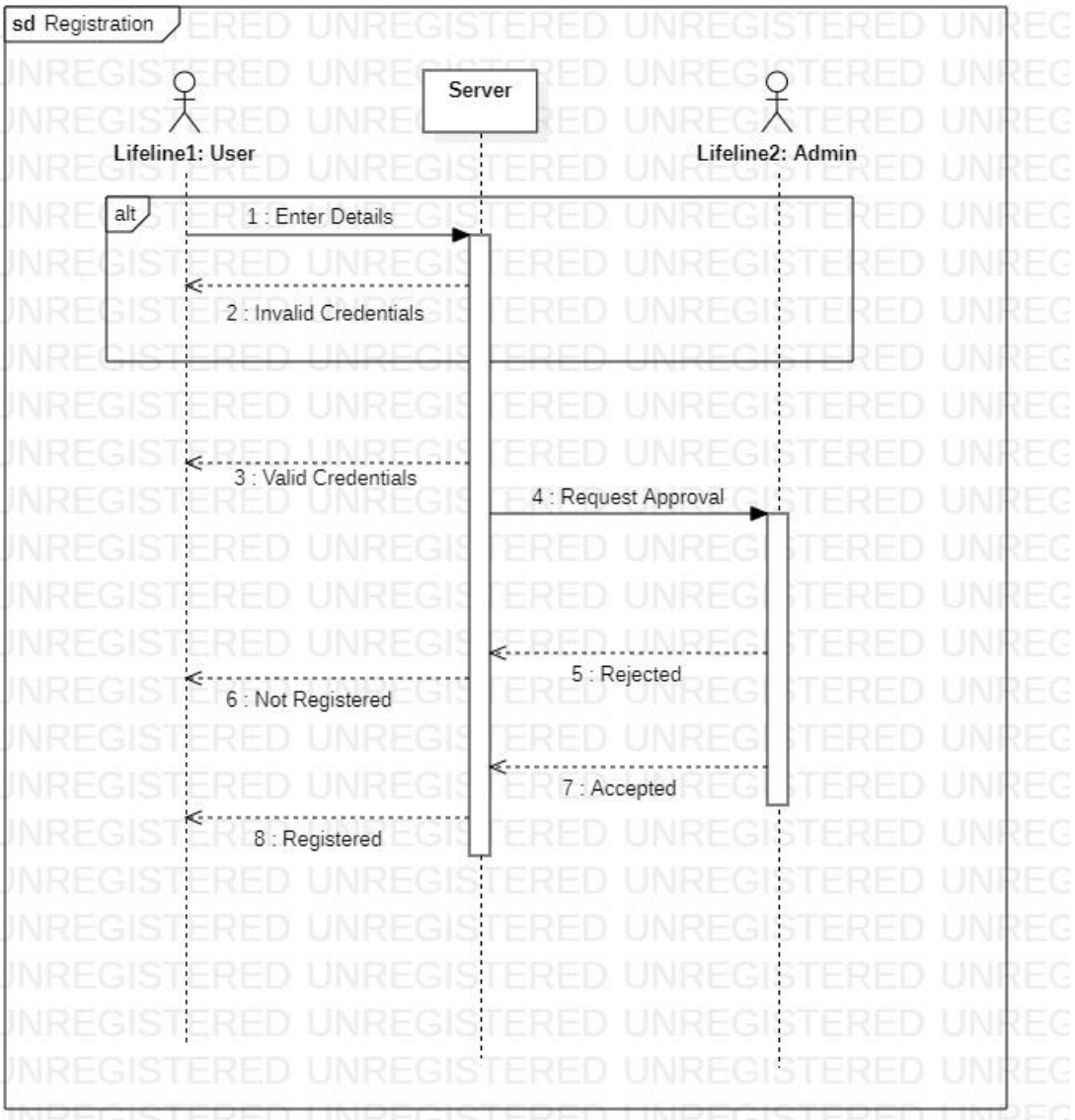


1.4 System Interactions through Sequence Diagrams

Sequence diagrams are interaction diagrams that show the sequence of messages exchanged by the set of objects performing a certain task. A sequence diagram shows, as parallel vertical lines (lifeline), different processes or objects that live simultaneously, and as horizontal arrows, the messages exchanged between them, in the order in which they occur.

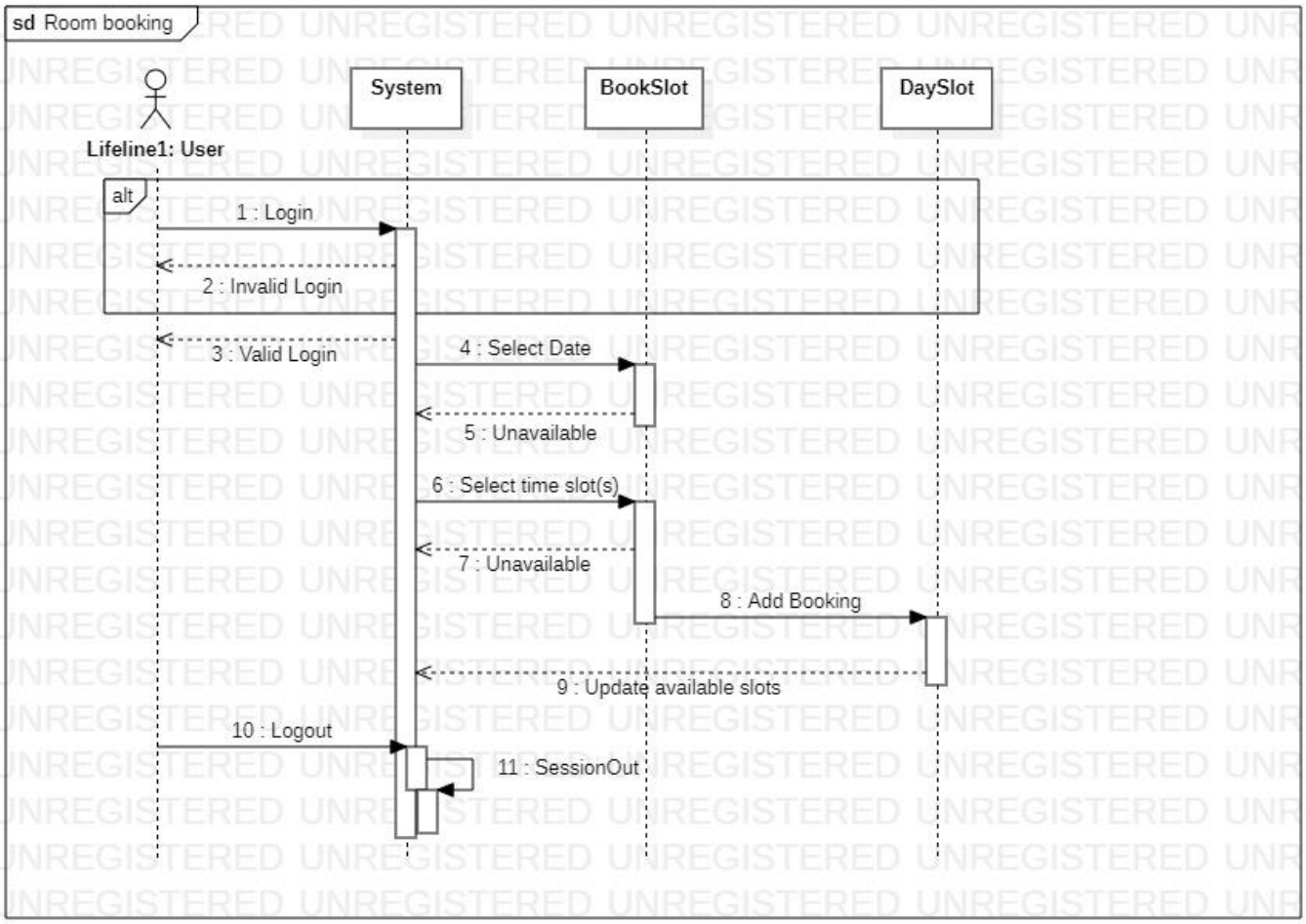
1.4.1 Registration Process

System will take the community name, email, password and password confirmation from the user. On validating details successfully, a user account will be created.



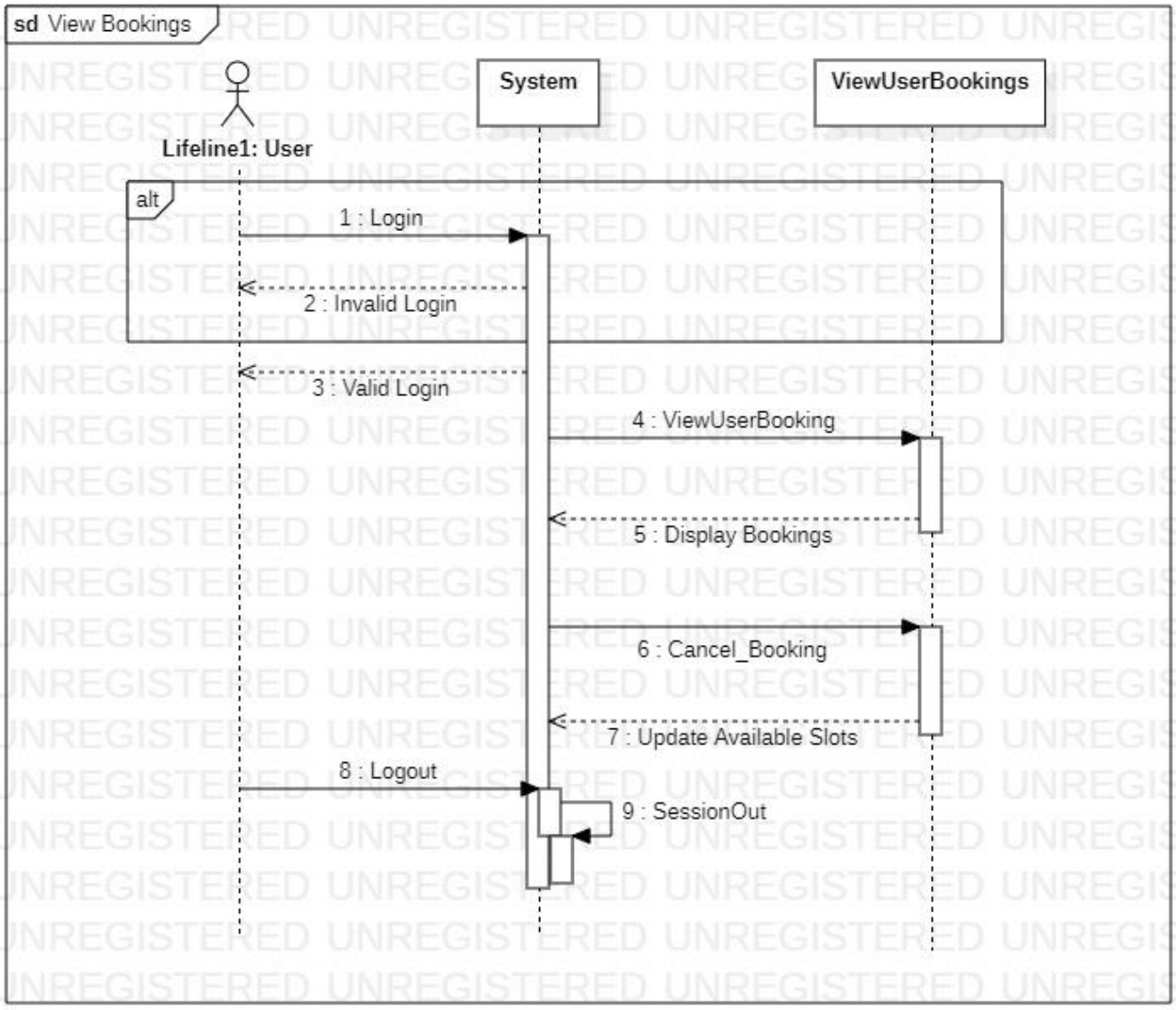
1.4.2 Slot Booking

Users will choose a date then choose slots of that day. On providing a valid purpose and contact number, he will book a slot successfully.



1.4.3 View Bookings

User will be shown his bookings on choosing view booking options while he's logged in. On selecting a booking, he can get the option of canceling that booking.

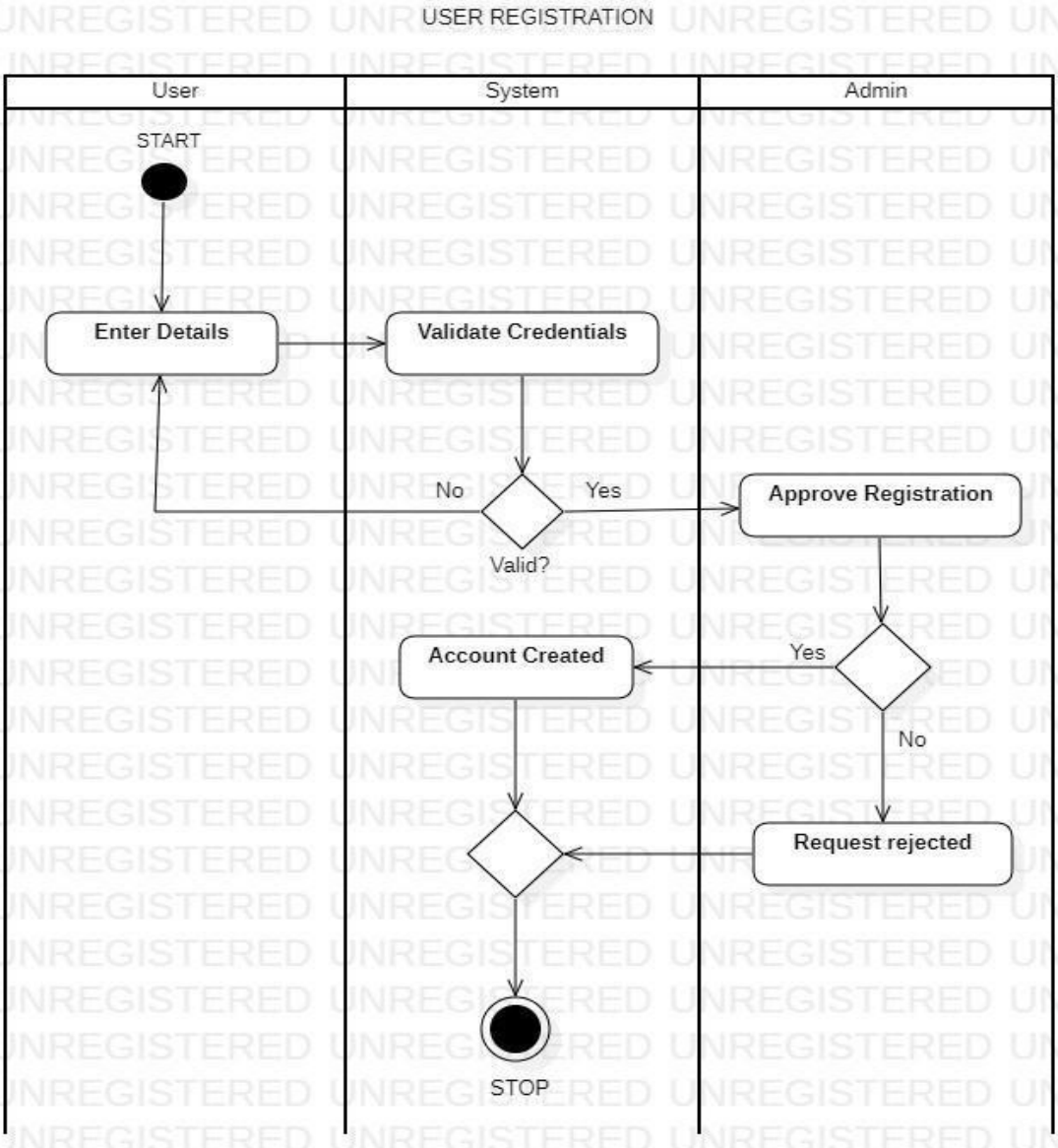


1.5 Control and Data Flows through Activity Diagrams

Activity diagram is another important diagram in UML to describe the dynamic aspects of the system. Activity diagram is basically **a flowchart to represent the flow from one activity to another activity**. The activity can be described as an operation of the system.

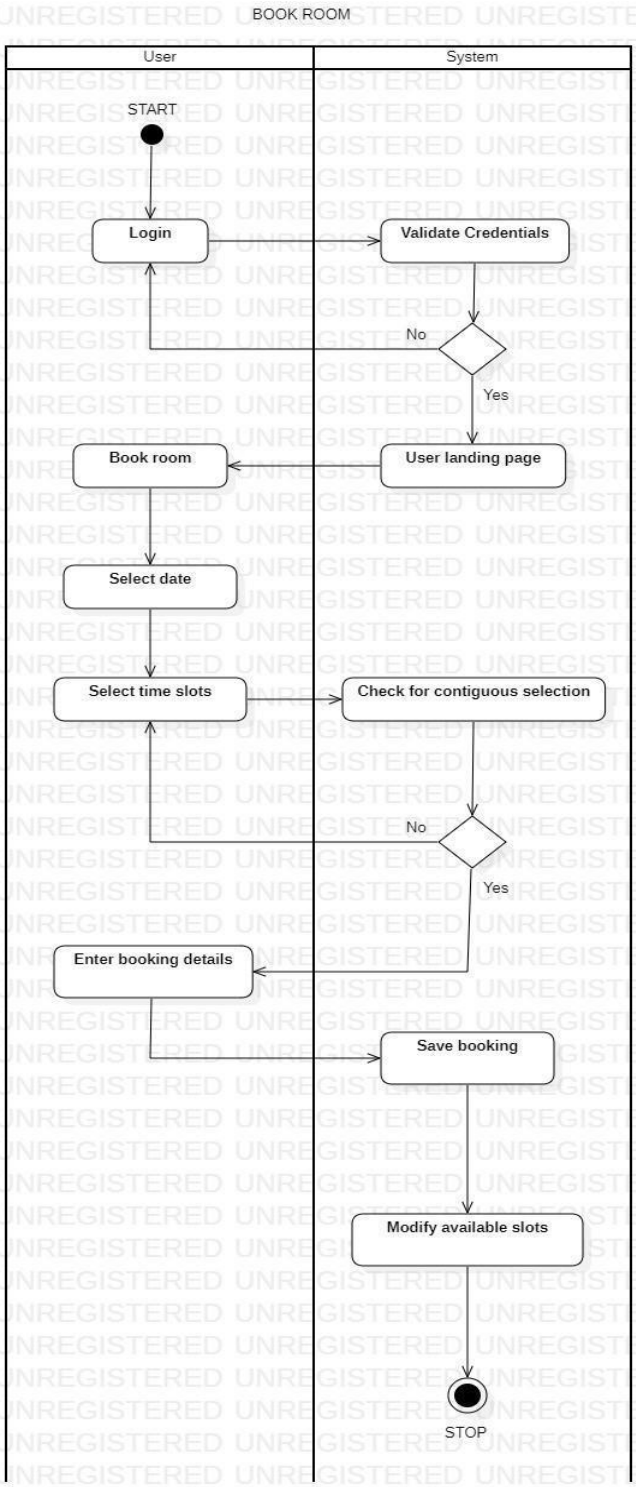
1.5.1 Registration Activity

User will give the community name, email, password and password confirmation from the user. On validating details successfully, a user account will be created.



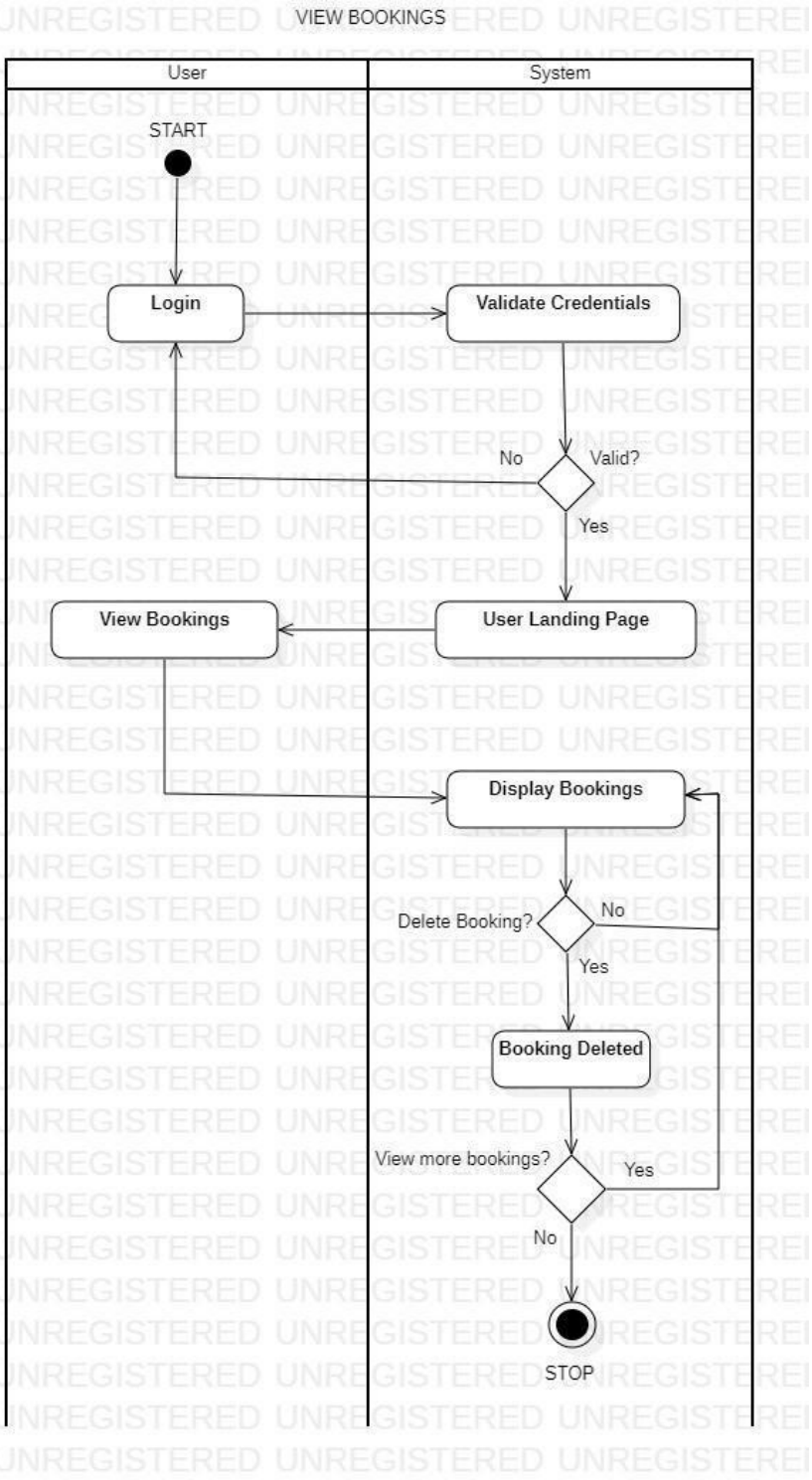
1.5.2 Book Slot

While the user is logged in, he can book slots by choosing a date then available slots of that date and finally providing the purpose of booking and contact number.



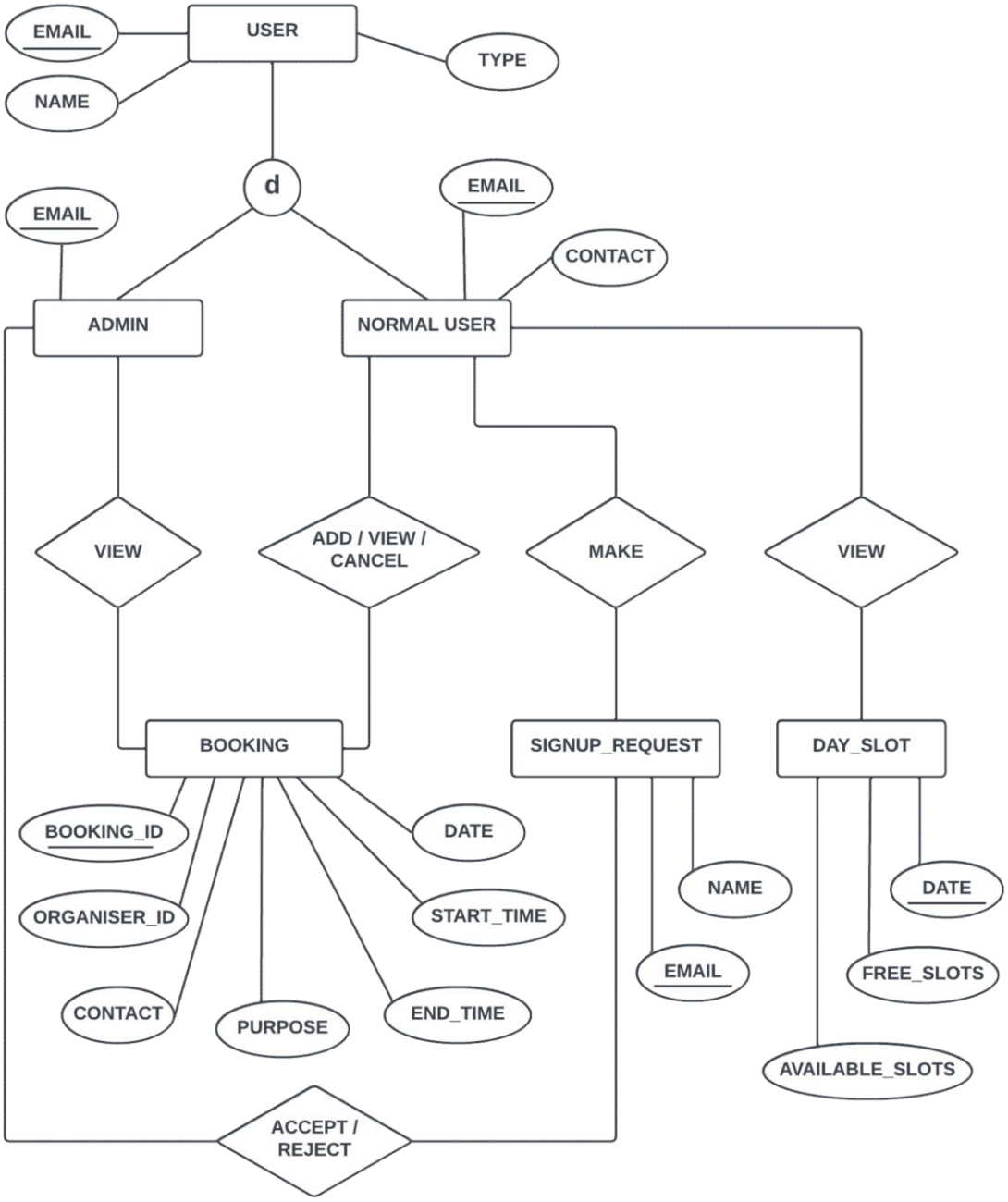
1.5.3 View Bookings

User will be shown his bookings on choosing view booking options while he's logged in. He'll also be provided with the option of canceling that booking upon clicking that booking.



2. Database Design

2.1 ER Diagram



3. Implementation Plans

3.1 Technology Stack

Software platform used :

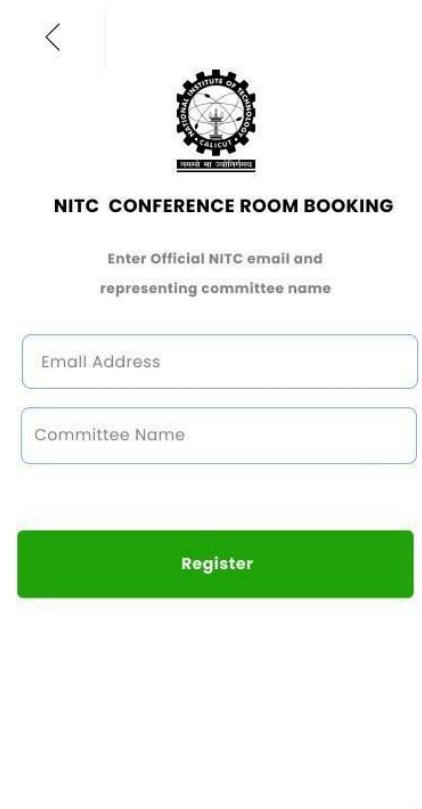
For writing source codes : Android Studio
For DBMS : Firebase
For cloud services : Firebase

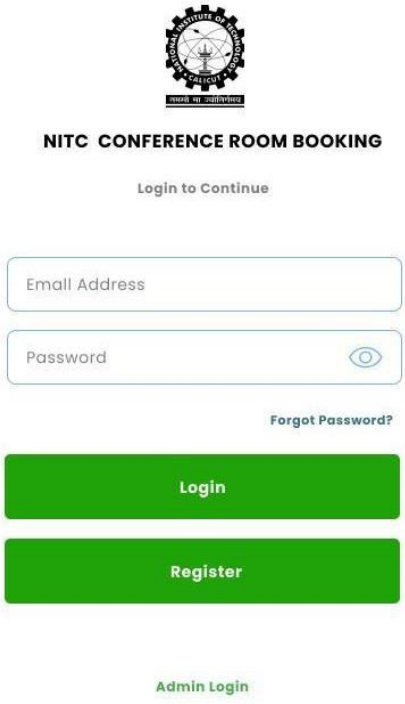
Programming language used :

For writing source codes : Java
For designing/layout : XML

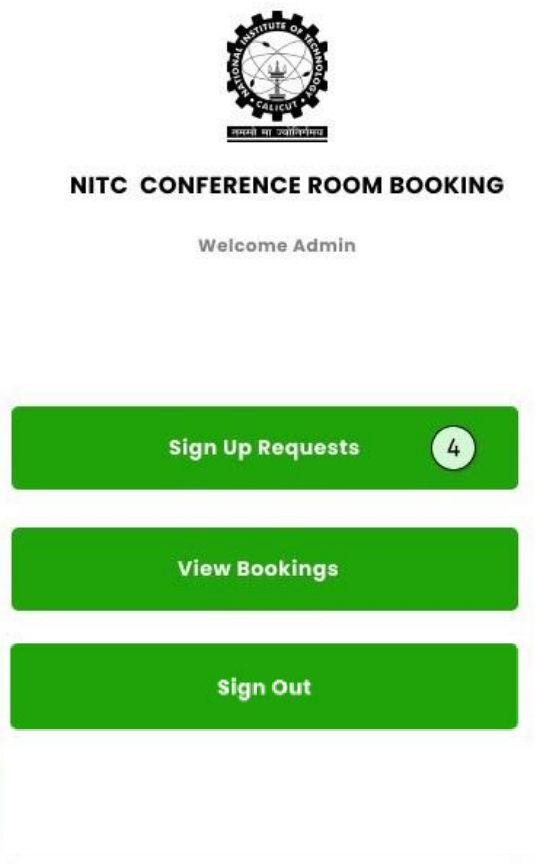
3.2 User Interface Prototyping

1. User signup and login page UI.

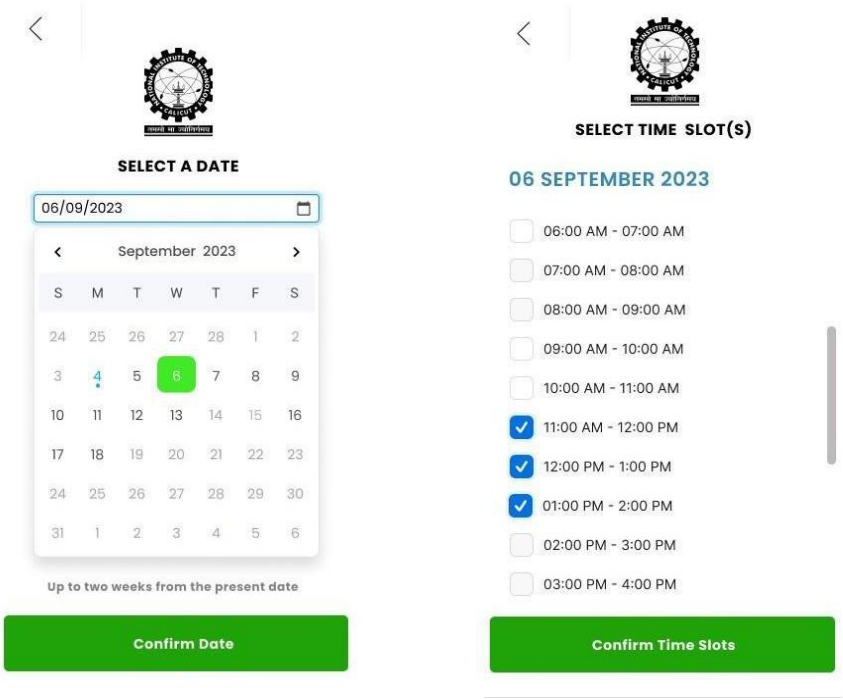




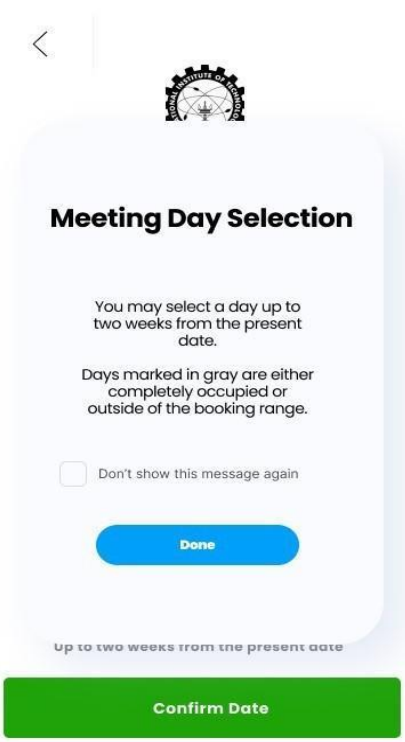
2. User and Admin Home page UI.

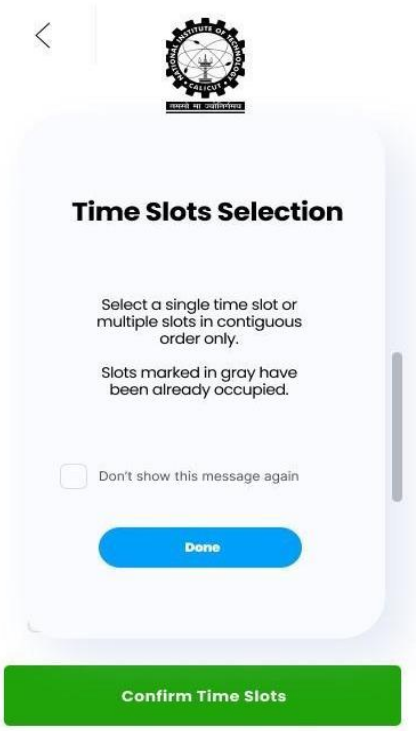


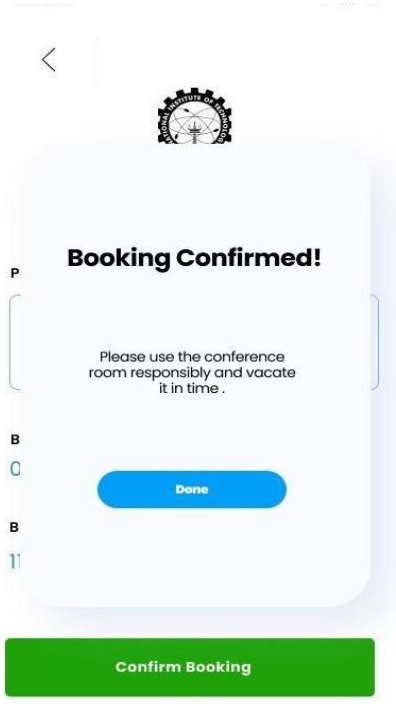
3. Room booking by user UI.



4. Pop-up instructions for room booking process.I.







4. Test Cases

4.1 Test Case #1 (Test_login)

Author: Anuj Singh Kushwaha

Test Case Description:

Verify the validity of the user.

Pre-Conditions:

Users must have an NITC mail ID and corresponding password.

Test Steps:

Enter email ID.
Enter password.
Click the Login
button.

Test Data:

Email :literature@nitc.ac.in
Password : literature@123

Expected Result:

Users will be logged in.

Post Condition:

User will go to the User home page if his ID is verified and approved by the admin. Else he will be redirected to a page where it's shown whether his ID is not verified or pending approval by admin.

4.2 Test Case #2 (Test_signup)

Author: Komal Gupta

Test Case Description:

Create a new user in the system.

Pre-Conditions:

User must have an NITC mail ID of any NITC community and he must be representative of some community of NITC.

Test Steps:

Enter community name.
Enter email ID.
Enter password.
Confirm password.
Click the SignUp
button.

Test Data:

Name : Literature Society
Email :literature@nitc.ac.in
Password : literature@123
Confirm password : literature@123

Expected Result:

Users will be signed up.

Post Condition:

User will receive an email containing a profile verification link, profile will be activated once he clicks that link. Also the user profile will be endorsed to the admin for approval.

4.3 Test Case #3 (Test_bookSlot)

Author: Sandeep Gupta

Test Case Description:

Booking a slot by user.

Pre-Conditions:

User must be logged in

Test Steps:

Click the “Book Slot” option on the User Home Page.
Select any of the available dates as shown in the calendar and click “okay”. Select contiguous time slots and click “okay”.
Provide details asked such as
- Purpose
- Contact number

Click “submit”.
Room is booked for selected slots.

Test Data:

Date : 08/04/2023
Slots : 8:00 AM - 11:00 AM
Purpose : Literature society meet.
Contact : 9876543210

Expected Result:

The slots selected will be booked for users.

Post Condition:

The selected slots will be shown as occupied and the user will be able to see his booking inside the “View Bookings” section on his Home Page.

4.4 Test Case #4 (Test_cancelBooking)

Author: Sandeep Gupta

Test Case Description:

Cancelation of a booked slot by user.

Pre-Conditions:

User must be logged in and he must have an upcoming slot booked in his name.

Test Steps:

Click the “View bookings” option on the User Home Page.
Select any upcoming bookings being displayed.
Click “cancel”.
Slot is canceled for selected booking.

Test Data:

Date : 08/04/2023
Slots : 8:00 AM - 11:00 AM

Expected Result:

The slots canceled will be removed from the bookings window of the user.

Post Condition:

Canceled slot space will be shown as available in book slots.

4.5 Test Case #5 (Test_approveRequest)

Author: Sandeep Gupta

Test Case Description:

Approval of a user signup request by admin.

Pre-Conditions:

Admin must be signed in and there must be at least one signup request.

Test Steps:

Click the “View Signup Requests” option on the Admin Home Page.
Signup requests made by various users will be shown.
Click “accept” corresponding to a profile to accept it.
User is approved by the admin.

Test Data:

User name : literature society
Email : literature@nitc.ac.in

Expected Result:

Users will be approved and now will be able to login hassle free.

Post Condition:

User profile will be removed from the signup requests section.

4.6 Test Case #5 (Test_viewBookings)

Author: Sandeep Gupta

Test Case Description:

User will view the bookings made by him.

Pre-Conditions:

Users must be signed in.

Test Steps:

Click the “View bookings” option on the User Home Page.
Select any of the bookings being displayed.

Test Output Data:

Date : 13/03/2023
Slots : 6:00 PM - 7:00 PM

Date : 24/03/2023
Slots : 2:00 PM - 4:00 PM

Date : 08/04/2023
Slots : 8:00 AM - 11:00 AM

Expected Result:

Users will see all bookings made by him including past one year bookings as well as upcoming bookings.

Post Condition:

System will fetch bookings data of a user from a cloud database and display it to the user.

5. Traceability

		Test Cases						Design Elements					
		1	**2**	**3**	**4**	**5**	**6**	**SD1**	**SD2**	**SD3**	**AD1**	**AD2**	**AD3**
REQUIREMENTS	**1**	X	X			X		X			X		
	2						X			X			X
	3			X					X			X	
	4			X					X			X	
	5			X					X			X	
	6				X					X			X
	7	X				X							
	8						X			X			X
	9		X			X		X			X		

6. References

1. R. S. Pressman, Software Engineering: A Practitioner's Approach, 6/e, McGraw Hill, 2008.
2. T. C. Lethbridge and R. Laganiere, Object Oriented Software Engineering, 1/e, Tata McGraw Hill,2004.
3. Diagrams.net : Flow Chart Maker and Online Diagram Software. https://app.diagrams.net/
4. Android for developers :Android Studio. https://developer.android.com/
5. Lucid Chart : Diagramming Online Application. https://lucid.app/lucidchart/