

## ACKNOWLEDGEMENT

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Our most heart full thanks go to **Mr. Sangram Patil** who gave all the required support and kind coordination to provide all the necessities like required hardware, internet facility and extra lab hours to complete the project and throughout the course up to the last day here in C-DAC ACTS, Pune.

## **Abstract**

LocalLens is a web-based platform facilitating PGs, hostels and mess owners' business growth and helping users, especially students, find nearby options effortlessly. Offering dual logins for Users and Owners of PGs, hostels and mess , the system allows users to explore PGs, hostels, mess options by location and view detailed rooms, beds and menu. PGs, hostels, mess owners benefit from scaling features, including menu management and user preference analysis. The system guarantees 24/7 availability, 99.999% uptime, and maintains data persistence using commercial database software. It employs a portable UI ( ReactJS, TailwindCSS ), deployable on various servers and OS or cloud platforms (AWS). Access is restricted to registered users and owners, with secure login pages to thwart attacks. Durability is ensured through data retention, backup, recovery, and cache mechanisms for enhanced performance. Efficiency is maintained during peak hours via load balancing and transactional isolation. LocalLens's modular design promotes reusability and cohesion, offering scalability for a consistent user experience. With a focus on security, efficiency, and user-friendliness, LocalLens is poised to revolutionize PGs, hostels, mess discovery and empower owners in their business endeavors.

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# 1. INTRODUCTION

LocalLens is a web-based application designed to revolutionize the PGs, hostels, mess industry by offering a seamless platform for both users and owners. With dual login options for users and owners, it facilitates easy exploration of options for PGs, hostels, mess within a specific locality or user-defined location. Users can access detailed information such as regular and today's menu, and discover top-rated PGs, hostels. For mess owners, LocalLens provides tools to scale up their business, including features to update menus and analyze user requirements through data and ratings. The system boasts 24/7 availability with 99.999% uptime, employs commercial database software for data persistence, and ensures maintainability through separate environments for production, testing, and development. The platform offers a portable user interface and can be deployed across various servers and cloud services. Accessible only to registered users and owners, it prioritizes durability with backup and recovery mechanisms, efficiency during peak hours through load balancing, and safety measures to secure user logins from potential threats. Designed with modularity and scalability in mind, LocalLens aims to provide a consistent and secure user experience while transforming the industry.

## **2. PROBLEM DEFINITION & SCOPE**

### **2.1 Problem Definition**

LocalLens aims to address several challenges faced by both owners and users in the context of finding, managing, and exploring PGs, hostels and mess options. The following problem areas have been identified:

#### **1. Limited Visibility for Users:**

- Users, especially students, face challenges in finding suitable options in their locality.
- Lack of a centralized platform makes it difficult for users to discover and explore various hostels and mess services.

#### **2. Business Scalability for PG, hostel and mess Owners:**

- Owners struggle to scale up their businesses due to a lack of online presence and efficient management tools.
- Inefficient methods of reaching potential customers hinder the growth potential of mess businesses.

#### **3. Ineffective Communication and Information Flow:**

- Users often lack information about the menu, ratings, and other details of mess services.
- owners find it challenging to communicate their offerings effectively to potential customers.

#### **4. Data Analysis for Business Improvement:**

- Owners lack tools to analyze user preferences and feedback to enhance their services.
- Absence of a systematic approach to gathering and analyzing data for business growth and customer satisfaction.

#### **5. Infrastructure and Accessibility Issues:**

- Lack of a reliable and accessible platform for users to explore options.
- Owners face challenges in managing and updating information efficiently due to limited technical infrastructure.

#### **6. Security Concerns:**

- Users and mess owners need assurance regarding the security of their data and transactions.
- The potential vulnerability of the system to malicious attacks and phishing.

#### **7. Operational Challenges:**

- System downtime and inefficient load balancing may result in a poor user experience during peak hours.
- Lack of modularity may lead to difficulties in system maintenance and future enhancements.

#### 8. Deployment Flexibility:

- The system needs to be adaptable to various deployment scenarios, including different servers and cloud environments.
- The flexibility to deploy the system on different operating systems and cloud platforms is crucial for widespread usability.

### Scope

#### 1. User Authentication:

- Implement two login options: Users and PGs, hostels and mess Owners, ensuring access only for registered individuals.

#### 2. User Exploration:

- Allow users to explore PGs, hostels and mess options based on their current location or by manually entering a location.

#### 3. Filtering and Sorting:

- Provide users with the ability to filter PGs, hostels and mess options based on ratings for a more personalized experience.

#### 4. PGs, hostels and mess Information:

- Display comprehensive information for each PGs, hostels and mess, including regular menu, today's menu and other relevant details.

#### 5. Top-Rated PGs, hostels and mess Display:

- Showcase top-rated options to users for quick decision-making.

#### 6. PGs, hostels and mess Owner Tools:

- Equip owners with tools to enhance their business, such as updating menus and analyzing user data.

#### 7. Non-Functional Requirements

- Ensure 24\*7 availability with 99.999% uptime, maintainability through commercial database software, and portability using React.Js .

#### 8. Security and Safety Measures:

- Implement secure user authentication, protect against malicious attacks, and maintain separate environments for production, testing, and development.

## 2.2 Goals & Objectives:

### Goals:

#### 1. User Experience Enhancement:

- LocalLens aims to provide a seamless and user-friendly experience for both users and PGs, hostels and mess owners, ensuring easy navigation and accessibility.

#### 2. Business Expansion for Owners:

- The primary goal is to empower PGs, hostels and mess owners in scaling up their businesses by attracting more customers through the platform, ultimately leading to increased revenue.

#### 3. Efficient Location-Based Search:

- Enable users to effortlessly find PGs, hostels and mess options in any locality, whether based on their current location or through manual input, fostering convenience and choice.

#### 4. Rating-Based Filtering:

- Allow users to filter PGs, hostels and mess options based on ratings, ensuring that they can make informed decisions by considering the experiences of others.

#### 5. Information Accessibility:

- Provide users with detailed information about bed, menus, including regular and daily offerings, helping them make dining choices that align with their preferences.

#### 6. Top-Rated Recommendations:

- Highlight and recommend the top-rated options to users, offering a curated selection based on positive reviews and ratings.

#### 7. Data-Driven Business Analysis Equip owners with tools to analyze user preferences and ratings, enabling them to adapt their services to meet customer expectations effectively.

### Non-Functional Goals:

1. High Availability:
  - Ensure LocalLens is available 24/7, with an uptime of 99.999%, guaranteeing continuous access for both users and owners.
2. Maintainability:
  - Implement a robust infrastructure using commercial database software, web servers, and separate environments for easy maintenance and updates.
3. Portability:
  - Provide a portable user interface using React.Js, and TailwindCSS, allowing users to access the application from various devices and deploy it to different platforms.
4. Accessibility and Security: Maintain a secure login system, restricting access to registered users and owners after authentication, safeguarding against malicious attacks and phishing.
5. Durability:
  - Implement backup and recovery mechanisms to retain user and owner data, ensuring data persistence over time.
6. Efficiency and Scalability:
  - Manage peak hours efficiently through load balancing, ensuring a consistent user experience irrespective of the system load. The system should be scalable to handle increased user traffic.
7. Modularity:
  - Design LocalLens with modular components, promoting reusability and flexibility. Modules should be loosely coupled and highly cohesive for efficient development and maintenance.
8. Safety:
  - Prioritize the security of user data, implementing best practices to protect sensitive information and maintaining separate environments for production, testing, and development to ensure isolation.

### **Objectives:**

1. Develop a web-based platform, LocalLens, with the primary objective of aiding PGs, hostels and mess owners in expanding their businesses and enabling users, especially students, to easily discover available mess options in their vicinity.
2. Implement a dual login system, allowing users and owners to access the platform, each with their unique set of functionalities.



3. Empower users to explore mess options based on their present location or manually entered preferences, providing a convenient search experience.
4. Enable users to filter PGs, hostels and mess options based on ratings, facilitating informed decision-making.
5. Furnish users with detailed information about PGs, hostels and mess facilities, including regular and today's menu, fostering transparency and user engagement.
6. Showcase top-rated mess establishments to users, enhancing their ability to choose high-quality options.
7. Facilitate PGs, hostels and mess owners in scaling up their businesses by offering features such as menu management, data analysis, and user feedback assessment.
8. Ensure the platform's 24\*7 availability with a 99.999% uptime, utilizing robust technologies and maintaining a secure and efficient user experience.

### **2.3 Major Constraints & Outcomes**

#### **Constraints**

8. **Data Privacy and Security:** Ensuring the confidentiality and security of user and owner data is a major constraint. Implementing robust encryption, secure authentication mechanisms, and protecting against potential data breaches are critical considerations.
9. **Scalability Challenges:** As the platform aims to provide a consistent user experience irrespective of load, scalability becomes a major constraint. The system must be designed to handle a growing number of users, PGs, hostels and mess owners, and data without compromising performance.
10. **User Authentication and Authorization:** Implementing a secure and efficient user authentication and authorization system is crucial. This involves validating user identities, managing access control, and preventing unauthorized access to sensitive information.

11. **Integration with External Services:** If the system relies on external services or APIs for features such as map integration, location services, or payment gateways, ensuring seamless integration and maintaining compatibility with these external services becomes a constraint.
12. **Regulatory Compliance:** Adhering to legal and regulatory requirements related to data protection, business operations, and any industry-specific regulations is a constraint. This includes compliance with data protection laws, safety regulations, and any other applicable standards.

**Outcomes :**

1. **Data Quality and Availability:** Ensuring high-quality data and its continuous availability is crucial for the success of LocalLens. Incomplete or inaccurate information about details, menus, beds and ratings could lead to dissatisfaction among users. Regular data audits and validation processes should be implemented to maintain data integrity.
2. **Integration with Owners:** Collaborating with owners to integrate their business data into the platform might face resistance or technical challenges. Establishing a streamlined onboarding process for owners and providing necessary support for data integration will be essential for the platform's success.
3. **User Adoption and Engagement:** Encouraging users, especially students, to actively use the platform and provide accurate feedback is a challenge. Implementing user-friendly features, incentives, and marketing strategies to boost user engagement will be critical. Regularly seeking user feedback for continuous improvement is also essential.
4. **Technological Infrastructure:** Building and maintaining a robust technological infrastructure, including accurate mapping algorithms, secure databases, analytics tools, and user interfaces, is crucial. Regular updates, security patches, and scalability measures should be implemented to ensure a seamless and secure user experience.
5. **User Interface and Accessibility:** Designing an intuitive and accessible user interface is key to attracting and retaining users. Ensuring accessibility for users with diverse abilities, including those with disabilities, requires adherence to web accessibility standards (WCAG). Conducting usability testing and incorporating user feedback will help refine the user interface for optimal user experience.
6. **Sustainability:** Long-term sustainability in terms of funding, resource allocation, and user engagement is a critical consideration. Developing a sustainable business model, exploring revenue streams, and establishing partnerships with relevant stakeholders will contribute to the continued success and growth of LocalLens. Regular assessments of resource requirements and user needs will inform strategic planning for sustainability.

# 3. SOFTWARE REQUIREMENT SPECIFICATION

**Document:**

System Requirement Specification Document

**Title:**

System Requirement Specification for LocalLens

**Team:**

Direct Customer, Indirect Customer, Architect, Business Analyst, Quality Assurance Team, System Analyst

**3.1 Proposed System:**

LocalLens aims to revolutionize the food service industry by providing a comprehensive web-based platform. The primary goal is to empower PGs, hostels and mess owners, enabling them to expand their businesses efficiently. Simultaneously, it seeks to enhance the dining experience for users, particularly students, by offering a quick and convenient way to discover all available options in their area with just a click.

**1. Benefits for Owners:**

For PGs, hostels and mess owners, LocalLens serves as a strategic tool for business growth. The platform equips them with features to scale up operations and gain insights into user preferences through data analytics and ratings analysis. By facilitating the addition of daily and regular menus, LocalLens becomes an essential companion for owners in managing and promoting their establishments effectively.

**2. User-Centric Exploration:**

On the user front, LocalLens focuses on simplicity and accessibility. Normal users can effortlessly explore options within their current location or any manually entered area. The system allows users to filter choices based on ratings, providing a curated selection. Information such as regular and today's menu is readily available, ensuring users make informed decisions about their dining choices.

**3. Top-Rated Recommendations**

LocalLens enhances user experience by showcasing top-rated PGs, hostels and mess options. This feature aids users in discovering the most popular and well-regarded establishments, aligning with their preferences. Through a user-friendly interface, LocalLens aims to make the process of finding the right both effortless and enjoyable.

#### 4. Technologically Advanced Infrastructure

The objective includes deploying a robust and technologically advanced system. With an emphasis on non-functional requirements, LocalLens guarantees 24/7 availability, employing commercial database software, and implementing backup and recovery mechanisms. The use of modern technologies such as React.Js, and TailwindCSS ensures a portable and seamless user interface accessible across various devices and platforms.

#### 5. Security and Safety Measures:

Lastly, LocalLens prioritizes the security of user data and system integrity. Only registered users and owners, authenticated through a secure login process, gain access to the platform. The system incorporates safety measures to protect against malicious attacks and phishing attempts. With separate environments for production, testing, and development, LocalLens ensures a secure and reliable user experience.

### **3.2 Scope:**

The LocalLens project aims to develop a web-based application facilitating owners in scaling their business and enabling users, particularly students, to effortlessly discover available PGs, hostels and mess options in any locality. The platform features dual login options for users and owners, ensuring accessibility only for registered individuals. Users can explore nearby options, filter by ratings, and access detailed information on display. Meanwhile, PGs, hostels and mess owners can utilize the system to expand their business, update menus, beds and analyze user preferences through data and ratings. With a strong focus on non-functional aspects, including 24/7 availability, maintainability through commercial database software, and a portable user interface, LocalLens strives to deliver a secure, efficient, and scalable solution that meets the diverse needs of both users and owners.

### **Functional Requirements:**

#### 1. User and Owner Authentication:

- Users should be able to log in with their credentials.
- PGs, hostels and mess owners should have a separate login option.
- Authentication mechanisms should ensure secure access.

## 2. User Exploration:

- Users can explore available options based on their current location.
- Manual location input should also be an option for users.
- Filtering options for PGs, hostels and mess based on ratings.

## 3. Information:

- Display detailed information about each PGs, hostels and mess, including regular menu, available bed and today's menu.
- Provide a platform for owners to update and manage their availability.

## 4. Top-Rated:

- Display a list of top-rated options to users.
- The rating system should be based on user reviews and feedback.

## 5. Owner Business Tools:

- Owners should have tools to scale up their business.
- Functionality for owners to add and update today's menu, bed availability, regular menu, etc.

## 6. User Feedback and Ratings:

- Users should be able to provide feedback and ratings for services.
- Owners can access and analyze user ratings for continuous improvement.

## **Non-Functional Requirements :**

### **1. Availability:**

- The system must be available 24/7 with a target uptime of 99.999%.

### **2. Maintainability:**

- A commercial database software will be employed for data persistence.
- A web server will be installed to host the LocalLens application, ensuring proper management of server capabilities.
- Separate environments (production, testing, and development) will be maintained for isolation.

### **3. Portability:**

- The system will provide a portable User Interface using React.Js.
- Deployment flexibility on various environments, including single-server, multi-server, and cloud platforms like Azure, AWS.

### **4. Accessibility:**

- Only registered users and PGs, hostels and mess owners will have access to the system after proper authentication.

### **5. Durability:**

- The system will maintain user and PGs, hostels and mess owner details persistently.
- Implementation of backup and recovery mechanisms to retain data and business data over time.
- Utilization of caching for faster data retrieval and improved performance.

6. Efficiency:

- The system will ensure a consistent user experience during peak hours through effective load balancing.
- Efficient transaction management in isolated environments.

7. Modularity:

- Design and development of the system will follow a modular approach.
- Modules will be loosely coupled and highly cohesive, promoting reusability and independence.

8. Scalability:

- The system will provide a consistent user experience regardless of the user load.

9. Safety:

- Implementation of secure login pages to protect against malicious attacks and phishing attempts.
- Maintenance of separate environments for production, testing, and development to ensure isolation and security.

## **4. PERFORMANCE REQUIREMENT**

### **4.1 Hardware Requirements and Software Requirements**

#### **Hardware Requirements**

1. Intel i3 processor 3<sup>rd</sup> generation or later / AMD Ryzen 2002<sup>nd</sup> generation or later
2. 4GB RAM.
3. Windows 7 Home edition or later.
4. 200GB data HDD Space
5. Data Connection 200kbps

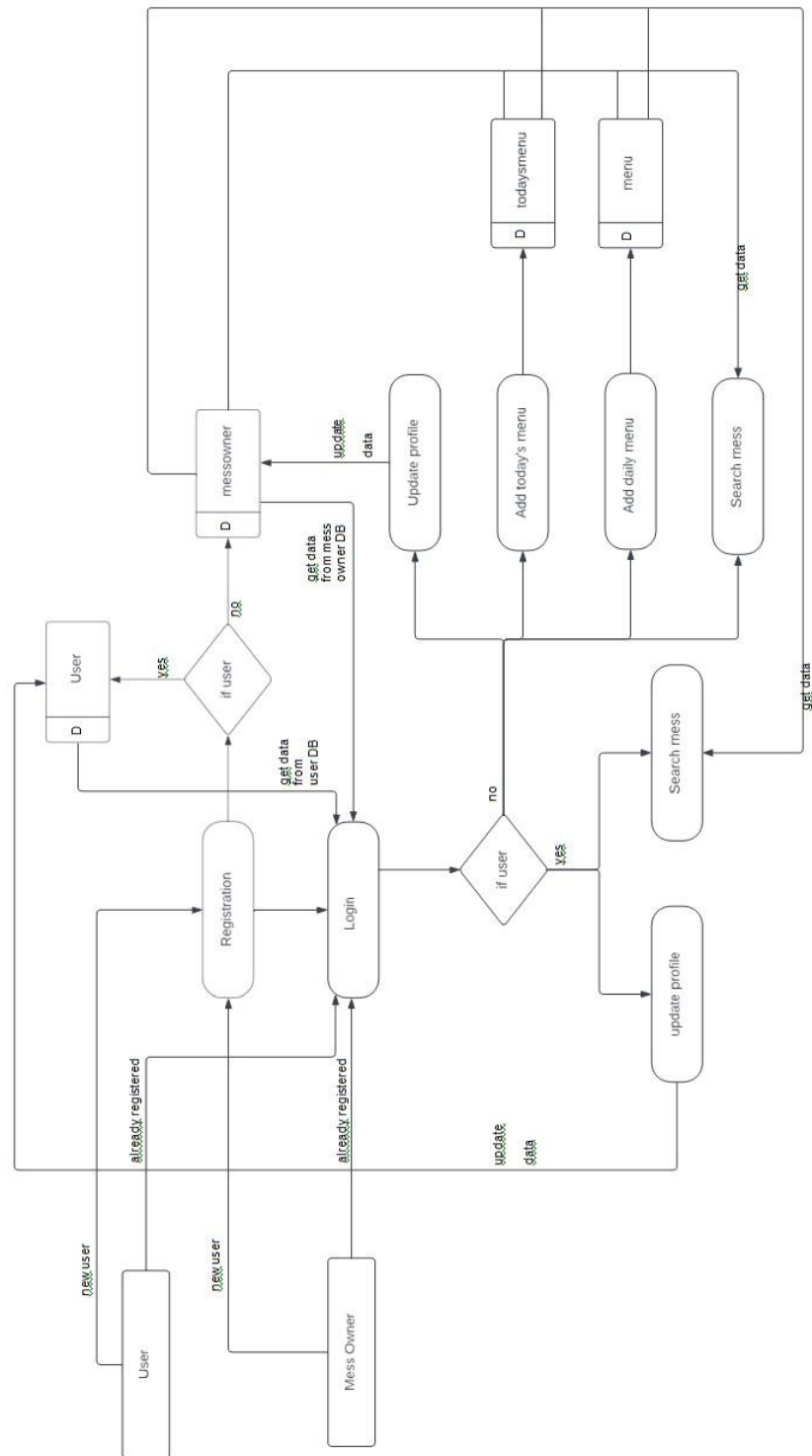
#### **Software Requirements**

1. Eclipse 4.7
2. MySQL 5.8 with Workbench 8.0
3. Google Chrome version 119
4. Apache Tomcat Server 9.0
5. Maven Dependencies
6. Visual Studio C

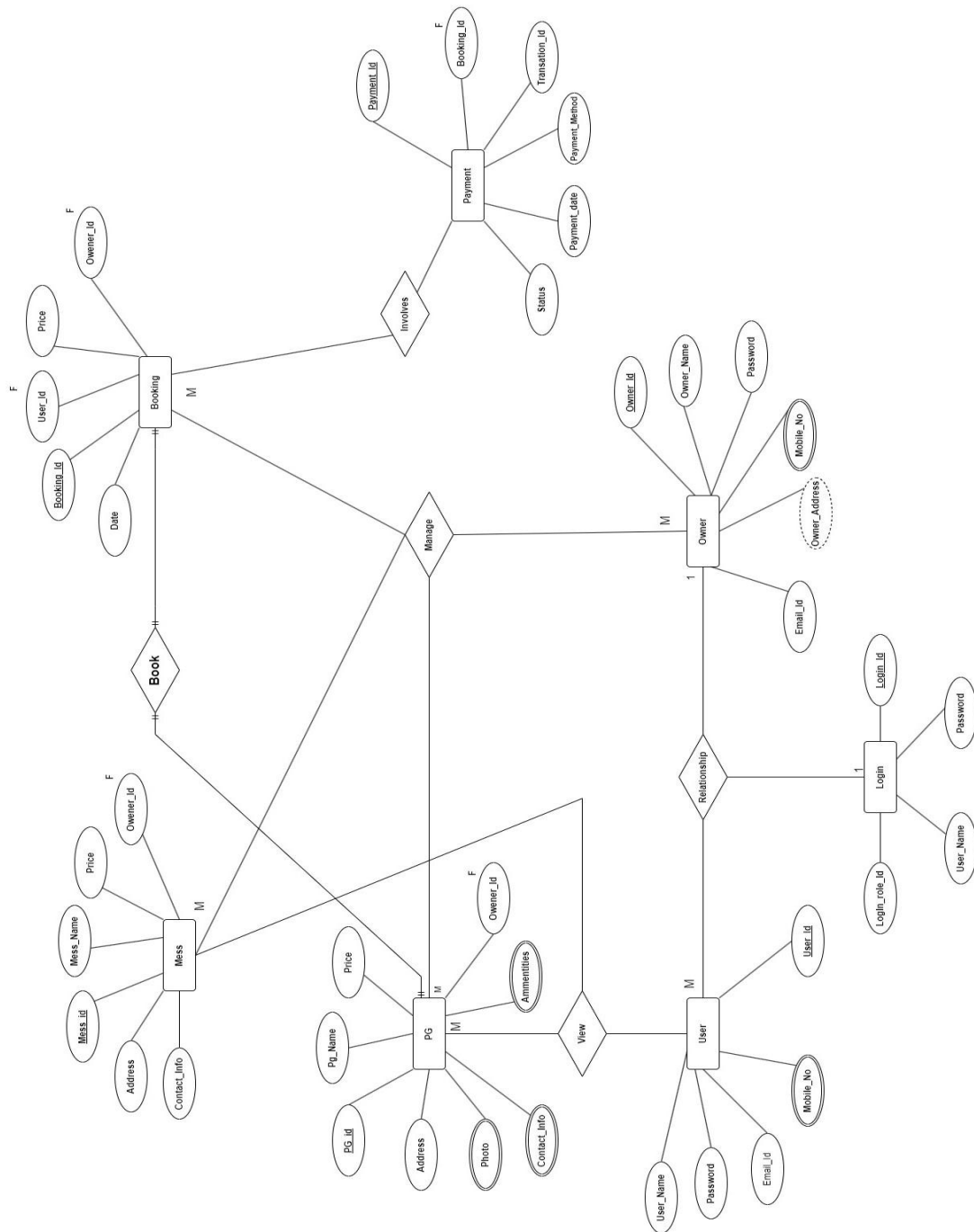


## 5. UML DIAGRAM

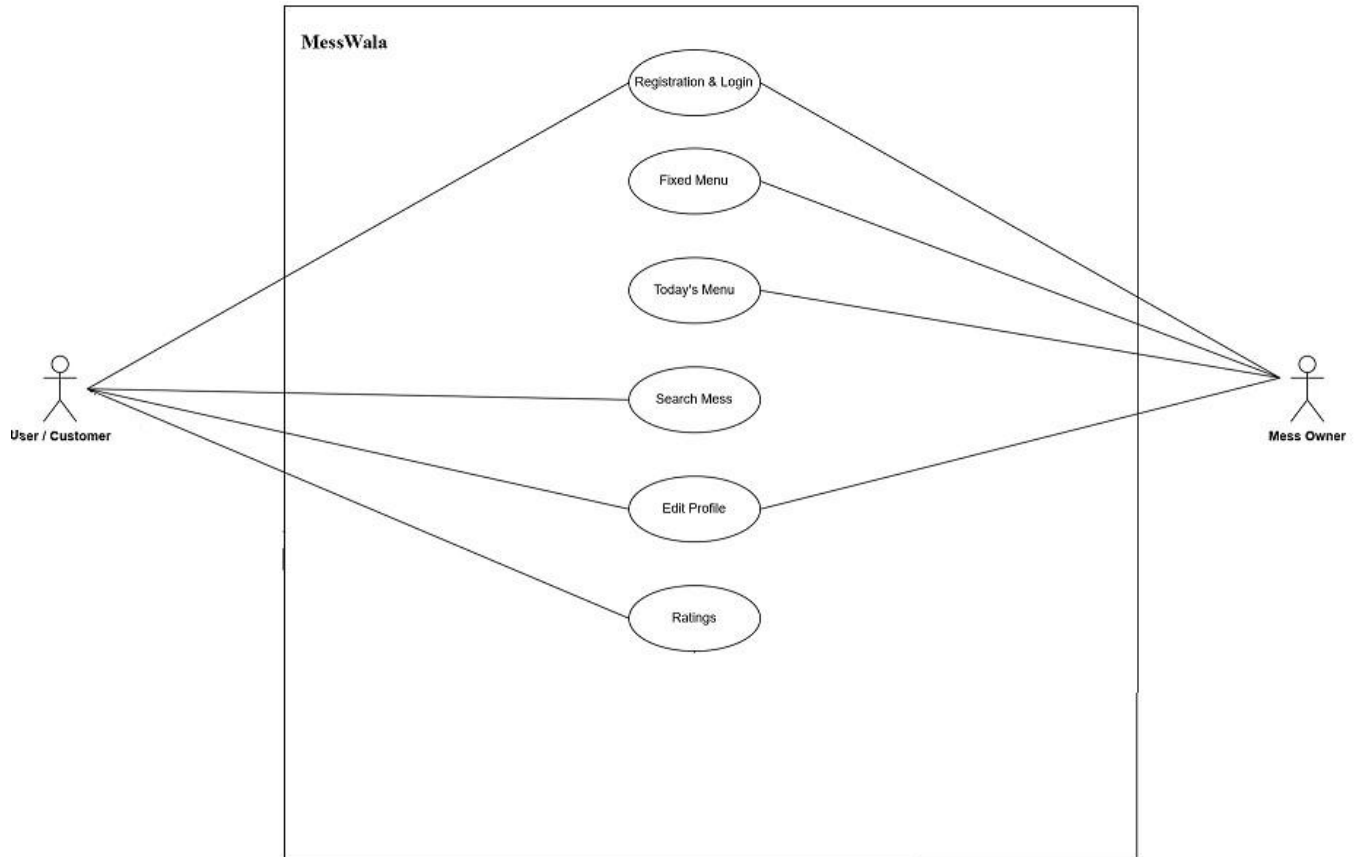
### 5.1 DFD Diagram



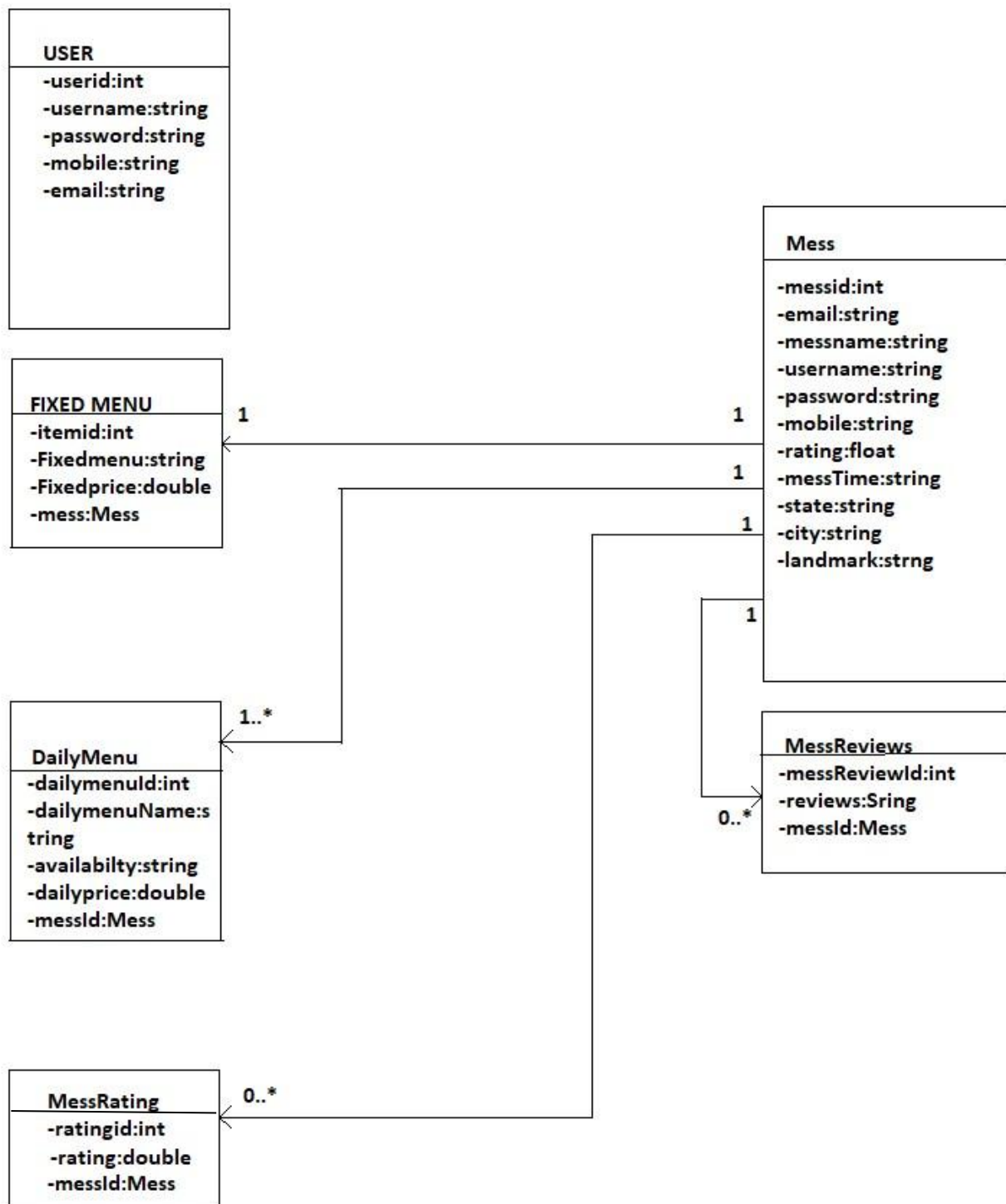
## 5.2 ER Diagram



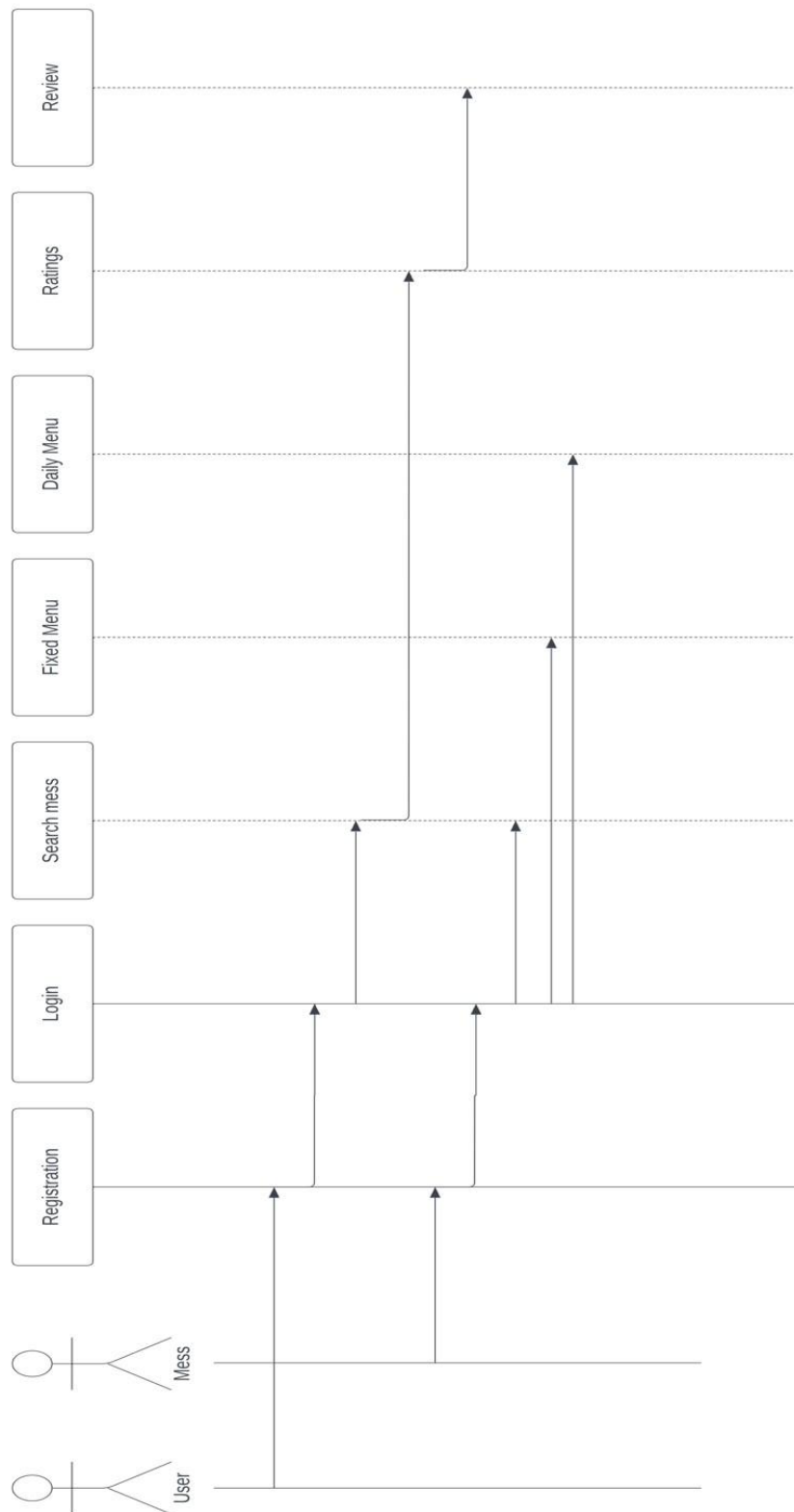
### 5.3 Use case Diagram



## 5.4 Class Diagram

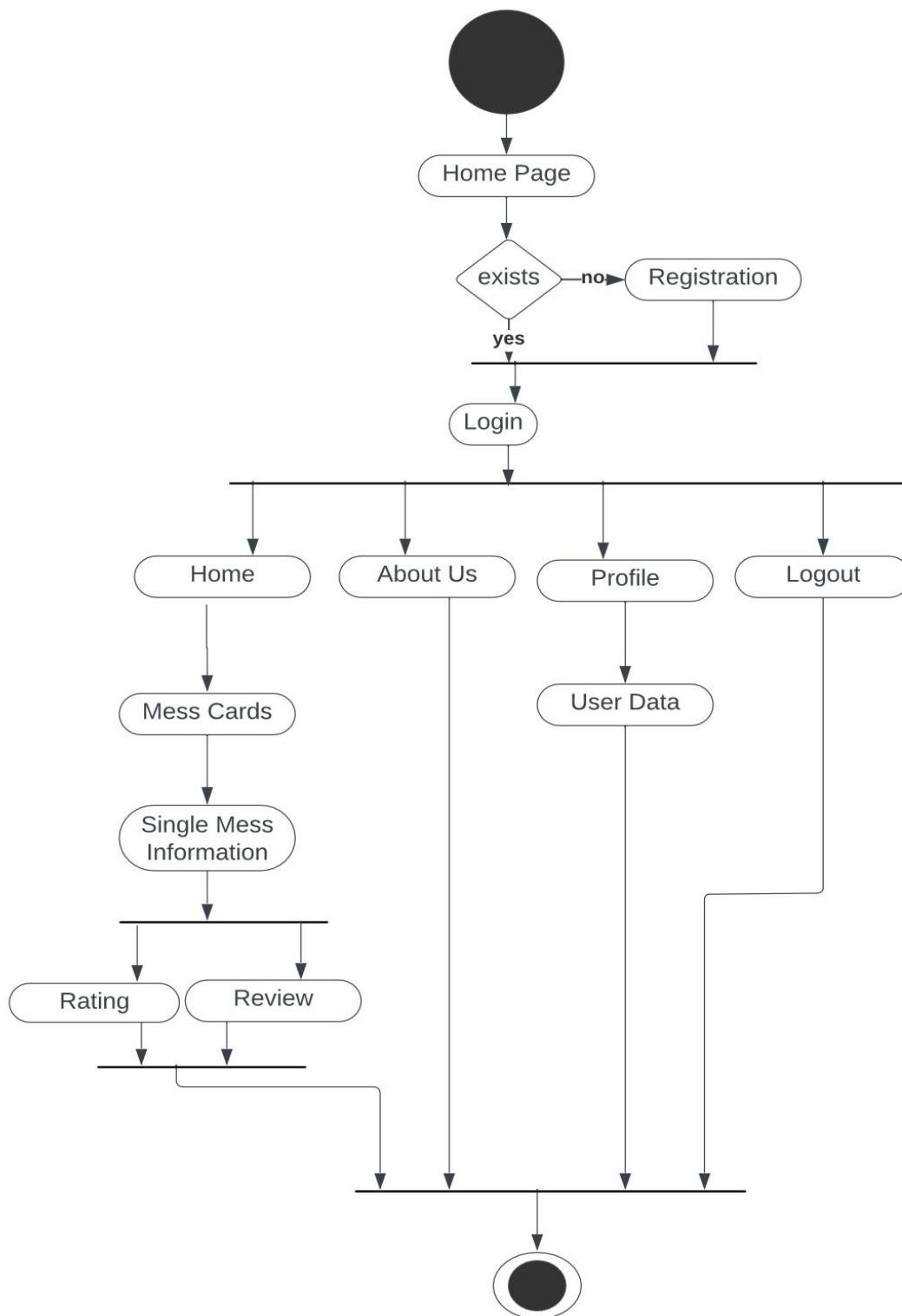


## 5.5 Sequence Diagram

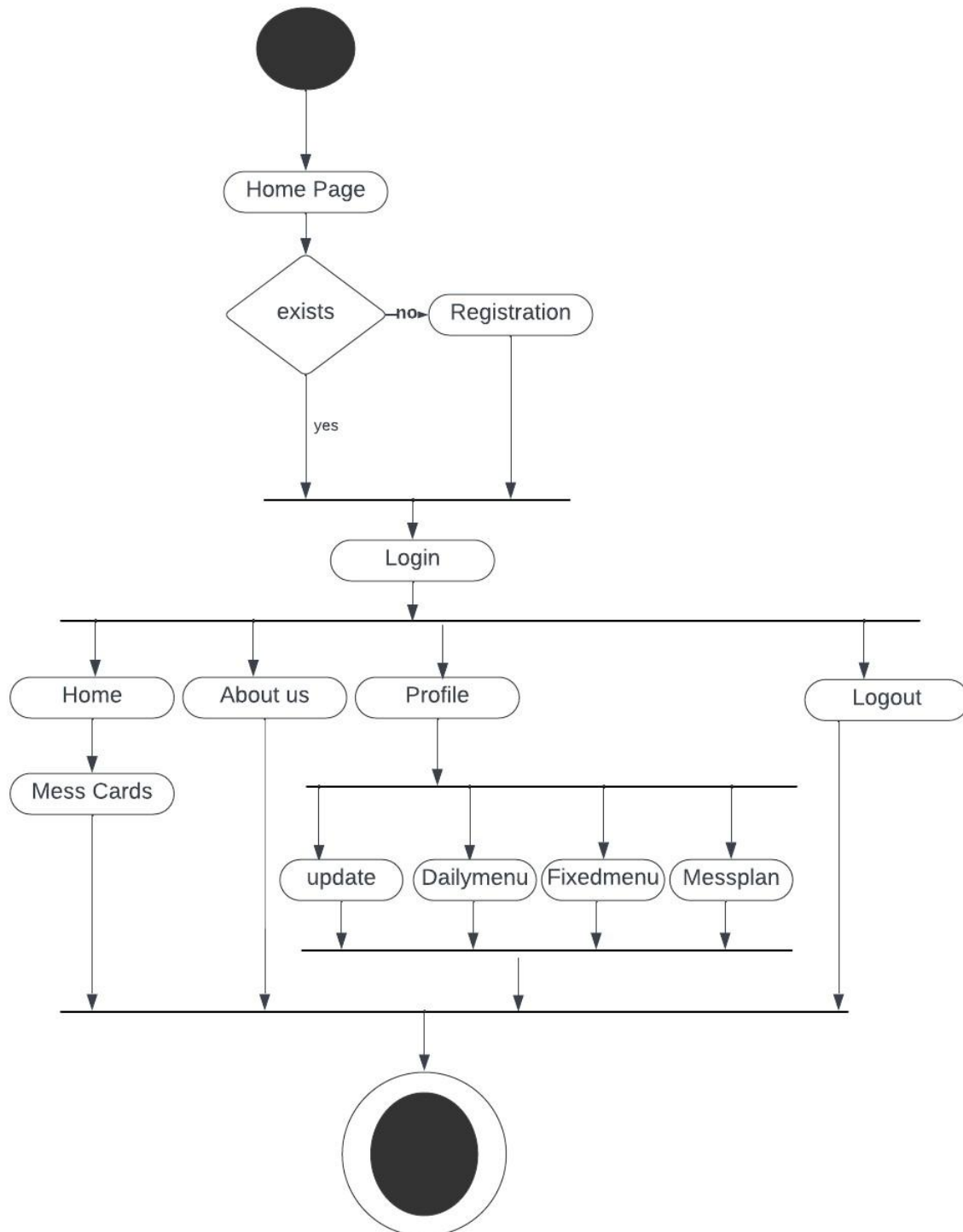


## 5.6 Activity Diagram User

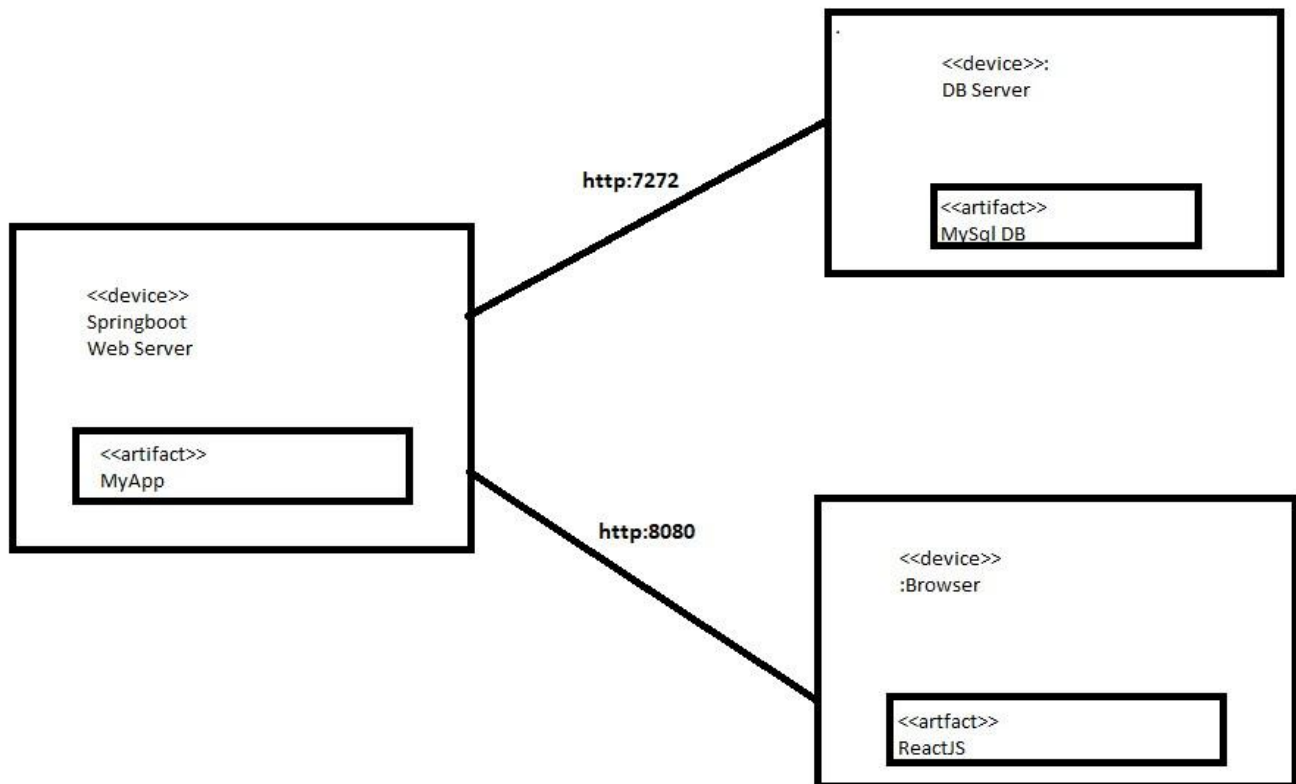
Activity Diagram:



## Mess Activity Diagram

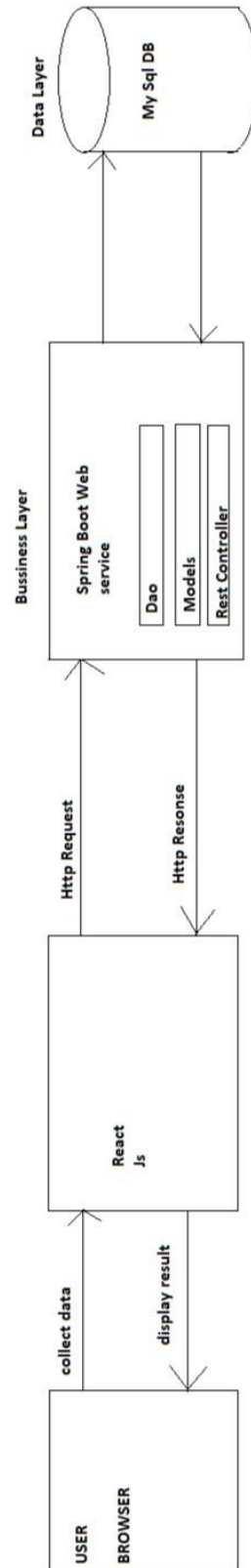


## 5.7 Deployment Diagram





## 5.8 System Architecture

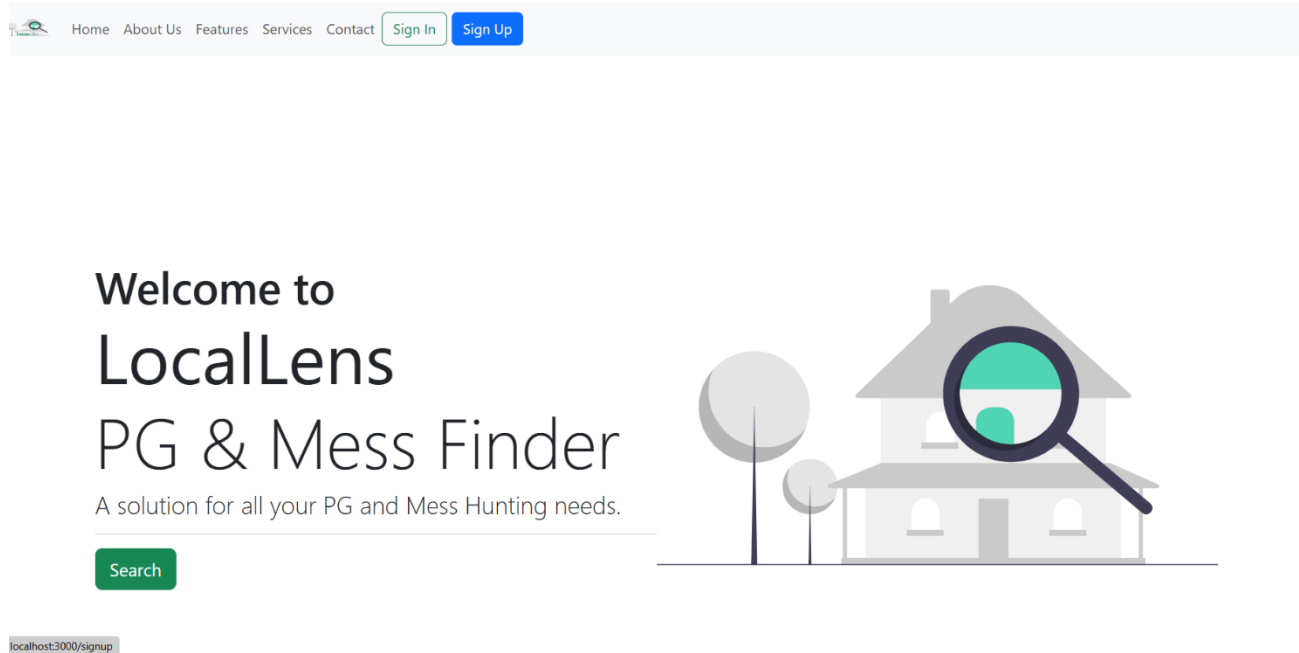


## 6. Test Cases

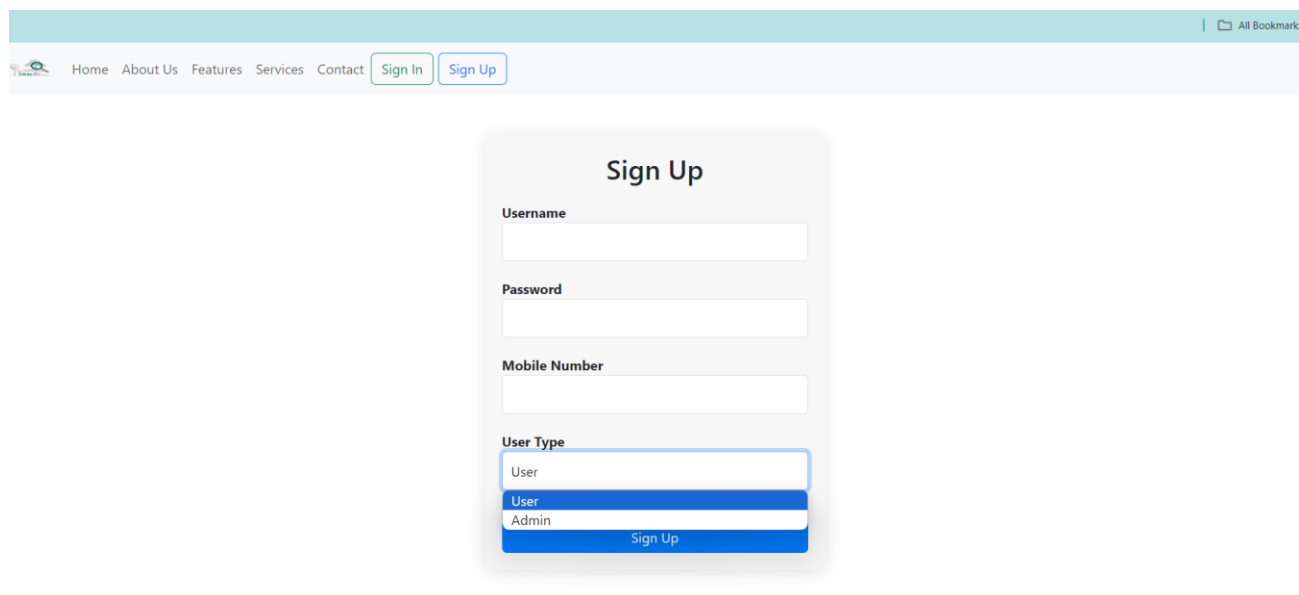
Test Case Id	Test Case Description	Test Data	Expected Data	Actual Output	Status
1	Registration as User or PGs, hostels and mess	valid username, valid password, valid email, etc	Registration Successful	Registration Successful	Pass
2	Login as User or PGs, hostels and mess	valid email, valid password, valid type	Login Successful	Login Successful	Pass
3	Login as User or PGs, hostels and mess	valid email, valid type, invalid password	Login Failed	Login Failed	Pass
4	Add Daily Menu (For Mess)	valid menuname, valid availability, valid price	Daily Menu Added Successfully	Daily Menu Added Successfully	Pass
5	Add Fixed Menu (For Mess)	valid menuname, valid price	Fixed Menu Added Successfully	Fixed Menu Added Successfully	Pass
6	Forgot Password for User or Mess	valid email, valid type, valid new password	Password Updated Successfully	Password Updated Successfully	Pass
7	Search PGs, hostels and mess	valid address	PGs, hostels and mess List	PGs, hostels and mess List	Pass
8	Logout as User or PGs, hostels and mess	—	Logout Successful	Logout Successful	Pass

## 7. SCREENSHOTS

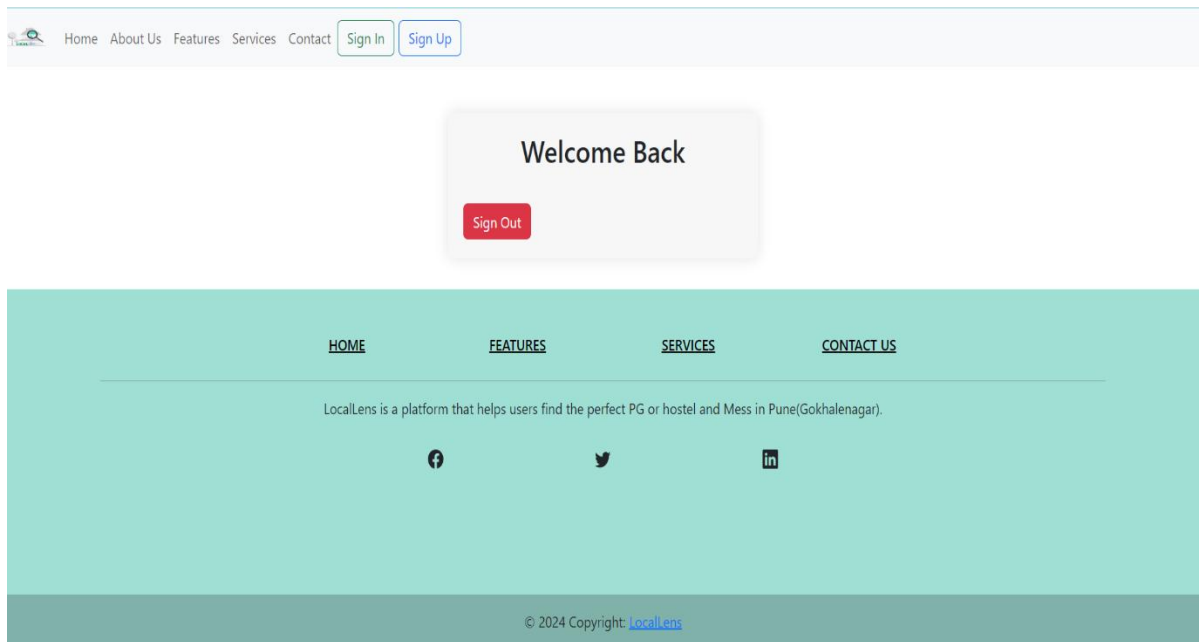
### Home Page



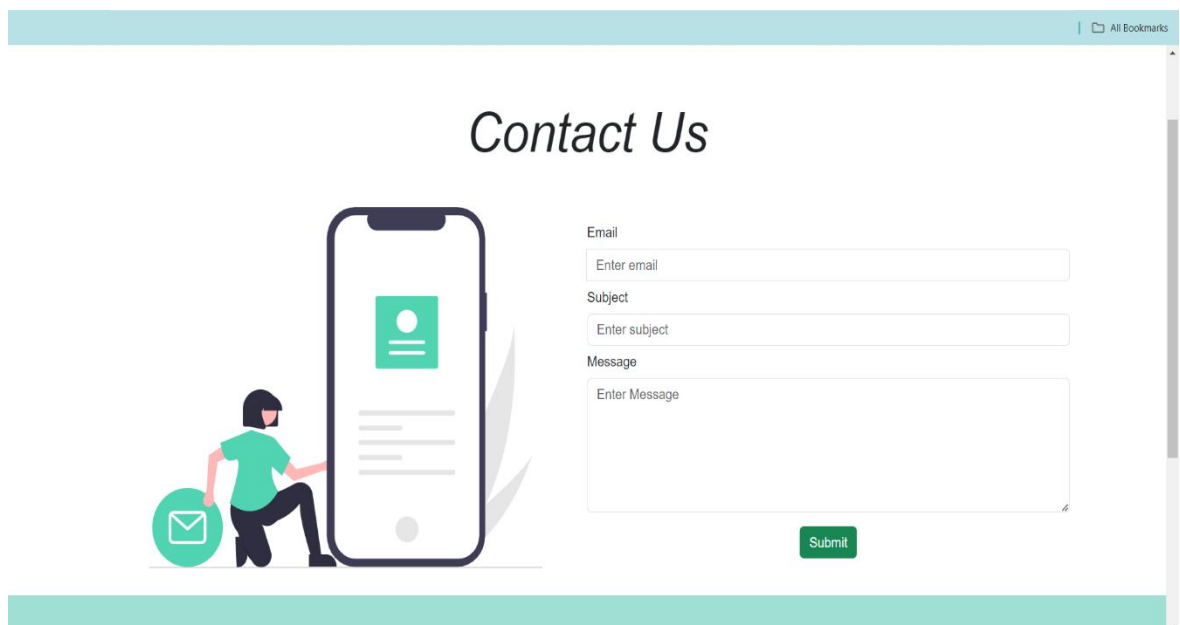
### Registration Page



## Login Page



## Contact Us Page




## About us

### About Us

We help you find the best PG and Mess facilities in your area. Our platform connects users with reliable and quality services, ensuring a comfortable stay.



## User PG Search Page

 [Home](#) [About Us](#) [Features](#) [Services](#) [Contact](#) [Sign In](#) [Sign Up](#)

[Dashboard](#)  
[Search Pg](#)  
[Search Mess](#)  
[Profile](#)  
[Logout](#)

### Search PG by Location

Location

Search


No PGs found.

## Mess View User Profile Page


[Home](#) [About Us](#) [Features](#) [Services](#) [Contact](#) [Sign In](#) [Sign Up](#)

[Dashboard](#) [Search Pg](#) [Search Mess](#) [Profile](#) [Logout](#)

### View Mess & Menu



**Annapurna Mess**  
Gokhale Nagar  
Description: Veg/Non-Veg  
[View Menu](#)



**Indrayani Mess**  
Gokhale Nagar  
Description: Veg  
[View Menu](#)


#### Menu for Annapurna Mess

Sr-No	Menu Name	Price	Description
1	Veg Thali	₹150	Rice, Dal, Sabzi, Roti
2	Paneer Butter Masala	₹120	Paneer in buttery gravy
3	Aloo Paratha	₹50	Stuffed Paratha with Curd
4	Chicken Biryani	₹180	Basmati rice with chicken

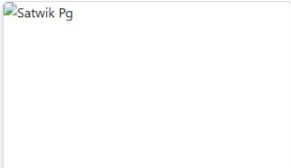
## PG View And Book Page

[Home](#) [About Us](#) [Features](#) [Services](#) [Contact](#) [Sign In](#) [Sign Up](#)


### Available PGs




**Santa Pg**  
Pg for Boys & Girls  
**Location:** Shivaji nagar  
**Price:** \$4500  
**Rooms:** 8  
[Book Now](#)



**Satwik Pg**  
Pg for Boys  
**Location:** gokhale nagar  
**Price:** \$5000  
**Rooms:** 2  
[Book Now](#)



**Santa Pg**  
Pg for Boys & Girls  
**Location:** shivaji nagar  
**Price:** \$5000  
**Rooms:** 2  
[Book Now](#)



Any Form Like Fixed Menu, Daily Menu

## Available Mess

### Available Mess



#### Ram Mess

Veg Non-Veg Available

Location: Shivaji nagar

Search



#### Laxmi Mess

Veg Available

Location: gokhale nagar

Search



#### Kamat Mess

Veg Available

Location: gokhale nagar

Search



#### Sai Mess



#### Renuka Mess



#### Matoshri

## Owner Manage Mess

Dashboard

Bookings

Manage PG

Manage Mess

Update Food Menu

Profile

Logout

### Manage Mess

Mess Name

Enter Mess Name

Mess Location

Enter Mess Location

Description

Enter Description

Monthly Price-One time

Enter Price

Add Photos URL

Enter Image URL

UserId

Enter userId

Menu List

Menu Item 1

Add Menu Item

Create Mess

## Owner Manage PG

Dashboard

Bookings

Manage PG

Manage Mess

Update Food Menu

Profile

Logout

### Manage Account

PG Name

Enter PG Name

PG Location

Enter PG Location

Description

Enter Description

Price

0

Total Beds

0

booked Count

0

Add Photos

Userid

Create PG

Your PGs

## Owner Dashboard

Home About Us Features Services Contact Sign In Sign Up

Dashboard

Bookings

Manage PG

Manage Mess

Update Food Menu

Profile

Logout

### Dashboard

Welcome to the Owner Dashboard.

30

Total Members

5

This Month

10





Total Rooms

8

Booked Rooms

#### Available Members

Overview of available members

Name	Room No	Mobile No	Parents Mobile No	Gov-Id Proof	months
 <b>Ashwin Patil</b> someone123@gmail.com	1	7865410945	8545956712	451295781480	4
 <b>Vedant Kundale</b> someone123@gmail.com	2	7865410945	8545956712	451295781480	4
 <b>Pradyumn Lande</b> someone123@gmail.com	3	7865410945	8545956712	451295781480	4
 <b>Prasad Mule</b> someone123@gmail.com	4	7865410945	8545956712	451295781480	4



## 8. References

- 1) React documentation - <https://legacy.reactjs.org/docs/add-react-to-a-website.html>
- 2) React Router Dom Documentation - <https://v5.reactrouter.com/web/guides/quick-start>
- 3) Axios Documentation - <https://www.geeksforgeeks.org/axios-in-react-a-guide-for-beginners/>
- 4) Hibernate Documentation - <https://hibernate.org/orm/documentation/6.4/>
- 5) Spring Boot Reference Documentation Phillip Webb, Dave Syer, Josh Long, Stéphane Nicoll, Rob Winch, Andy Wilkinson, Marcel Overdijk, Christian Dupuis, Sébastien Deleuze, Michael Simons, Vedran Pavić, Jay Bryant, Madhura Bhav
- 6) Spring Boot Documentation - <https://docs.spring.io/springboot/docs/2.1.13.RELEASE/reference/html/index.html>
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## **9. Conclusion**

In conclusion, LocalLens aims to revolutionize the PGs, hostels and mess industry by providing a seamless platform for users to discover and engage with local PGs, hostels and mess options while empowering owners to enhance their businesses. With robust functionalities catering to both users and owners, the system ensures reliability, scalability, and security through advanced technology and strategic design. By prioritizing accessibility, efficiency, and maintainability, LocalLens is poised to become the go-to solution for students seeking hassle-free dining experiences and mess proprietors aiming for growth and optimization.