



Daffodil
International
University

Project Title: BD Rooms

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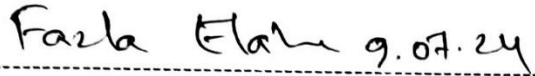
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This Project report has been submitted in fulfillment of the requirements for the Degree
of Bachelor of Science in Software Engineering.

APPROVAL

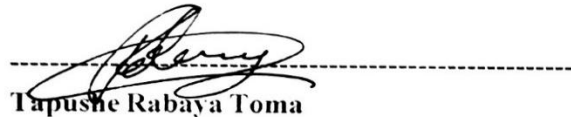
This project titled on “BD Rooms”, submitted by **Md. Omar Faruk (ID: 152-35-1242)** to the Department of Software Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of Bachelor of Science in Software Engineering and approval as to its style and contents.

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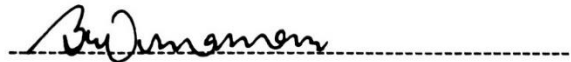
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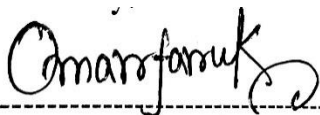
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I hereby declare that I have done this project under the supervision of **Mr. Khalid Bin Badruzzaman Biplob**, Lecturer (Senior Scale), Department of Software Engineering, Daffodil International University. I also declare that this project is my original work for the degree of B.Sc. in Software Engineering and neither the whole work nor any part has been submitted for another degree in this or any other university.

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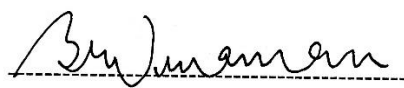


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ABSTRACT

This system aims to provide information about searching for hotels and booking cheap hotel rooms. Hotel owners have the convenience of easily listing their properties on this website. The platform is designed to simplify the process, allowing owners to add their hotels with minimal effort and reach potential guests quickly. The “BD room” website will provide an instant service to the users. The website enables customers to view room availability for chosen dates, allowing them to reserve accommodations with ease. It also offers a convenient search feature by city, so users can book available rooms ahead of time to ensure a comfortable stay that meets their requirements. Through the use of this system, both users and hotel owners can be benefited. The project aims to build a fully functional website for customers' and hotel owners' requirements. The overall mission of developing this system is to fix the unnecessary tension of booking cheap hotel rooms in a city or rural areas and also solve the problem of hotel owners by reaching more customers online.

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CHAPTER 1: INTRODUCTION

1.1 Project Overview

This is a hotel aggregator website. There are a lot of 3-star and 2-star hotels in Bangladesh. Specially situated in the city area. But they don't have many customers. I listed their hotel on my website and showed it on my website and apps. And also increased the quality of rooms like furniture and outlook. People can see the room photo and go for booking. As a result, these hotels get more customer.

The “BD Rooms” is a web-based platform designed for the dynamic operations of a hotel, to improve user services, and to provide effective management tools for hotel owners. This system will provide all kinds of services to a person in any location at any time. An instant service will be provided by this website. The map will help people to find their nearest hotel. This system is designed to streamline the entire hotel management process, offering a centralized solution for reservations, check-ins, check-outs, and room allocations.

By using a user-friendly interface for both users and hotel owners or managers, the system enhances efficiency and customer experience. Features include real-time room availability, online booking functionality, online payment, and a robust review system. The platform integrates seamlessly with various payment gateways, ensuring a secure and convenient transaction process. By using modern technologies, this website can ensure customer satisfaction with proper facilities.

1.2 Project Purpose

The purpose of BD Rooms” is to serve customers any type of search, or booking, with the help of this system in any popular city. The main purpose of this system is to solve problems for both users and hotel owners. Users will find hotel rooms easily and hotel owners add hotels to the website and gain more customers.

Functionalities provided by “BD Rooms”

- An instant online service for booking room
- Users can search by location
- Owner has the authority to accept or cancel the request.
- Users access to see real-time availability of hotel rooms

1.3 Background

Based on some hotel management systems I want to create a user-friendly system where both users and hotel owners have the authority to choose their services. I tried to create a full system, which will be reliable, secure, and above all user friendly.

1.4 Benefits and Beneficiaries

This website will be helpful for persons who searching for a living place in rural city areas all over the country. The Hotel owners or room owners provide hotel rooms for users who need their service.

1.5 Stakeholders

A stakeholder is someone who can be influenced or influenced by an organization, group, strategy, or project. They can be internal or external and they can be at senior or junior level. In this project, the stakeholders are:

- Customer
- Hotel Owners
- Admin Panel
- Hotel Employees
- Developers
- Investors

1.6 Proposed System Model

I designed this model to create a user-friendly interface for both hotel owners and customers.

I use the model to visualize and control the system architecture.

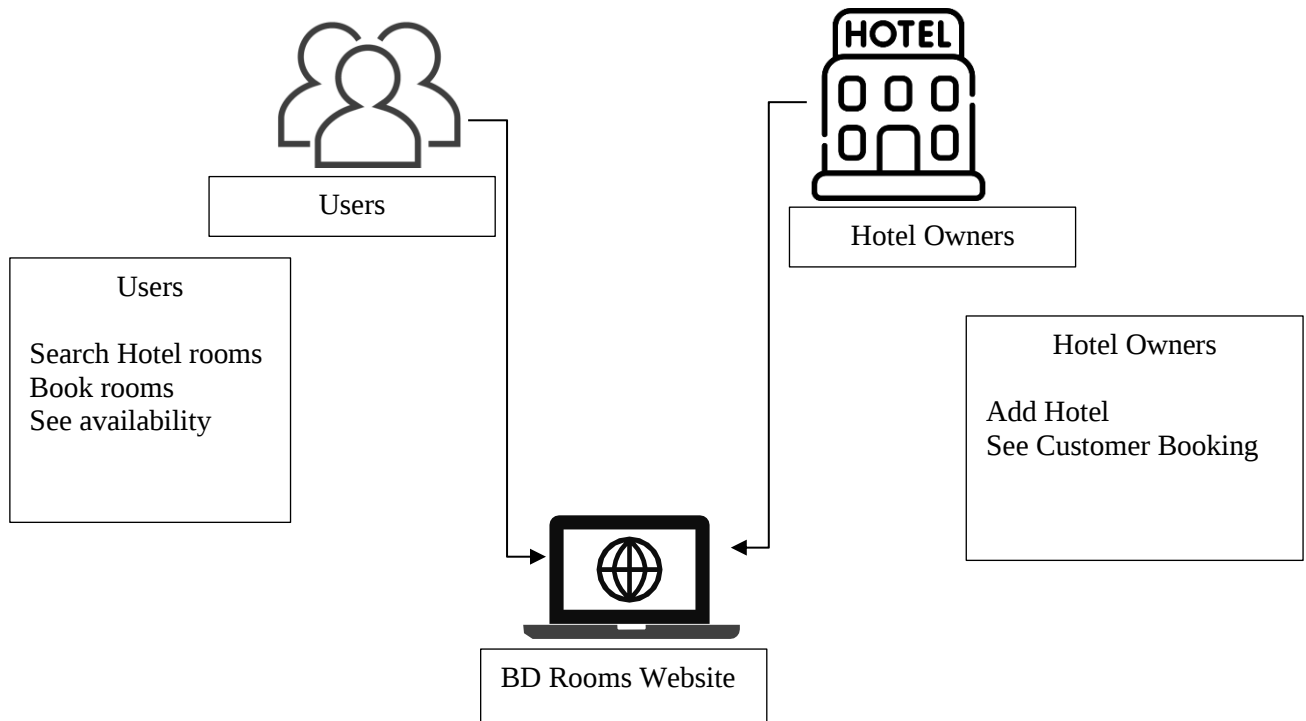


Figure 1: Proposed System Model

1.7 Modules of BD Rooms

- Login module: used for user authentication
- Registration module: used for managing users and hotel owners of the system
- Service module: used for service-related functions (AC, Spa,etc.)
- Add module: used for adding the information and details of the hotel rooms.
- Provider module: used for Showing the information and details of the hotel facilities.

1.8 Project Schedule

Considering the short time, I need to prepare a scheduling plan to finish the project on time.

It also refers to communication with what task needs to be done within a short time.

1.8.1 Gantt Chart

activities	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12
Market Research												
Specifications												
Planning												
Design												
Development												
Testing												
Assessment												
Documentation												

Table 1.1: Gantt Chart

1.8.2 Release Plan and Milestone

The release plan and milestones are given below:

Activities	Duration in week	Total week
Research	W1, W2	2
Specifications	W2, W3, W4	3
Planning	W3, W4, W5	2
Design	W4, W5	2
Development	W4, W5, W6, W7, W8	5
Testing	W7, W8, W9, W10	4
Assessment	W9, W10	2
Documentation	W10, W11, W12	3
Software release	W12	1

Table 1.2: Release Plan

1.9 Objective

The main objective of this project is to serve people with all kinds of booking, searching, and adding hotel and hotel rooms. This is an instant online web-based service management system.

- **Practically:** The website can be stable and can be operated by people with average intelligence.
- **Efficiency:** This involves accuracy, timeliness, and comprehensiveness of the output.
- **Cost:** It is desirable to aim for a system with a minimum cost subject to the condition that it must satisfy all the requirements.
- **Portability:** The web application should be portable to all environments.
- **Security:** This important aspect of design covers areas of physical security of data. This could be provided by a login facility enabling username and password for the user and admin. This makes the admin work simple with highest efficiency.

CHAPTER 2: SYSTEM ANALYSIS

2.1 Feasibility Analysis

The existing systems in various hotels are almost manual or not popular and some systems may not fulfil User satisfaction. The existing system is not reliable to the users. The existing system has a problem in that the system does not have up-to-date hotel information.

Social and economic factors

- Middle-class people will interested to use it.
- They can use it if they get a good offer.

Location Analysis: Target the tourist destination

Total Cost calculation: Calculate the development cost and maintenance cost

Local Hotel Supply and Demand Investigation: Analyze the local demand

Room Rates: Compare room rates with existing hotels.

2.2 Functional Requirements

Functional requirements define a system or its components. It specifies “What should the system do?” The user specifies functional requirements. It is mandatory to meet these requirements. It is captured in the use case.

The functional requirements of “BD Rooms” are:

- Registration
- Log in
- Search Hotel
- Book Hotel
- Add Hotel
- Edit Hotel
- Search by city name
- Check Availability
- Add facilities
- Check status
- Review
- Change password

2.3 Non-functional Requirements

Non-functional requirements define the quality attribute of a system. It specifies “How should the system fulfill the functional requirements?” non-functional requirements is specified by technical people or software developers. It is mandatory to meet these requirements. It is captured as a quality attribute.

The non-functional requirements of “BD Rooms” are:

- Compliance
- Documentation
- Privacy
- Quality
- Stability
- Authority
- Response time
- Reliability

2.4 System Requirements

Hardware Requirements:

PROCESSOR: Dual Core or above

RAM: 2GB or above

Cache Memory: 2MB or above

HDD: 20GB or above

Software Requirements:

IDE: Visual Studio

Web Browser: Mozilla, Chrome

2.5 Performance

Response Time: The system should respond quickly to user interactions. Slow response times can lead to frustration among hotel staff and impact overall efficiency.

Database Performance: Efficient database design and optimization are critical for quick retrieval and storage of data. Proper indexing, normalization, and caching mechanisms can contribute to improved database performance.

Optimized Code: Well-optimized and efficient code contributes to better performance. Regular code reviews, profiling, and optimization practices should be employed during the development process.

Regular Maintenance: Regularly monitor and maintain the system to identify and address performance bottlenecks. This includes routine checks, updates, and performance tuning.

Load Testing: Conduct load testing to simulate heavy usage scenarios and identify potential performance issues. This allows developers to optimize the system for peak loads.

CHAPTER 3: SYSTEM DESIGN

3.1 Development Model

To develop the project “BD Rooms” we have adopted the Iterative waterfall model. This model removes the shortcomings of the waterfall model.

These models work very well when the project includes several independent units that do not rely on the other units to operate. The two models under the incremental process models are the iterative enhancement model and the rapid application model.

The iterative enhancement model resembles the waterfall model with the exception that it allows several iterations of the design process. After each cycle, there is a product released. The lessons learned feed into the next cycle.

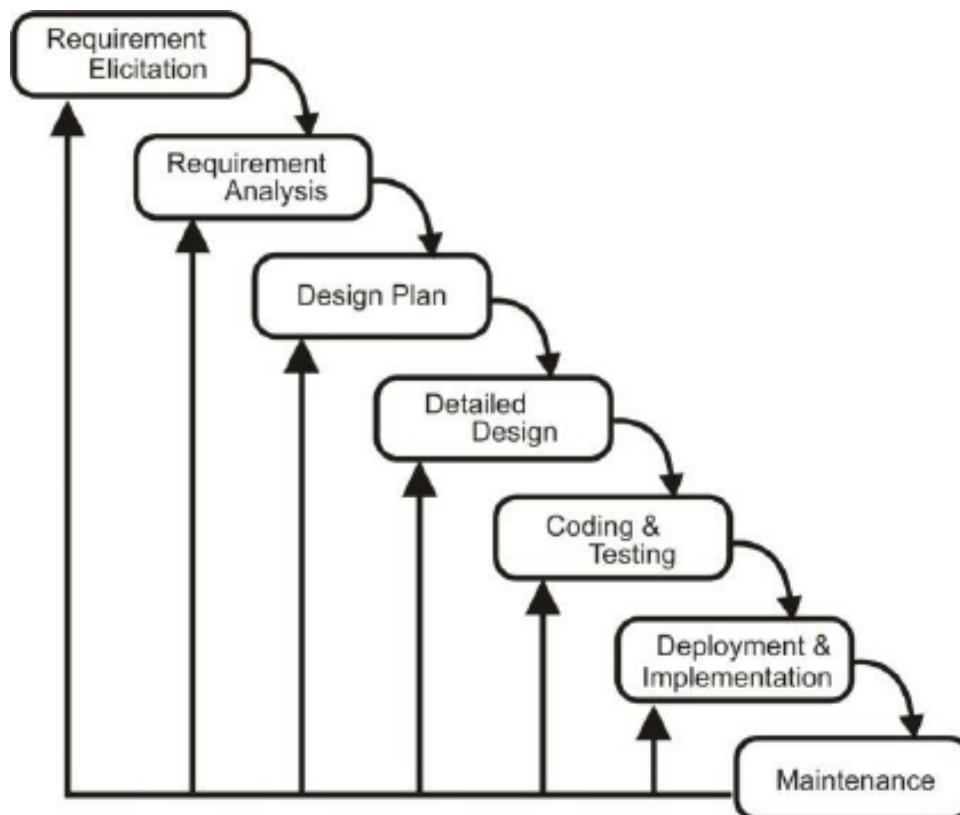


Figure 2: Iterative Enhancement Model

3.2 Use Case Diagram

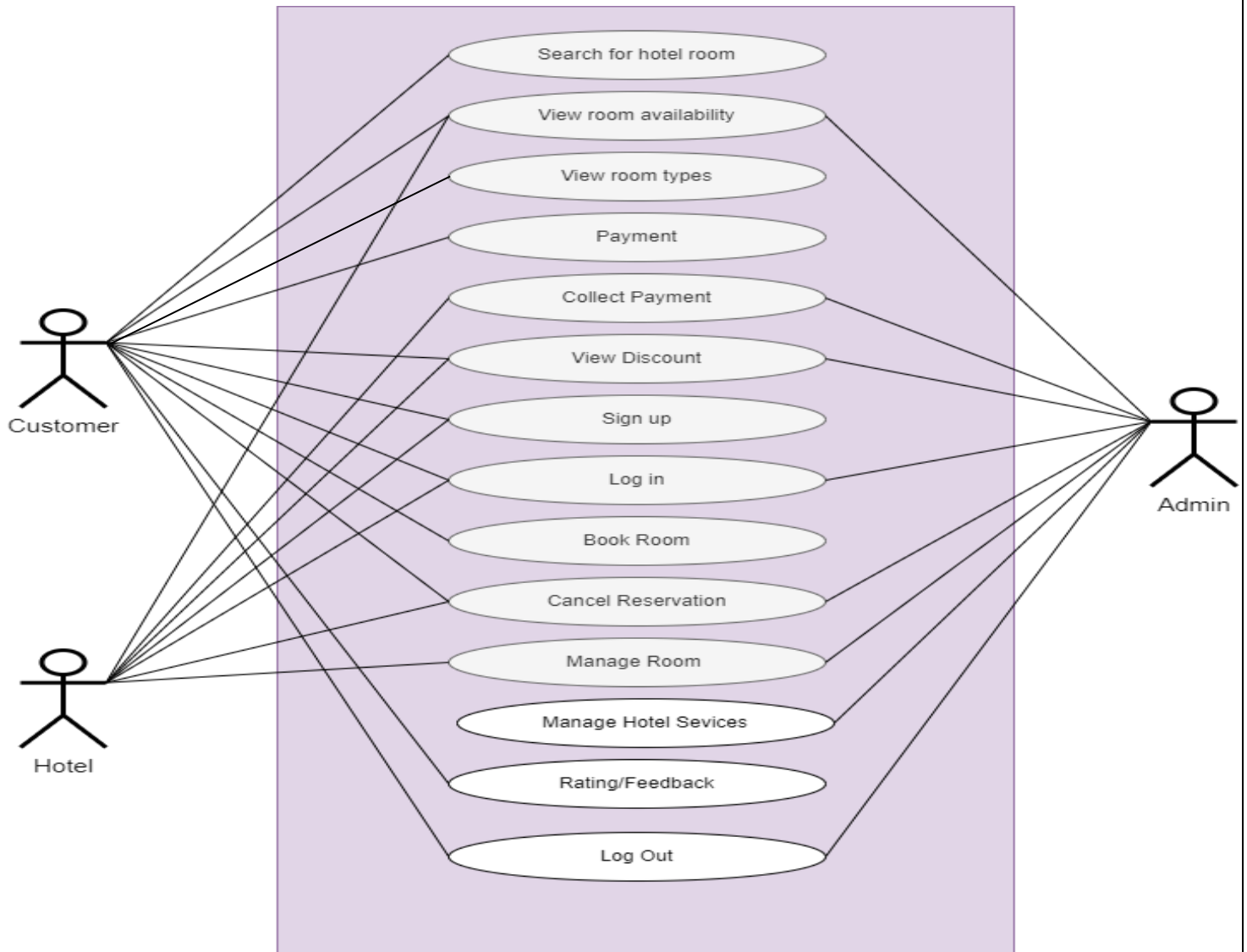


Figure 3: Use case diagram for BD Rooms

3.2.1 Use Case Description

Sign up

Description	This BD room website provides a registration form where customers and hotel owners can register themselves and submit requests for registration
-------------	---

Table 3.1: Sign up

Login

Description	This module is used to log in the website for both users and hotel owners by giving the correct information
-------------	---

Table 3.2: Login

Book Room

Description	This module is used to book rooms for users by giving correct information
-------------	---

Table 3.3: Book Room

Cancel Reservation

Description	This module is used to cancel a user's booking. Hotel owners can also cancel a booking with a valid reason
-------------	--

Table 3.4: Cancel Reservation

Manage Rooms

Description	This module is used to manage room facilities and availability. Hotel owners and admit can take action on this.
-------------	---

Table 3.5: Manage Room

Manage Hotel Services

Description	This module is used for manage room facilities and availability. Hotel owners only use this module.
-------------	---

Table 3.6: Manage Hotel Services

Rating/Feedback

Description	This is used to give feedback or review the hotel and its facilities.
-------------	---

Table 3.7: Feedback

Logout

Description	Admin, hotel owners, and users will use the action to logout from the website
-------------	---

Table 3.8: Logout

View Discount

Description	This is used to view the discounted price of the hotel rooms. Both hotel owners and users can use it.
-------------	---

Table 3.9: View Discount

Search Hotel Room

Description	This is used to search hotels for users by giving the right information.
-------------	--

Table 3.10: Search Hotel Room

View Hotel Availability

Description	Users can view the hotel availability nearby or in any city.
-------------	--

Table 3.11: View Hotel Availability

View Rooms type

Description	Users or visitors view the hotel room and facility of the hotel.
-------------	--

Table 3.12: View Rooms Type

Payment

Description	Users make their payments to book any hotel room.
-------------	---

Table 3.13: Payment

Collect Payment

Description	Admin or Hotel owner collects the payment
-------------	---

Table 3.14: Collect Payment

3.3 Activity Diagram

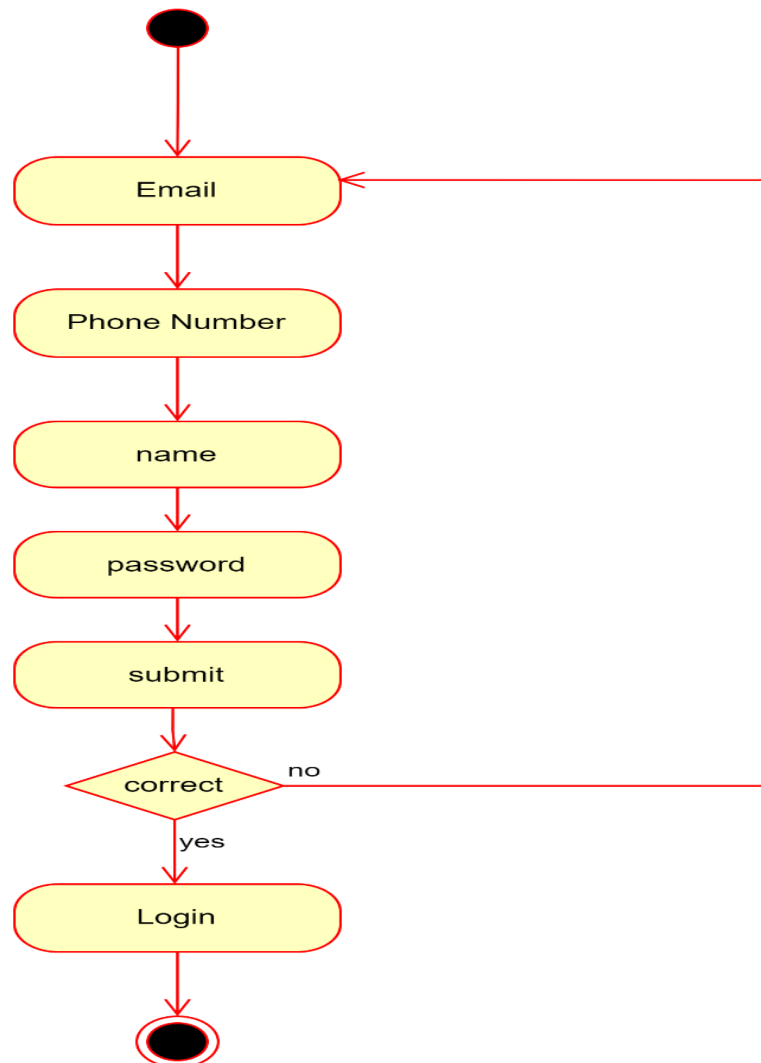


Fig 4: Activity Diagram for Customer Registration

Activity Diagram for Customer Login & Authentication

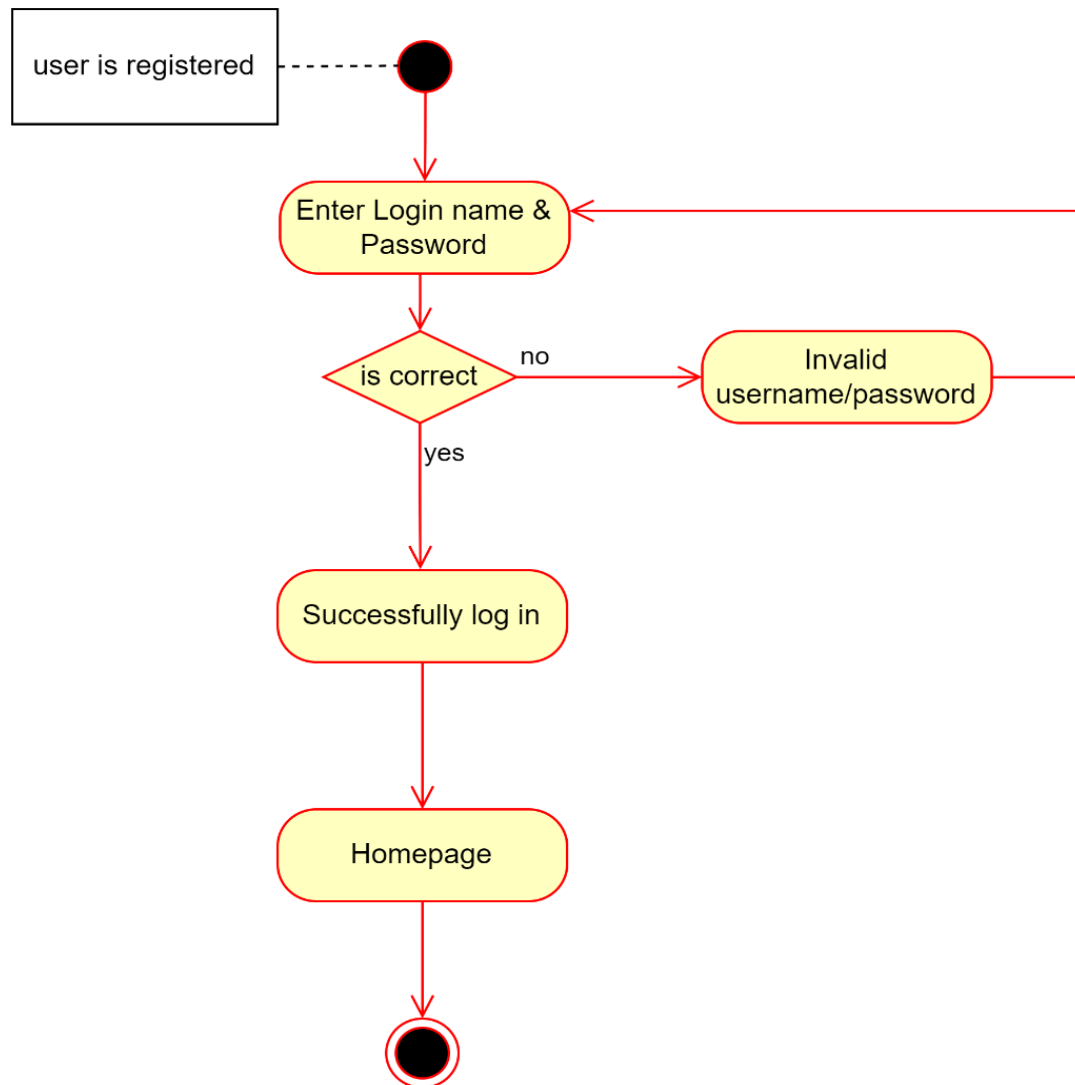


Fig 5: Customer Login

Activity Diagram for Booking Room for customer

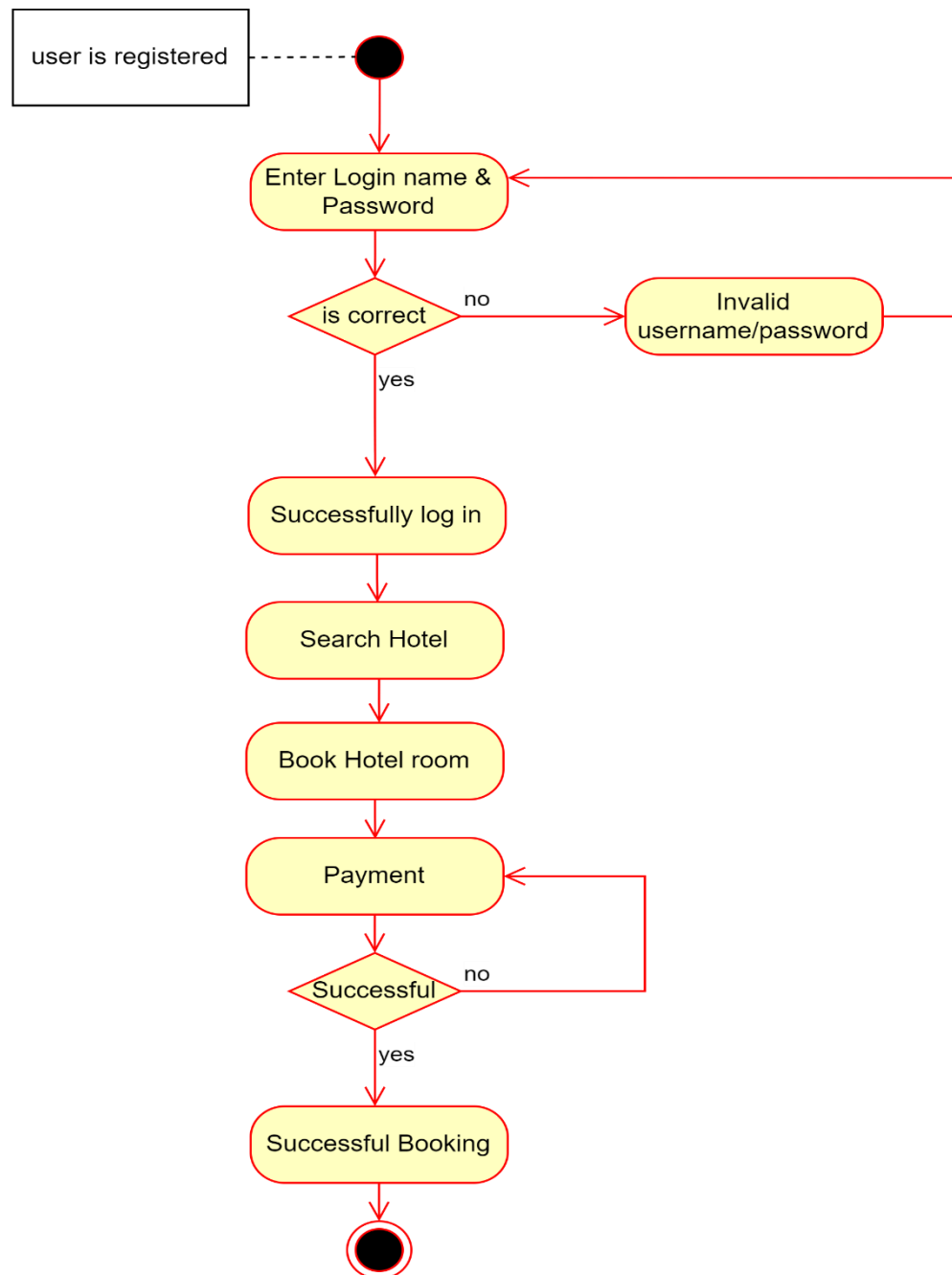


Fig 6: Booking Room

Activity Diagram for review Hotel

Feedback:

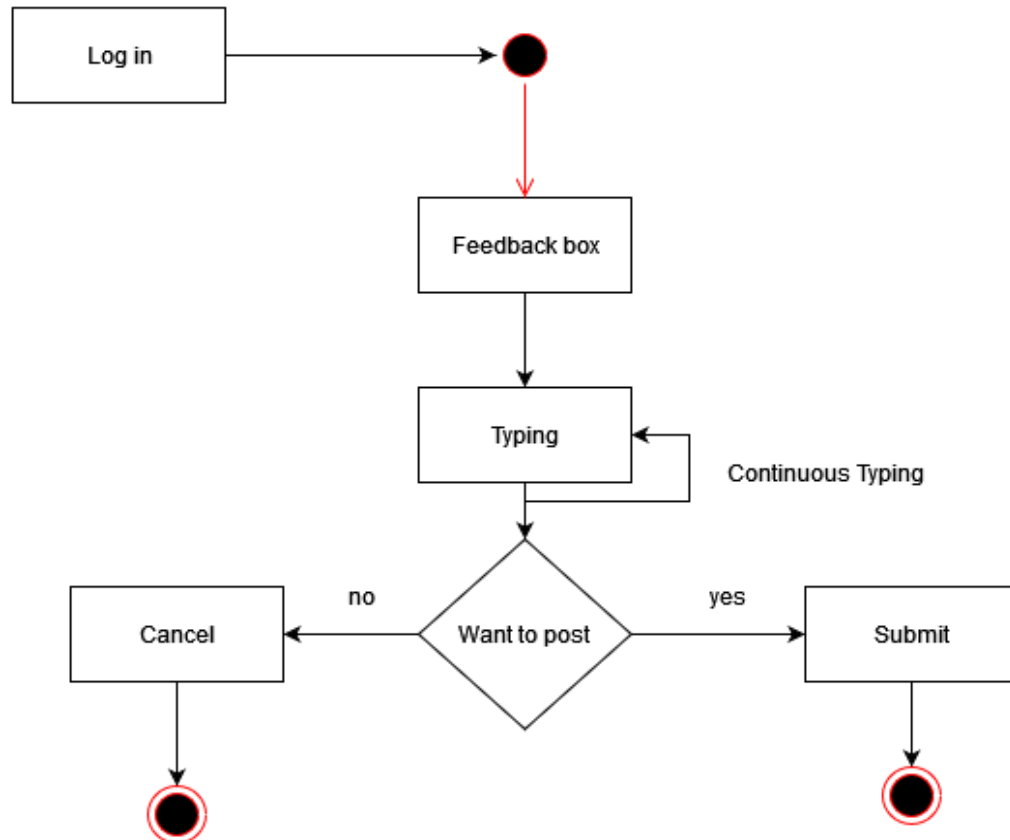


Fig 7: Review Hotel

Activity Diagram for Cancel Booking

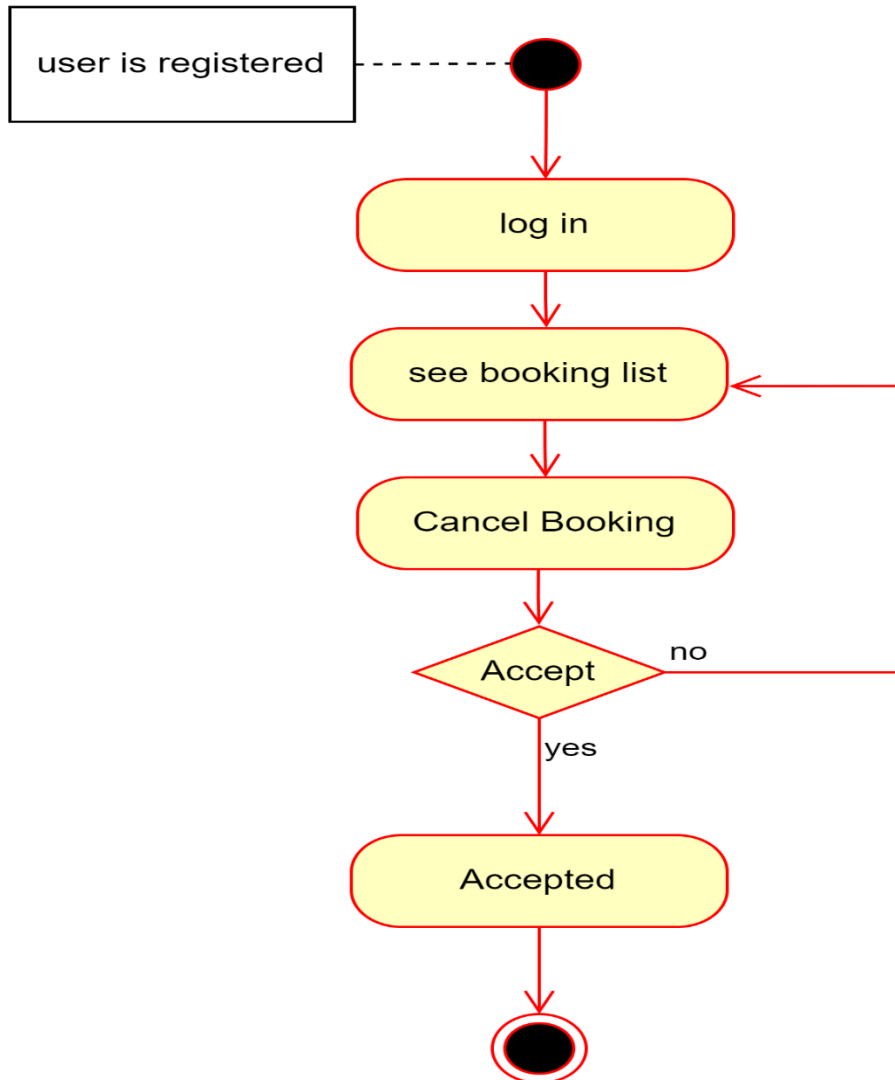


Fig 8: Cancel Booking

Activity Diagram for Hotel Owner Registration

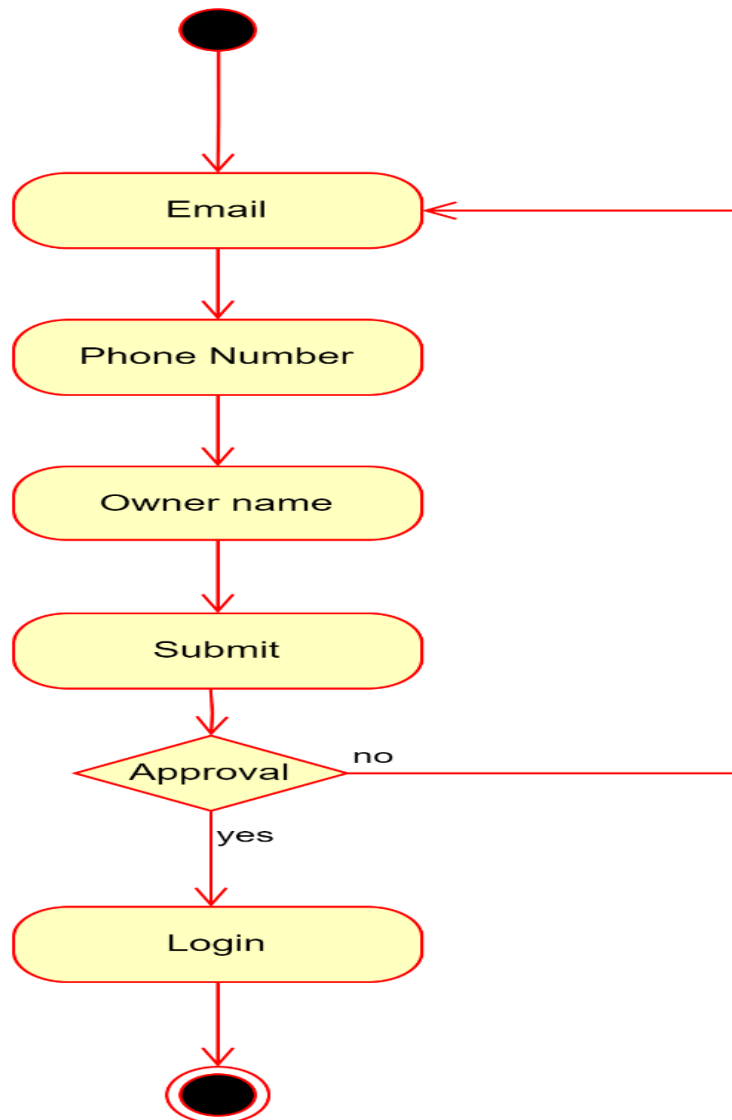


Fig 9: Owner Registration

Activity Diagram for Add Hotel

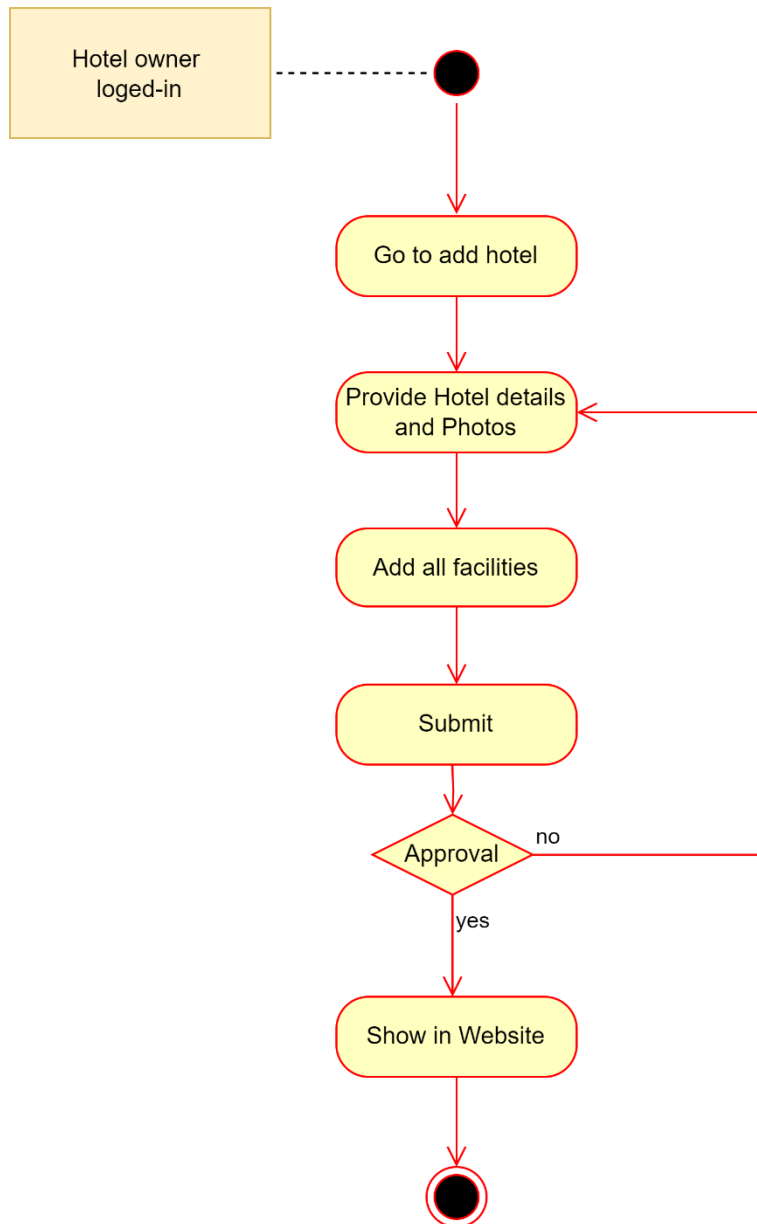


Fig 10: Add Hotel Rooms

Activity Diagram for Edit Hotel

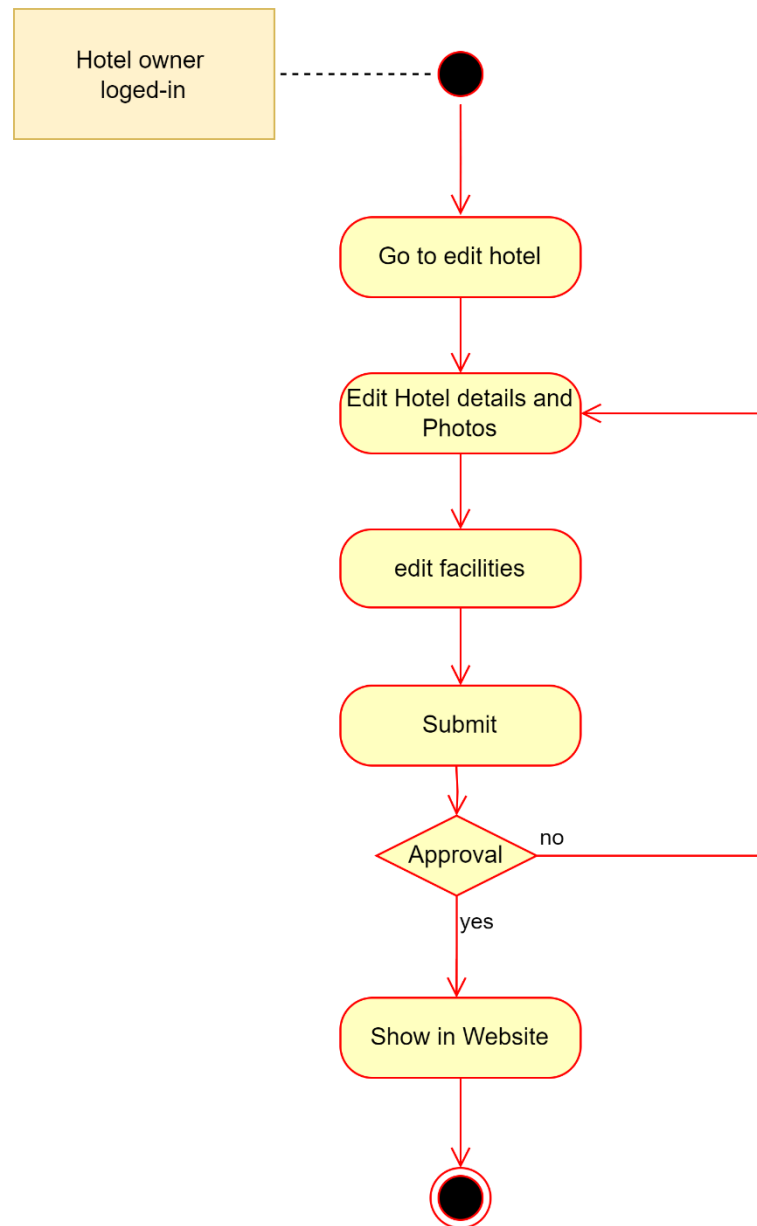


Fig 11: Edit Hotel Room Information

Activity Diagram for Delete Hotel

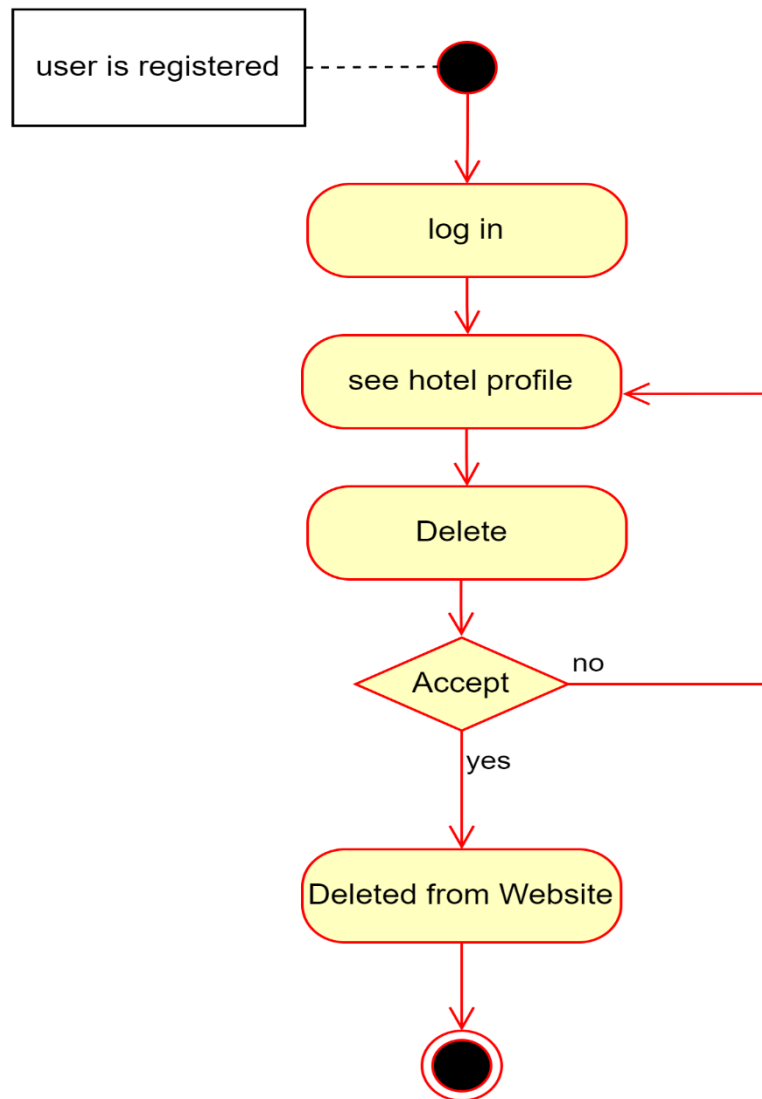


Fig 12: Delete Hotel Room Information

3.4 Sequence Diagram

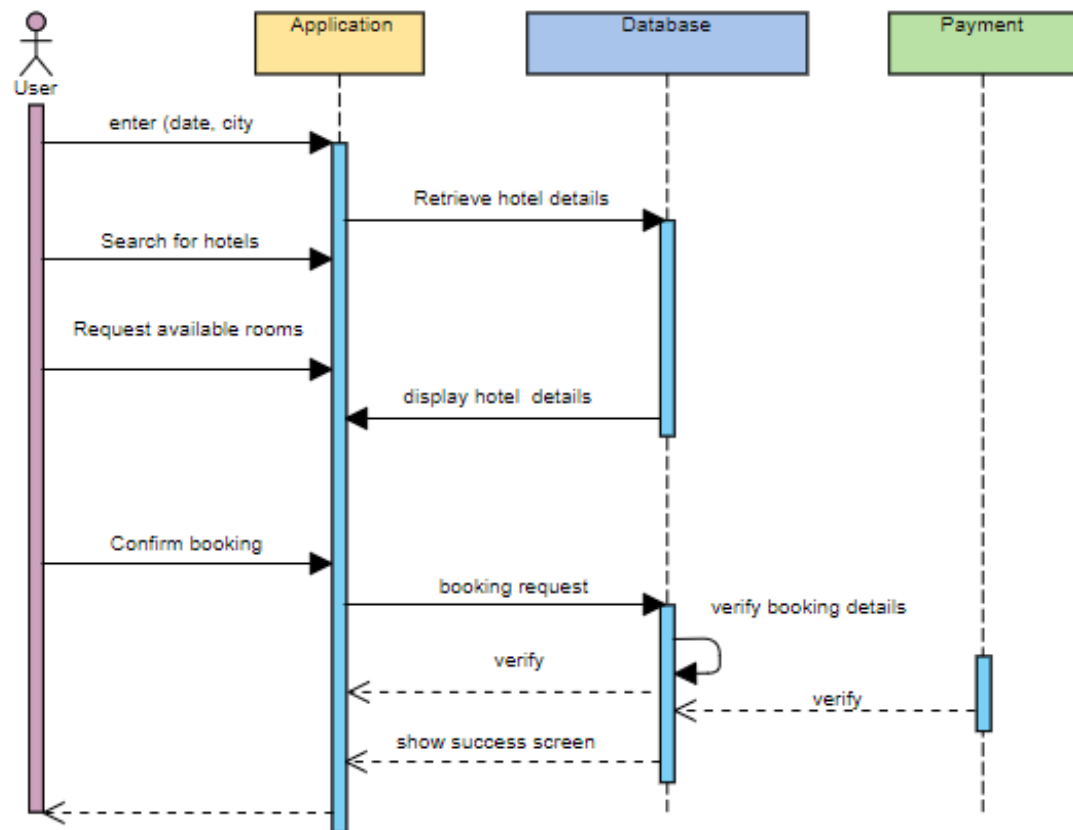


Fig 13: Sequence Diagram for the System

3.5 ER Diagram

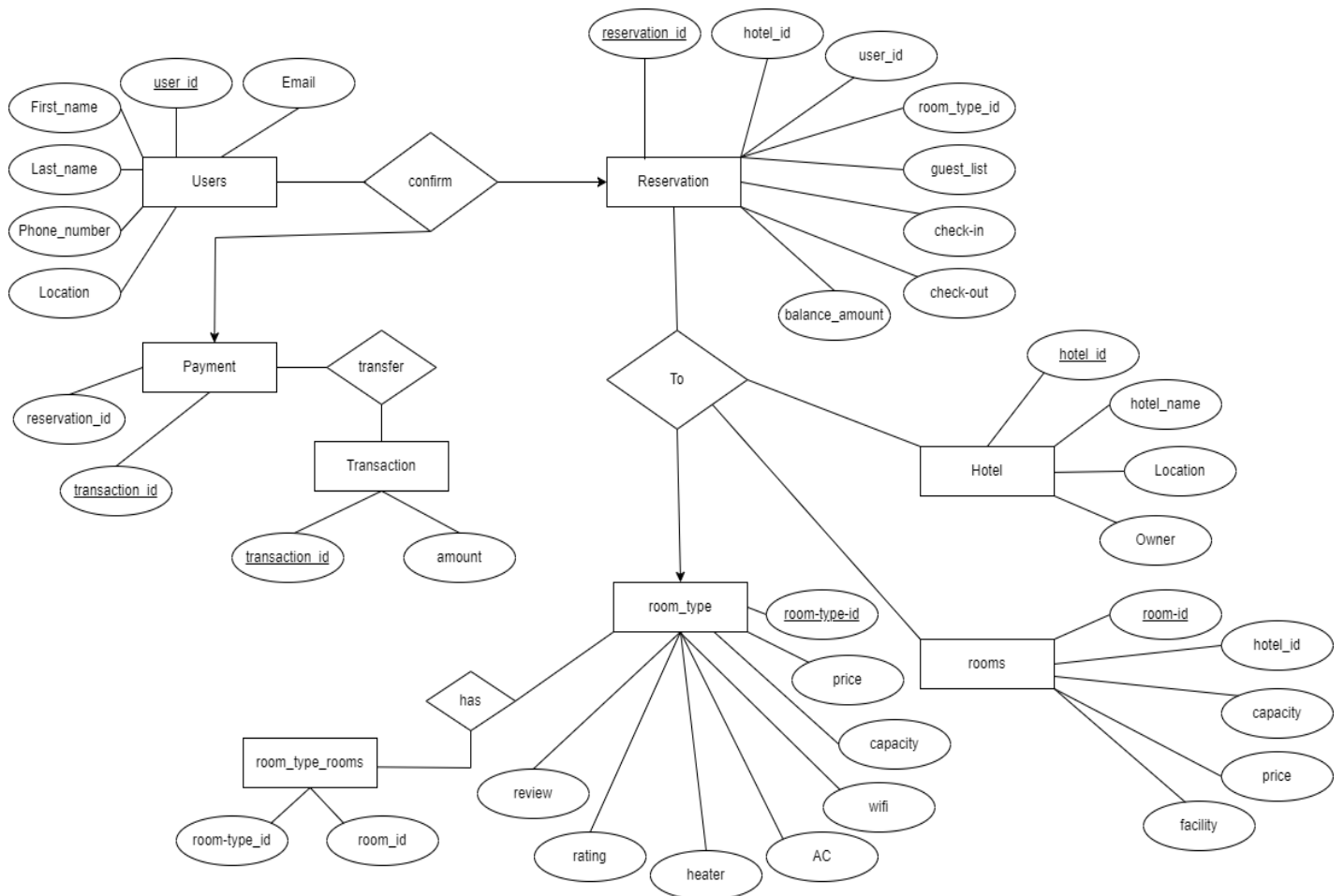


Fig 14: ER Diagram

3.6 Class Diagram

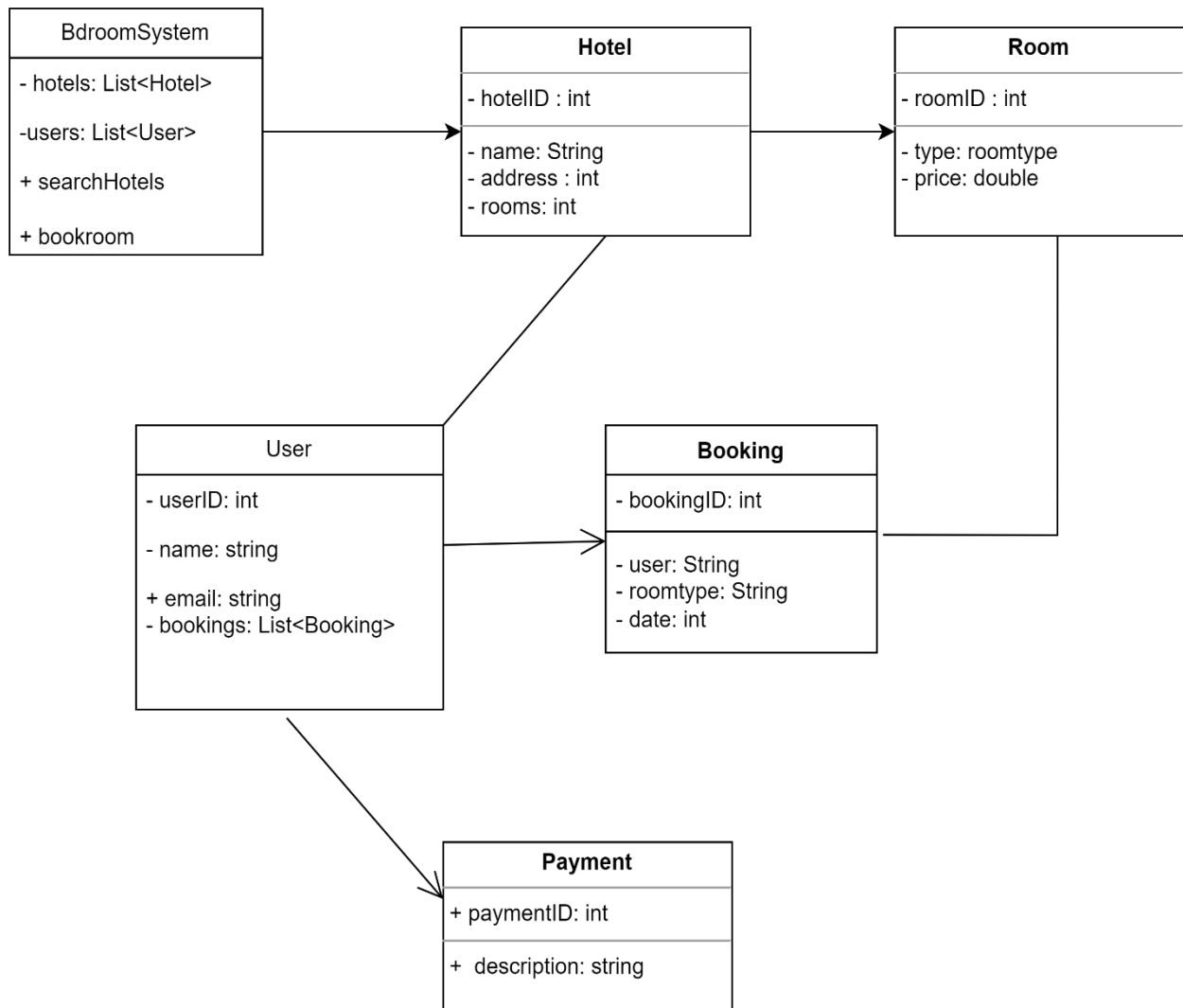


Fig 15: Class Diagram

CHAPTER 4:

DEVELOPMENT TOOLS & AND TECHNOLOGY

4.1 Integrated Development Environment (IDE)

Software development tools are used to develop software. There are different kinds of tools for software developers to make the process of software development very smooth. But now I will mention some of the tools that I am using to develop my project.

I use Visual Studio Code Editor as my IDE. Visual Studio is an integrated development environment from Microsoft. This is a dynamic and versatile IDE. VS code supports most of the programming languages, libraries, and frameworks. So that, I chose VS code as my development tool.

4.2 Programming Language

Language: Javascript

Frameworks: Next Js

4.3 User Interface Design

- HTML
- CSS
- Tailwind CSS

4.4 Database

MONGODB: I use MongoDB as my database. There are several reasons to use MongoDB, particularly if you need a flexible, scalable, and high-performance database solution. Here are some of the key benefits:

1. **Schema Flexibility:** Dynamic Schema: MongoDB is schema-less, meaning you don't have to define the structure of documents (records) before inserting data. This allows for easy modification of data structures as your application evolves without the need for costly schema migrations.
2. **JSON-like Documents:** Data is stored in BSON (Binary JSON), making it easy to work with complex data types and nested structures.

3. Scalability

Horizontal Scaling: MongoDB supports horizontal scaling through sharding. Sharding distributes data across multiple servers, enabling your database to handle large volumes of data and high-velocity read/write operations.

Replication: Built-in replication with automatic failover helps ensure high availability and data redundancy.

4.5 Deployment and Hosting

Vercel: I use Vercel to deploy and host my web application

CHAPTER 5: SYSTEM TESTING

5.1 Feature Testing

The testing of the software was done in full manual end user data flow testing style. The testing approach is narrated here omitting the technical details. Two common type of testing is black box testing and white box testing. Black box testing is also called functional testing. In this stage we test only functionality, input, and output. White box testing is structure-level testing. For this project I used black box testing.

Feature testing is considered to add and modify the feature system of the new features. New functionality of the system will be arrived here with the uppermost system. The main feature must be tested many times. Those are designed to make the web application more efficient, useful, reliable, effective, and secure.

5.1.1 Features to be tested

Features	Priority	Description
Log in	1	The user must be authenticated by the admin.
Log out	2	The session must be destroyed after logging out.
Registration	1	User information must be saved properly.
Search Hotel	1	The user must be search for hotel by date.
Book Hotel	2	User can book hotel when successful registration
Add Hotel	2	Hotel owner request to add hotel through register.
Payment	3	Users can pay through stripe.

Table 4.1: Features priority table

5.2 Test Strategies

I have used two different types of testing in this project to ensure the quality of my system. I focused on functional testing and structural testing mainly.

5.2.1 Test approach

- Black Box Testing (also called functional testing) is testing that ignores the internal mechanism of a system or component and focuses solely on the outputs generated in response to selected inputs and execution conditions.
- White-box testing (also called structural testing and glass box testing) is testing that takes into account the internal mechanism of a system or component.

5.2.2 Testing Schedule

Test Phase	Time
Testing plan create	3 Week
Unit testing	During development time
Component test	During development time
Testing user interfaces	1 Week
Performance testing	1 Week
Accessibility testing	1 Week

Table 4.2: Testing Schedule

5.2.3 Pass/fail Criteria

Pass or fail criteria will be set by the test engineers. They will prepare the pass/fail criteria based on which input data are worked and which does not work well. Those data that are worked well will be considered as pass criteria. And rest of the input data will be considered as fail criteria.

Now I will give the pass / fail criteria below.

- System crash will not be considered as pass case.
- If any criteria pass 100% times, then it will be considered as pass criteria only
- If data can't be displayed to the application properly, then it is also to be considered as fail criteria.

5.3 Test Cases

A test case refers to some rules and regulations or conditions by which it can be determined whether a system can be able to meet the works or requirements under test cases properly. We know, there is a chance to have some fault or break holes in any application. This is a very common scenario. And those issues are solved usually by software testing approaches. But if we don't care about those issues, then the full application development might be ruined. So proper testing must be needed. For testing our application, I have prepared some test cases. Now, I am going to provide them

Test case for Login

Test case #1	Test case name: Log in
Application: BD Rooms	Subsystem: N/A
Designed by: Omar Faruk	Designed date: 03 Dec-2023
Executed by:	Executed Date:
Short description: The registered users need to log in to the application. Before that our application will check the authentication and authorization.	Pre-conditions: 1. Users are always redirected to the login page whether they have not authenticated by our application while entering into the dashboard. 2. In this test case my number is 01777625475 and my password is 'password'

Step	Number	Password	Output	Pass/Fail	Comment
1	01777	pas	Invalid	pass	Can't log in
2	01777655	password	Invalid	pass	Can't log in
3	017755	pass	Invalid	pass	Can't log in
4	01777625475	password	Successful	pass	Successfully Login

Table 5.1: Login Test Case

CHAPTER 6

USER MANUAL

6.1 Homepage

This is the Homepage of the BD Rooms website. This manual will help users navigate, search, and manage bookings. Here you see top navigation bar, Search Function, listing hotel, filtering and sorting results, and notifications.

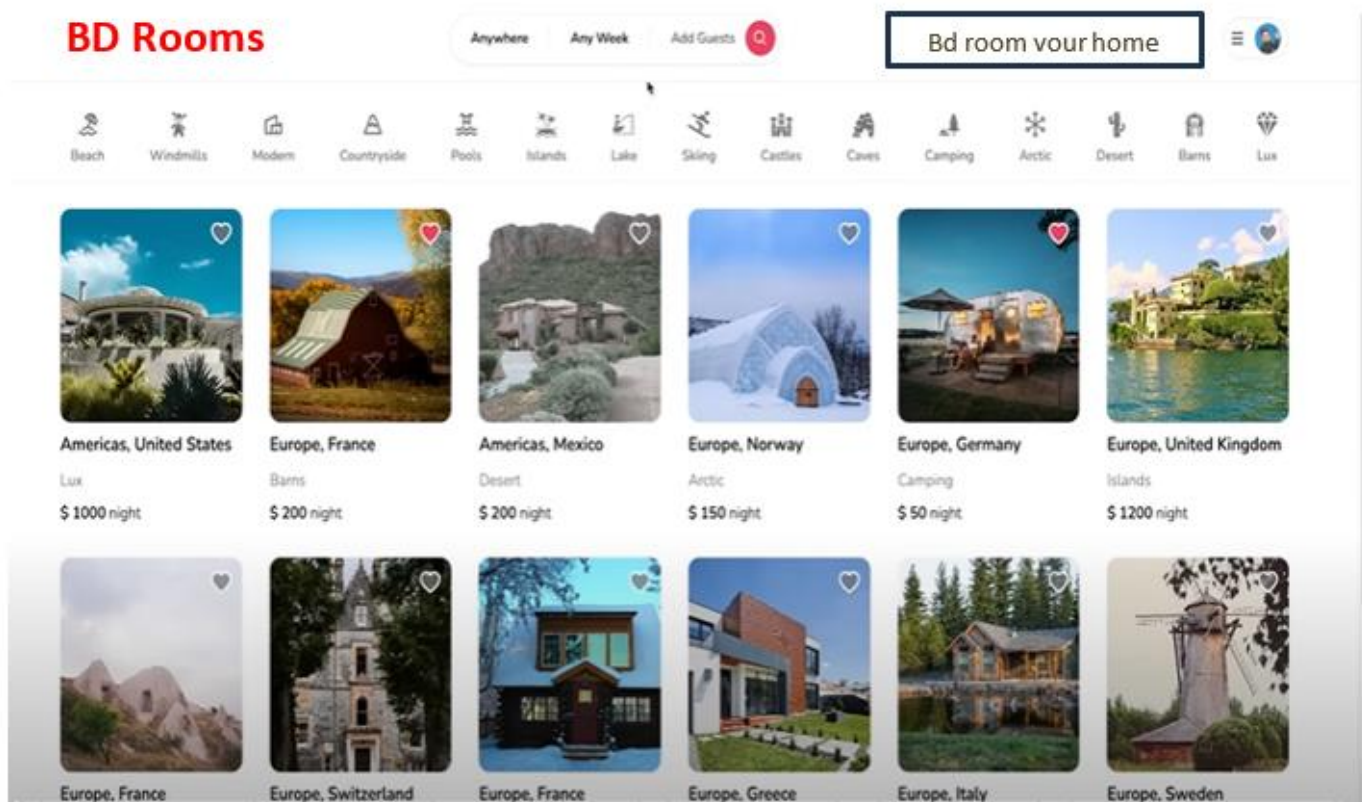


Fig 16: Homepage

6.2 Login /Signup Page

Signup/Login

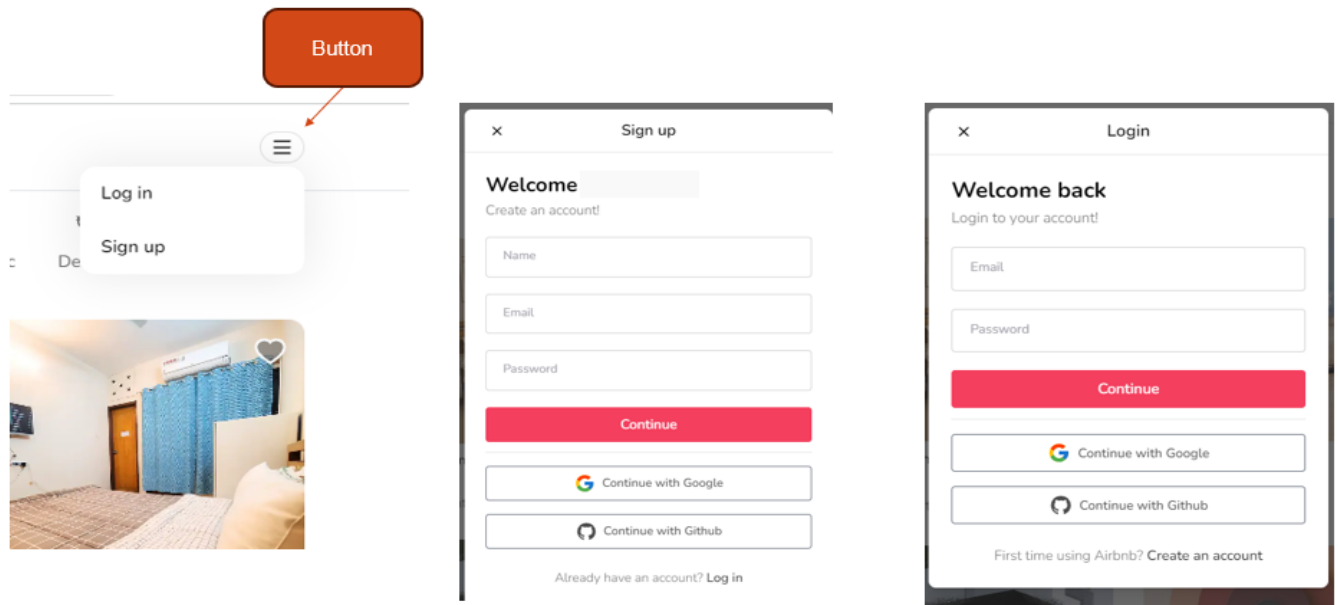


Fig 17: Login Page

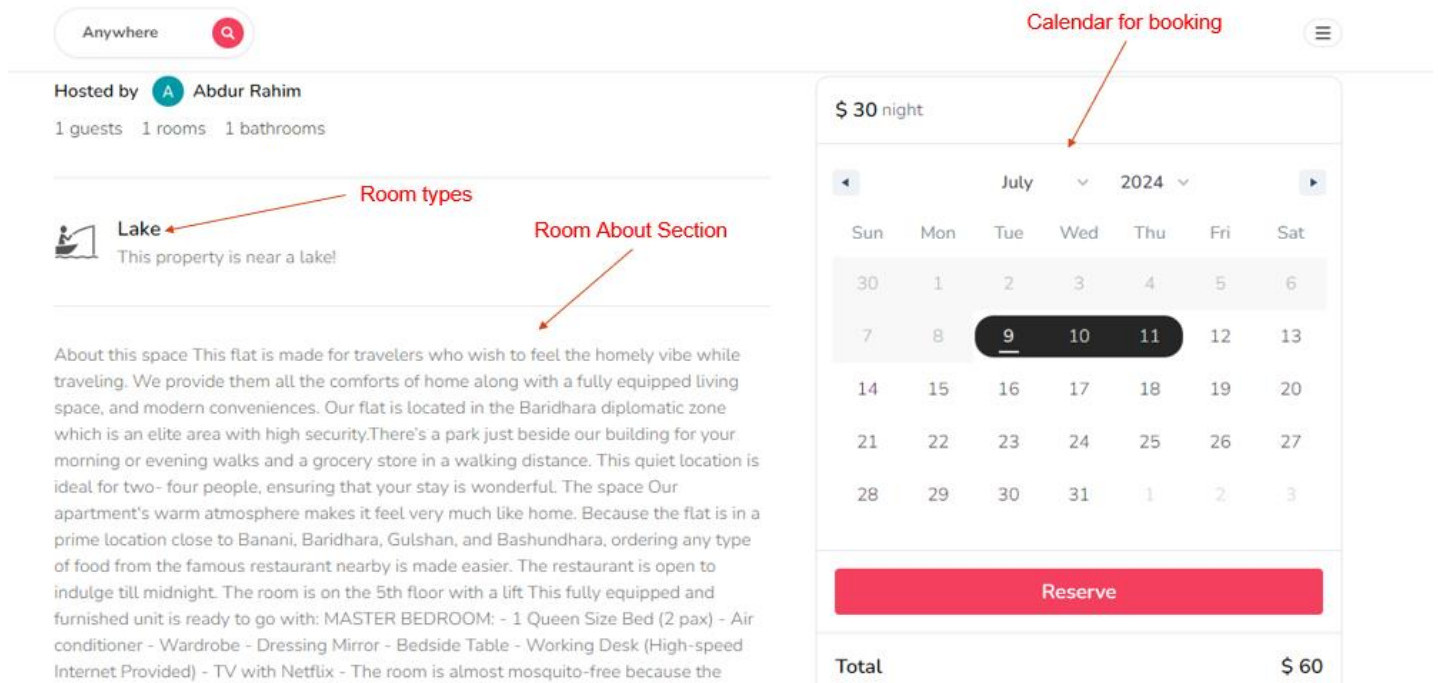


Fig 18: Booking Page

CHAPTER 7

CONCLUSION

Conclusion

The project implementation will redefine the hospitality industry in our country. BD rooms have emerged as a beacon of innovation, seamlessly connecting travelers with diverse accommodations through its user-friendly platform. BD rooms can transform people's experience through web technology. It creates a path of an efficient hospitality ecosystem.

7.1 Project Link

<https://github.com/omarfarukrasel/BD-Rooms>

7.2 Limitation

- **Scalability:** This web app is not scalable.
- **Security:** Every system have some security issue. We need to design a more secure system.
- **Dependency:** Depend on Technology
- **Maintenance:** Maintaining a web application is costly.

7.3 Future Scope

1. Add More Hotel room
2. Add More Country
3. Add Investor
4. Create a Startup

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