Kingdom of Saudi Arabia
Ministry of Higher Education
CCSIT, King Faisal University

Software Engineering

Hotel Management System

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Contents

1.Introduction

Software Engineering is an area where the user needs are analyzed, designed, implemented, and tested to make sure whether it meets the user requirement or not. Software Engineering is used for critical systems for large institutions. In order to apply what we have learned, we developed HMS project.

1.1 Purpose

This SRS is written to document the software requirements, including user and system requirements. SRS is readable and understandable by different users with different levels of knowledge. It provides an overview of our product with its scope, features, interfaces, and every other detail. The goal of this document is to collect and analyze and give a deep perception of the complete Hotel Management System by defining its capabilities, functional and non-functional requirements.

1.2 Document Conventions

SRS – Software Requirements Specification
HMS – Hotel Management System
End users – The people who will be actually using the system

1.3 Intended Audience and Reading Suggestions

The SRS will be read by different readers, so it meets each reader needs including system user to check whether their needs are met or required some changes, mangers in order to manage the development process, system engineer to understand what kind of system to be developed, test engineers to test the validity of the system, and system maintenance engineers to understand the hierarchy of the system and relationships between its parts to upgrade the system to cope with changes.

The SRS stands into two main sections. Starting with The Overall Desertions which describes the general requirements from a high-level perspective. Followed by a specific description of the requirement in details including functional and non-functional requirements.

1.4 Project Scope

The software product to be developed is a web-based HOTEL MANAGEMENT SYSTEM (HMS) which aims to provide an easy way of managing the major hotel operations. There are 2 end users for the HMS, who are hotel administrators, and customers. The system simplifies the efforts done by the hotel administrator through the automated system customers' services. As it will quickly serve and save time for the customer, It will reflect significantly on the company's profits by increasing its revenues.

The HMS consists of 3 subsystems. The first subsystem is a Reservation and Booking System that organizes the reservations of the rooms and check their availability. The second subsystem is about providing facilities (restaurant) to customers. The third subsystem is responsible for generating reports for all end users.

The system in its first version and available in English for now, although there are plans to make it available in different languages.

1.5 References

1. SRS refers to HMS projects we have implemented an ER model in Database & concept course.
https://drive.google.com/drive/folders/1vpeieQ2sQD7zWQcBMTUw4HX-ZVt_r1mi

2. The idea of the user interface design is taken from the following links
https://www.youtube.com/watch?v=-IADTLXHx4Y

2. Overall Description

2.1 Product Perspective

The HMS is an independent system and developed to replace the need for tradition attendance of a customer into online booking. Additionally, it enables the tourists to pre-book to ensure their residence. A simple diagram that shows the major components of the overall system shown in figure1.

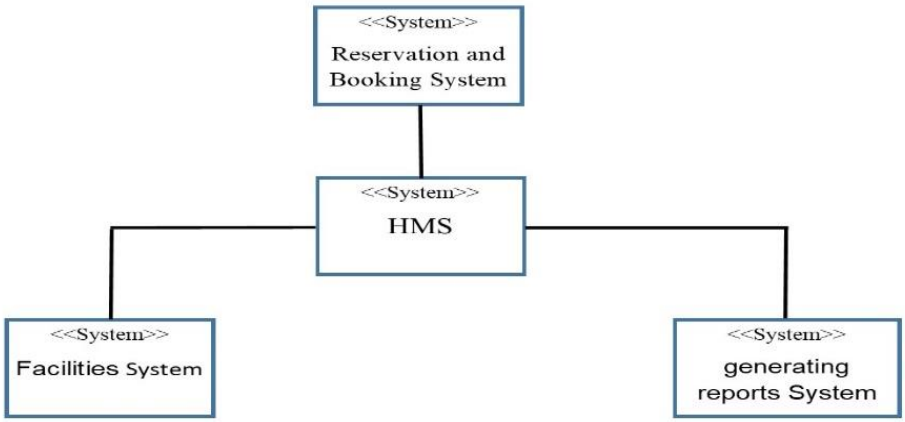


Figure1: Main components of HMS.

2.2 Product Features

The functionality of the subsystems will serve a different end-user:

Customers:

1. A customer can sign up for the system.
2. The customers will be able to log in.
3. The customers will be able to book one or more rooms; the room state will be changed to occupy in the database.
4. Customers can include meals along with their reservations.
5. Customer can view what the provided free services.
6. Customers can view a report of available rooms to make a reservation.
7. Customers can view bill information.

Admin:

1. Admin is able to login.
2. The administrator will be able to add a Room.
3. The administrator will be able to update Room information.
4. The administrator tracks customers' reservations.
5. The administrator can view all hotel rooms including (status and booking information) in the Hotel.

2.3 User Classes and Characteristics

The Educational level of HMS computer software – Low
Experience of HMS software – None
Technical Expertise – Little
Customer and Admin – High.

2.4 Operating Environment

- Hardware platform:

  HMS will be operated on the Windows10 operating system.

- Software platform:

  We will use MySQL to configure all the databases required for HMS. While we will use Java language to develop the system.

2.5 Design and Implementation Constraints

As the HMS is a web-based system, we are limited to develop the system and its interfaces using Java GUI component because we have not taken the Web-Based System course yet.

2.6 User Documentation

We will provide a user manual along with the software. When the user opens the system, he can click the help button to view the instructions for each transaction. So, the user manual acts as a guideline for the non-expertise users.

2.7 Assumptions and Dependencies

HMS is a web-based system that primely depends on the Internet connection. if there is a problem with the connection, as a result, the system will not be available. Besides, poor connection during the process (e.g booking) would lead to an incomplete transaction.

3. System Features

3.1 System Feature 1

Log in

3.1.1 Description and Priority:

The users (admin and customer) have to verify their identity by providing their username and password. This feature is the highest priority since the user s will not able to use the system unless they log in.

3.1.2 Stimulus/Response Sequences

the users shall fill their username and password in the required fields. After submission, the system will verify if their information has already recorded. If they exist, they can use the system for further transactions. According to the admin, if he entered the wrong information, he will receive an error message that prompts him to try again. For a customer, he will receive an error message which prompts him to sign up.

3.1.3 Functional Requirements

1.The system will verify the entered information.
2. Send the appropriate message to the user (‘error’).

3.2 System Feature 2

Sign up

3.2.1 Description and Priority:

The new customer has to fill the form of their information to register in the system This feature is the highest priority since the new customer will not able to use the system unless they sign up.

3.2.2 Stimulus/Response Sequences

The new customer shall fill the required form. After submission, the system will record the customers’ information.

3.2.3 Functional Requirements

1.The system will store the entered information into the database.

3.3 System Feature 3

Add rooms

3.3.1 Description and Priority:

Admin can add a room to the system This feature is considered a high priority since this information will be used for further transactions.

3.3.2 Stimulus/Response Sequences

the admin will provide the required details by filling a specific form. After submission of the form, an admin will receive a confirmation message.

3.3.3 Functional Requirements

1.The System will record the room information.
2. Send the appropriate message to the admin (‘confirm’).

3.4 System Feature 4

Update room

3.4.1 Description and Priority:

Admin can change room information including, price, and type. This feature is considered a medium priority since updating room’s type and price is not frequently used.

3.4.2 Stimulus/Response Sequences

the admin will enter the ID of the room in the search bar. If that room is found, the system will view its information for manipulation. Then, the admin will be able to update the data and submit it to the system. A confirmation message is expected to receive. On the other hand, if the system could not find the room, an admin will receive an error message.

3.4.3 Functional Requirements

1. the admin will make changes to the data, such as changing price and type.
2. The system will reflect the admin changes on the database.
3. Send the appropriate message to the admin (‘error’, ‘confirm’).

3.5 System Feature 5

Check availability

3.5.1 Description and Priority:

This feature will facilitate the reservation process by viewing all the unbooked rooms. The customer can filter the results according to their type or price. This feature is considered as a second priority as it saves the effort and time to the customer.

3.5.2 Stimulus/Response Sequences

All the available rooms will be shown by the system to the customer by clicking on the (‘check availability’) button. The system can filter the results in response to customer action (‘filter by price’ and ‘filter by type’).

3.5.3 Functional Requirements

1 the system scans all the rooms and view the unbooked rooms.
2. system will respond properly to the filter command (type, price).

3.6 System Feature 6

book room

3.6.1 Description and Priority:

Customers can make a reservation by providing the room number, check-in and check-out dates, and a number of nights. After completion of the booking process, the bill will be generated automatically by the system. This feature is considered a high priority since it is the main purpose of the system.

3.6.2 Stimulus/Response Sequences

the customer should provide specific information such as check-in and check-out dates. After the submission of the order, the system will check the state of the room. If it is already booked, an error message will be sent (“This room is booked”).

Otherwise, the system will update the state of that room to (“booked”). Then, send a confirmation message to the customer and generate the bill.

3.6.3 Functional Requirements

1. The System checks the room state.
2. Change the state of the room to (“booked”)
3. Send the appropriate message to the customer (‘error’, ‘confirm’).
4. The System generates the bill.

3.7 System Feature 7

Include meals

3.7.1 Description and Priority:

The customer can register for the foodservice which includes three meals (breakfast, lunch, dinner). If the customer register in the service, the system will generate the total bill which includes reservation and food price.

3.7.2 Stimulus/Response Sequences

The customer can click (‘include meals’) button, so he can see the price and time for meals. Then choose whether he prefers to involve in this service. After involving in this service, the total will be generated.

3.7.3 Functional Requirements

1.The system will add the price of food service to the total bill when it is generated for specific customer.

3.8 System Feature 8

View the free facilities

3.8.1 Description and Priority:

The customer can view the services which are freely provided by the hotel such as Wi-Fi, gym,…etc

3.8.2 Stimulus/Response Sequences

The customer can click (‘view free facilities) button, so he can view the list of free services.

3.8.3 Functional Requirements

1.The system will provide the customer with a list of free services

3.9 System Feature 9

View reports

3.9.1 Description and Priority:

1.The admin can ask for a different types of reports.
2.summary of customer’s reservation.
3.summary of all the hotel rooms.

3.9.2 Stimulus/Response Sequences

When the admin asks for a report, the system will respond by generating the proper report according to admin choice.

3.9.3 Functional Requirements

1. The system will provide a proper report to the admin.

4. External Interface Requirements

4.1 User Interfaces

At the first-time user of the system, he will see a picture and a brief description of the hotel and its services, and he can select whether he is an admin or a customer in figure2. Both users will see the login interface in figure3. After a successful log in, they can select one of the several activities related to each of them figure4. However, if the customer is new, he can create his account by providing their information in figure5.

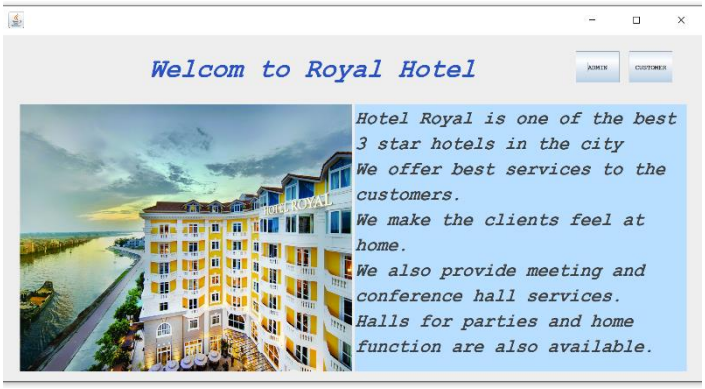


Figure2: Home Page

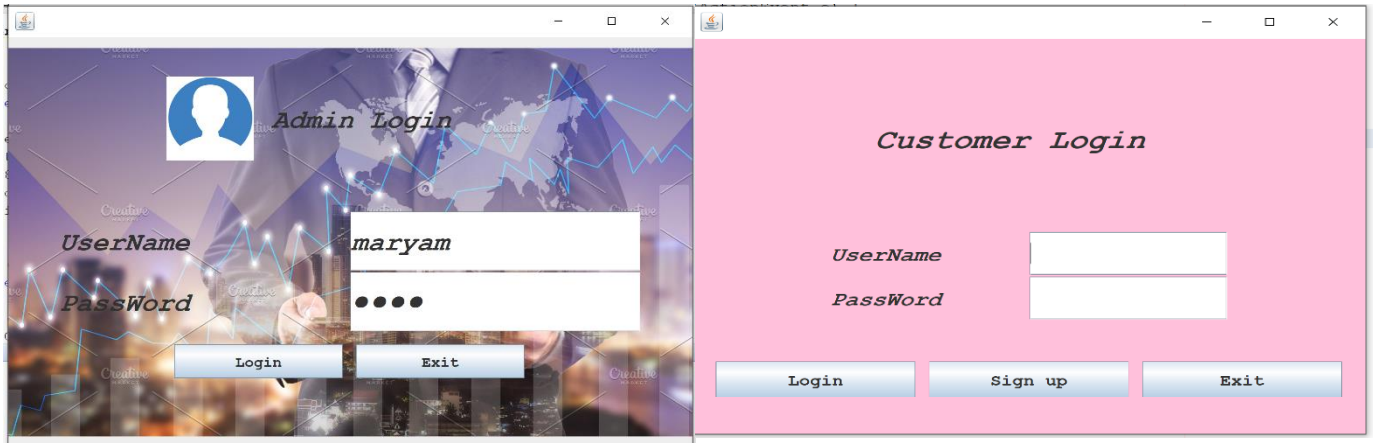


Figure3: Login interface

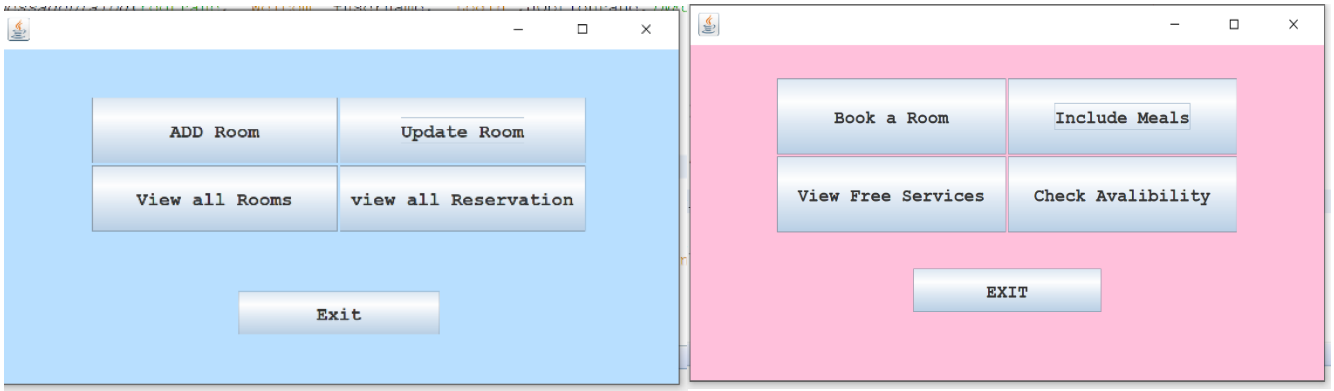


Figure4: Activates interface

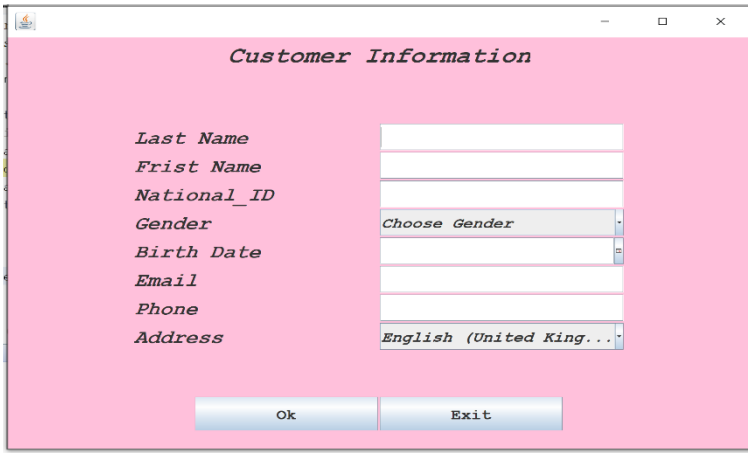


Figure5: Sign-up interface

4.2 Hardware Interfaces

The system shall run on a Microsoft Windows-based system.

4.3 Software Interfaces

HMS is a web-based that can run on any browser. According to our limitations, we implement the system using Java NetBeans (GUI components). We need database software to maintain the data for the system, so we chose MySQL WorkBench for that purpose.

4.4 Communications Interfaces

The HMS requires a web browser to be accessed.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

As the performance requirement is related to response time, the time needed to load each interface shall not exceed 2 sec. The login information shall be verified within five seconds. The communication with the database to send or receive data it takes 2 sec.

5.2 Safety Requirements

Any unauthorized user cannot make changes to the data stored in the database.

5.3 Security Requirements

Both users (Admin and customer) shall login to the system. The customer has access to the Booking and facilities subsystems. Whereas, admin has access to all subsystems to generate reports or do any modifications. Access to the various subsystems will be protected by a user login screen that requires a username and password.

5.4 Software Quality Attributes

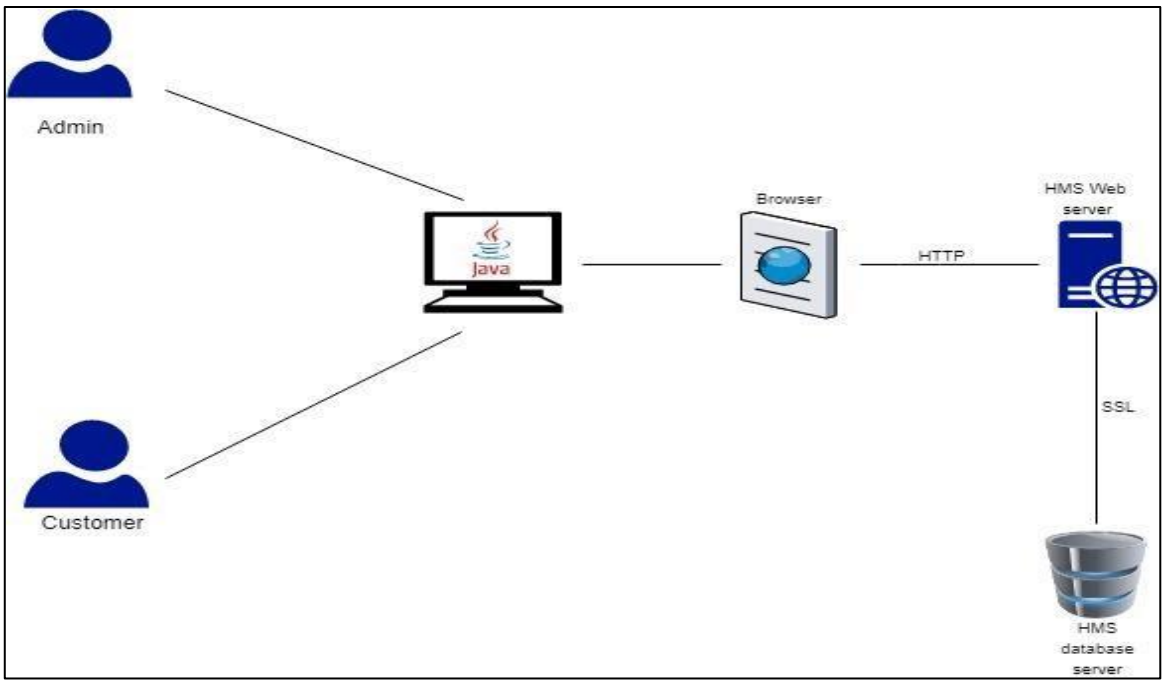
The reliability of the system depends on delivering the correct output to the user. The HMS should be available 24/7 for any user along with an Internet connection. Maintaining of the HMS is done by an authorized admin. According to the usability, the admin will be able to use all the features of the system within 2 hours of training,

and the customer can easily use it as the system interfaces are compatible with other software he already used. HMS is a portable system. It shall run in any Microsoft Windows environment that contains Java language and MySQL.

6.Analysis models:

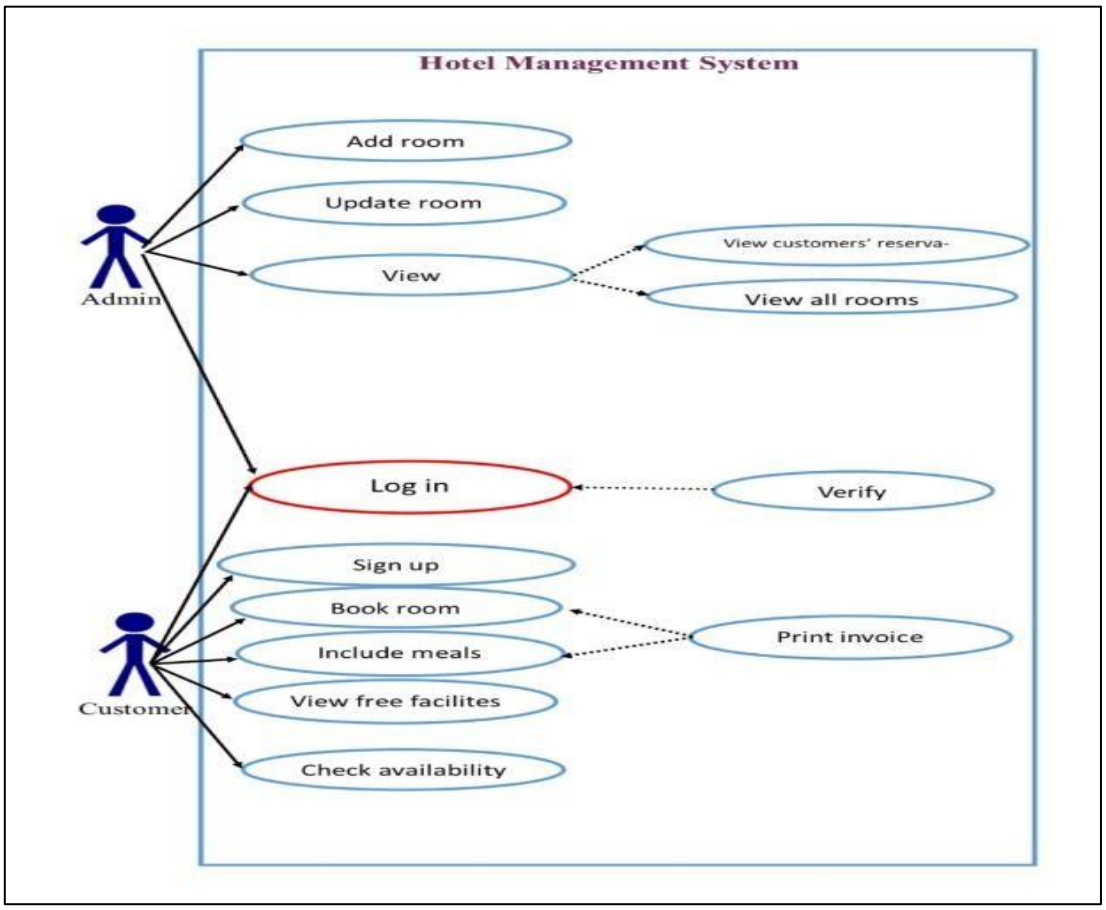
6.1 System architecture

This diagram represents the behavior and the component of the system.



6.2 Use case

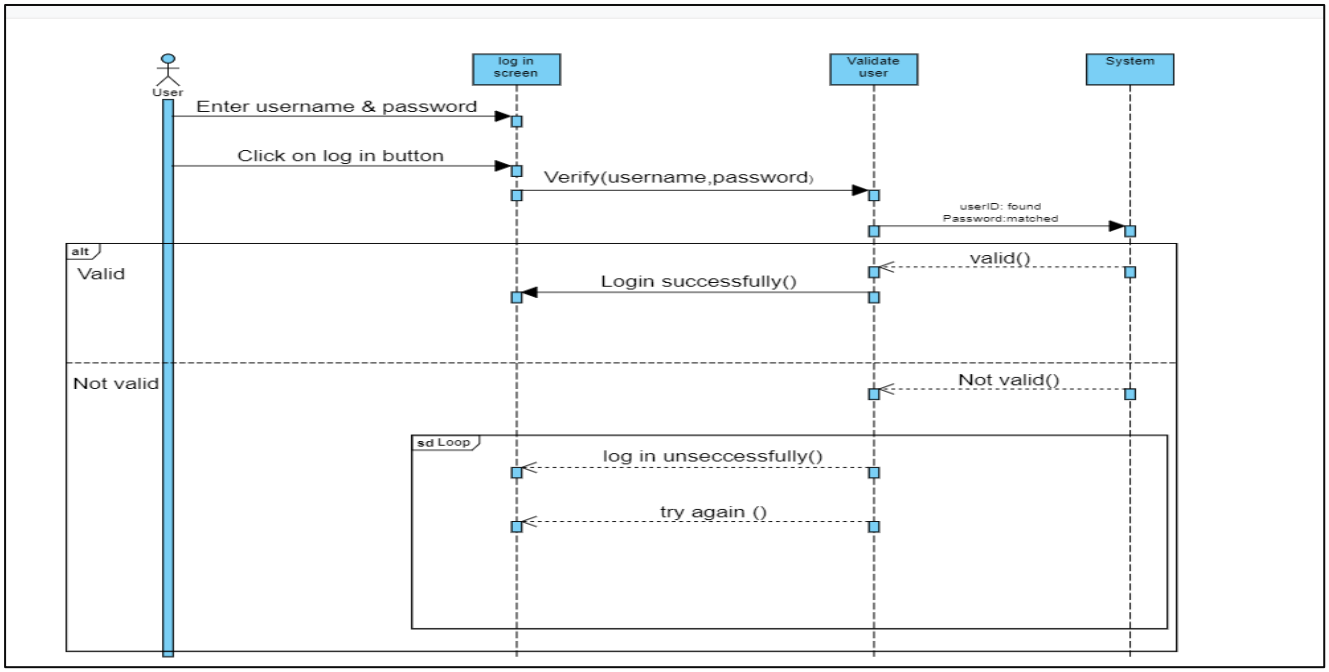
It shows the actions or events between the users (Customer and admin) and the system



6.3 Sequence diagram.

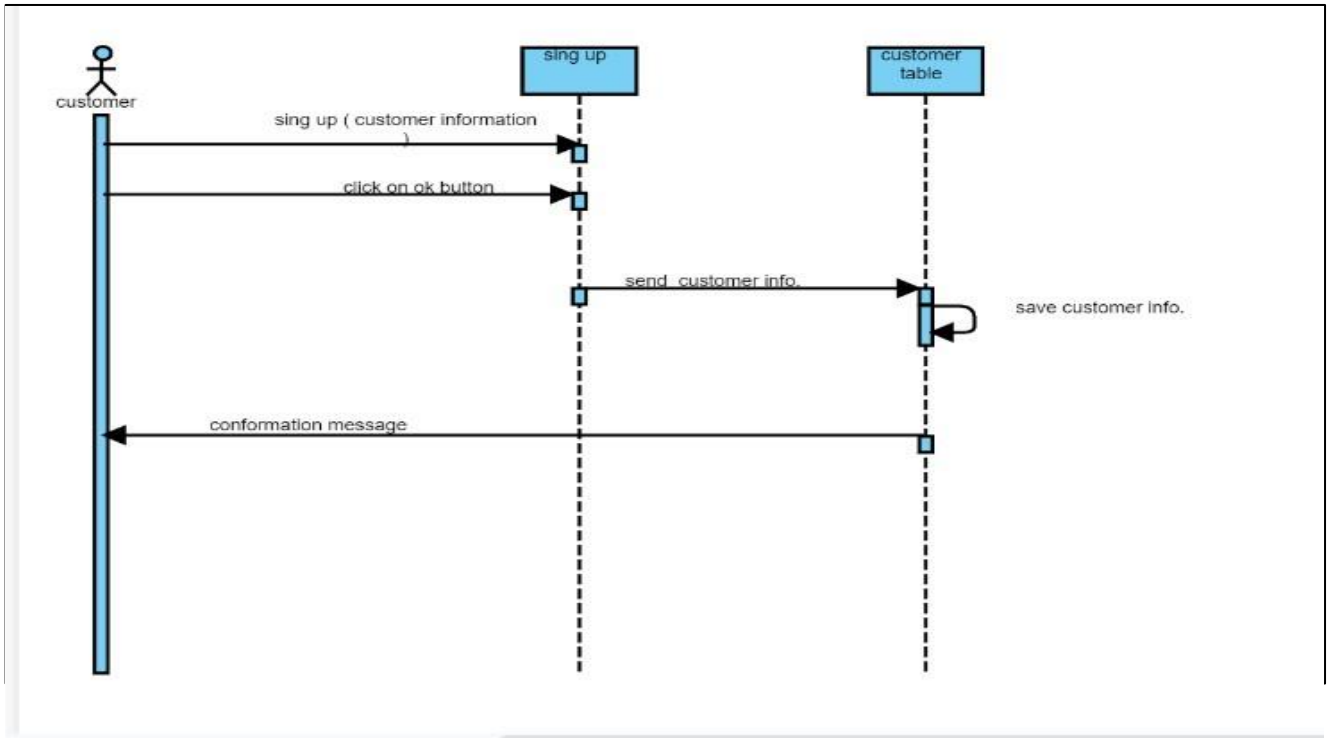
6.3.1 Log in

The below graph shows how the users (Customer and Admin) log in to the system using their username and password. Entered information will be verified by the system.



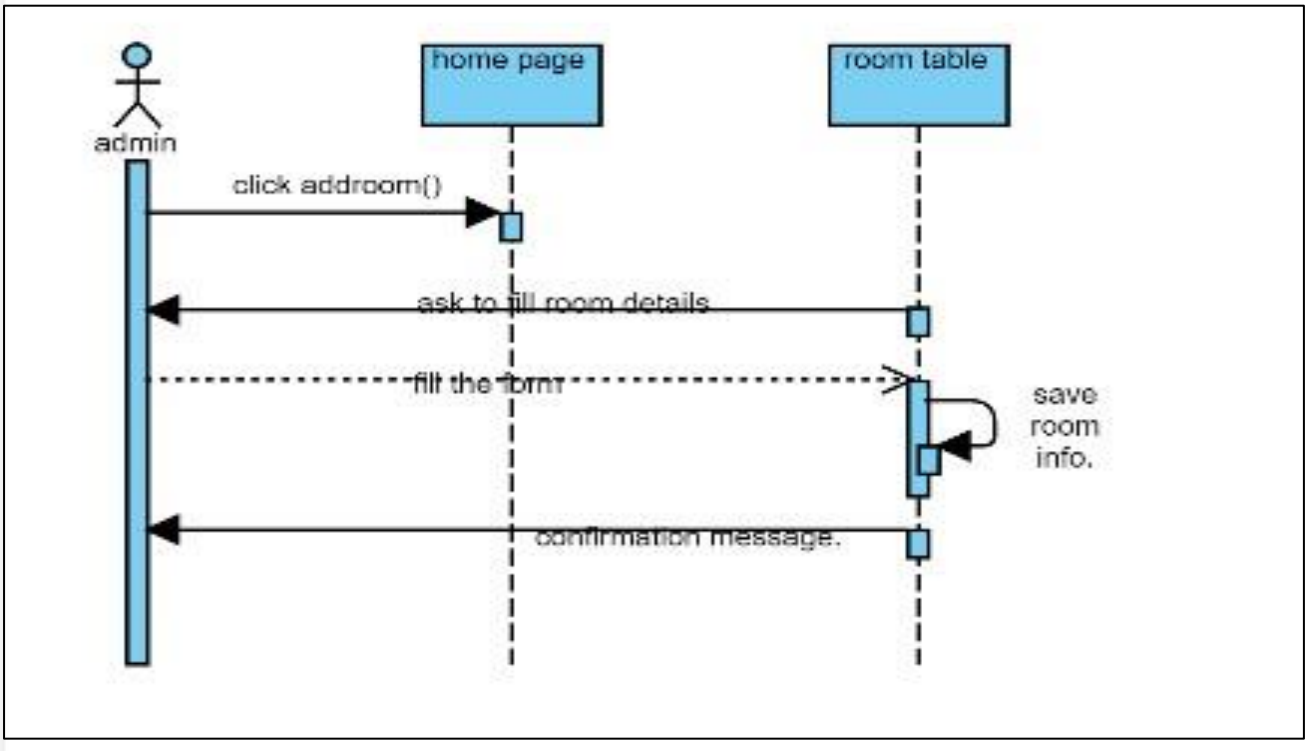
6.3.2 sign up

In the following diagram, it describes the steps of how new customers sign up by filling a form requires their information.



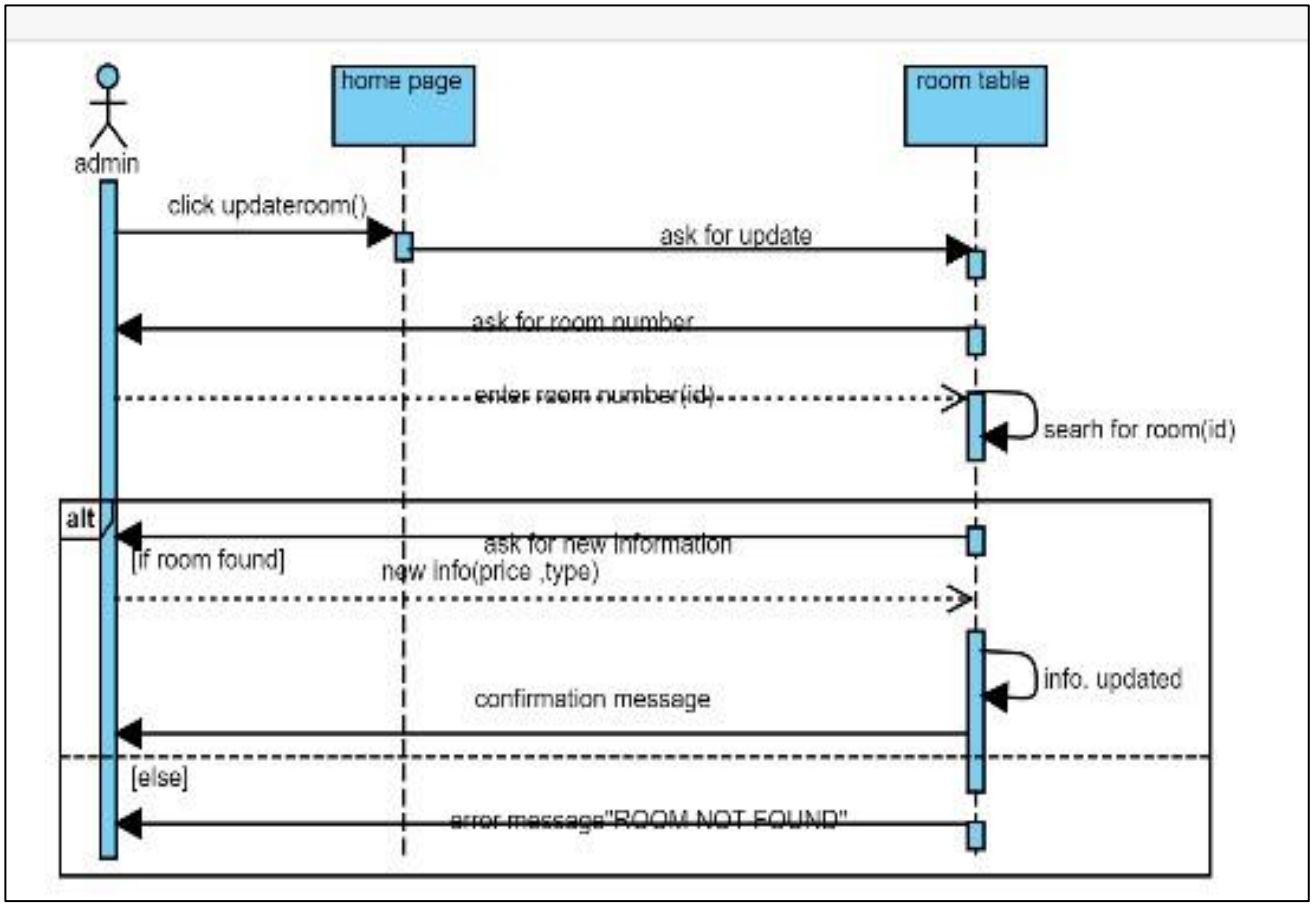
6.3.3 Add room

The following sequence diagram represents the procedure of adding a room to the system, including type, price, room number and so on, by the admin.



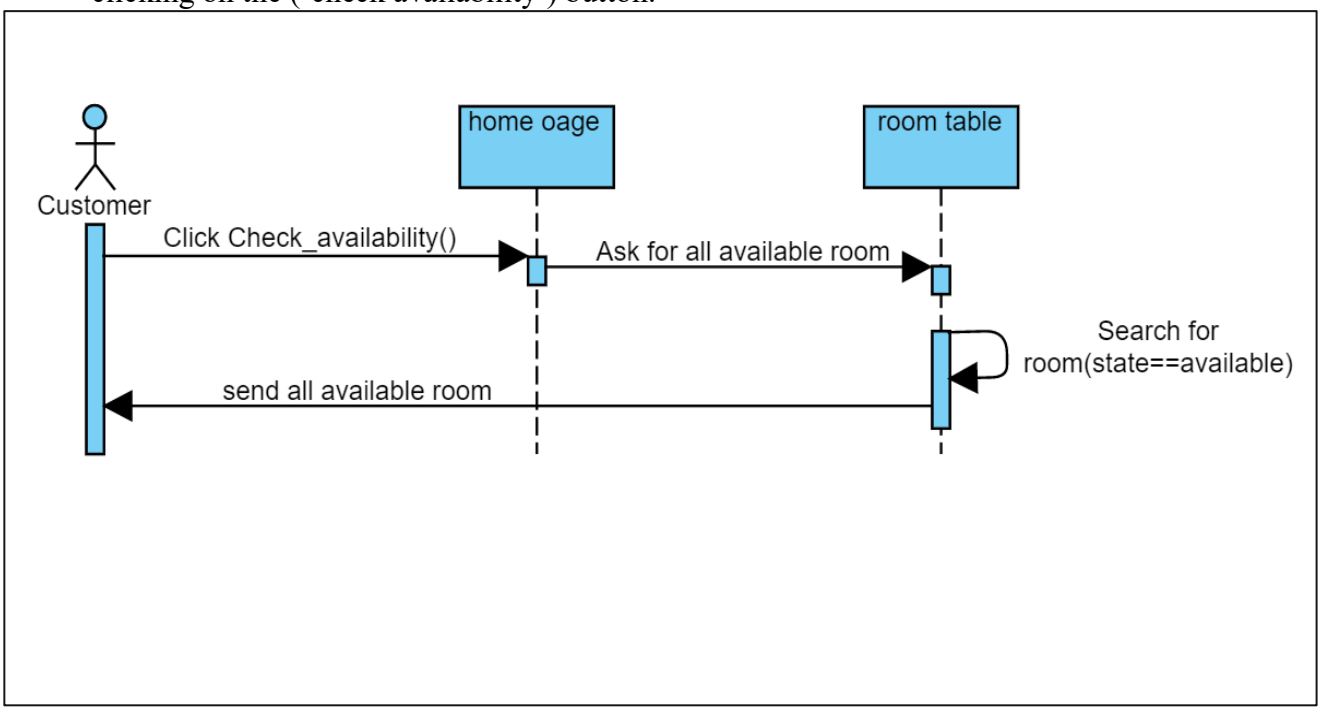
6.3.4 Update room

The following graph represents the procedure of updating a room in the system, including type and price, by the admin.



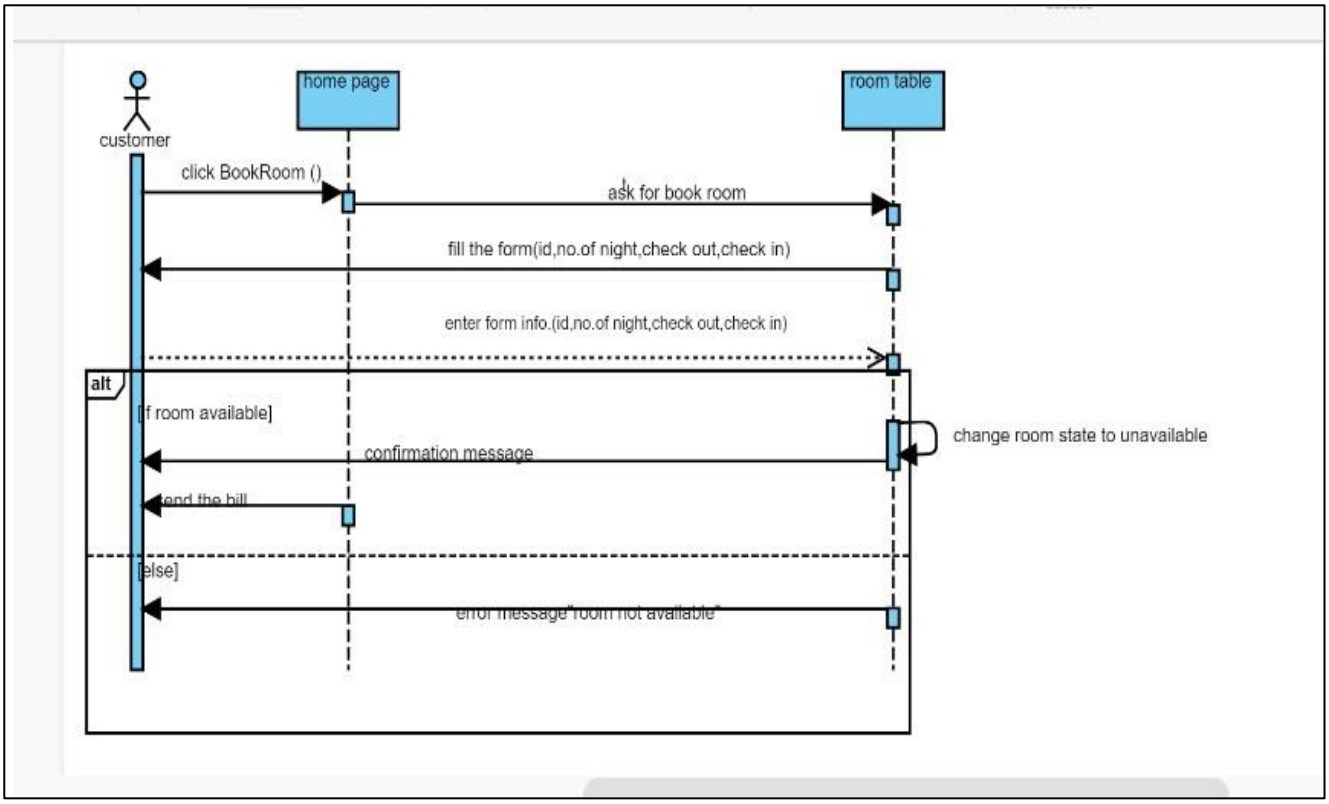
6.3.5 Check Availability of Rooms

The following sequence diagram describes the steps when customers want to check the availability of rooms. All the available rooms will be shown by the system to the customer by clicking on the (‘check availability’) button.



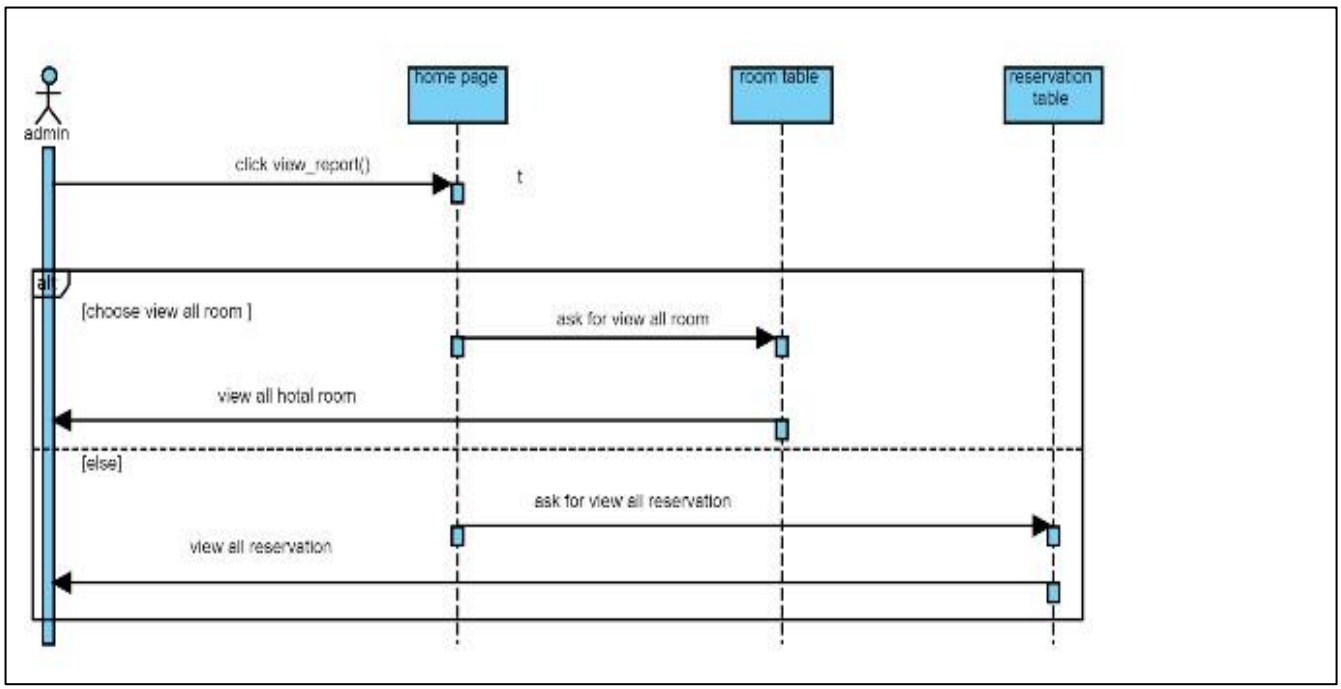
6.3.6 Book Room

The following sequence diagram represents the procedure of adding a room to the system, including type, price, room number and so on, by the admin.



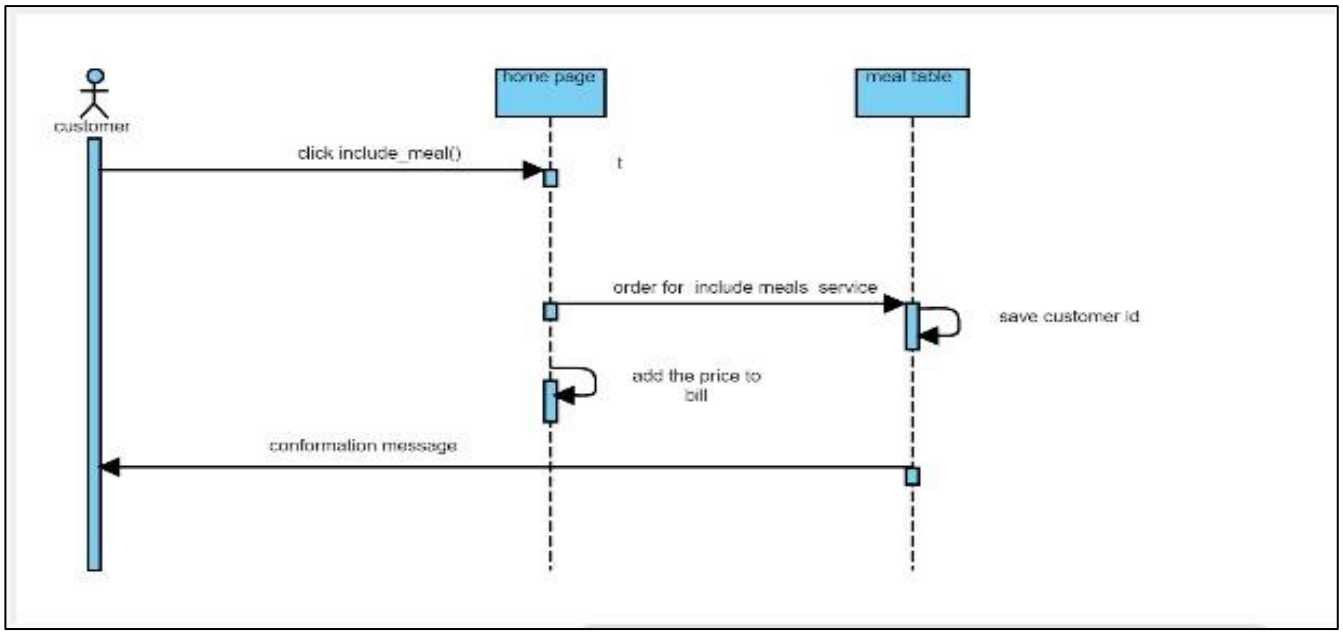
6.3.7 view report

The below diagram describes When the admin asks for a report, the system will respond by generating the proper report according to admin choice, either a summary of customer's reservation or all the hotel rooms.



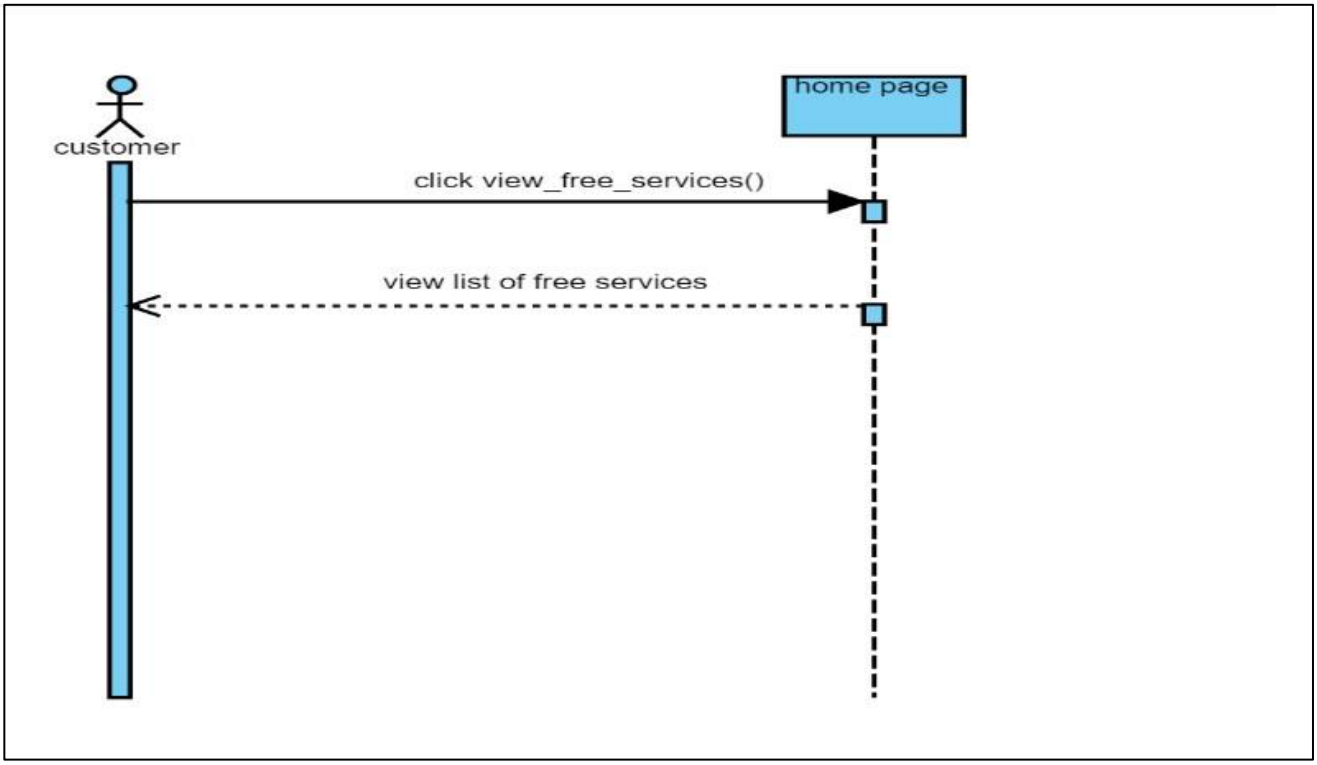
6.3.8 Include meals

The following sequence diagram represents “Include meals” use case which includes breakfast, dinner, and lunch. The customer can click the ‘include meals’ button, so he can see the price and time for meals. Then choose whether he prefers to involve in this service. After involving in this service, the total will be added to the bill and a confirmation message will be received.



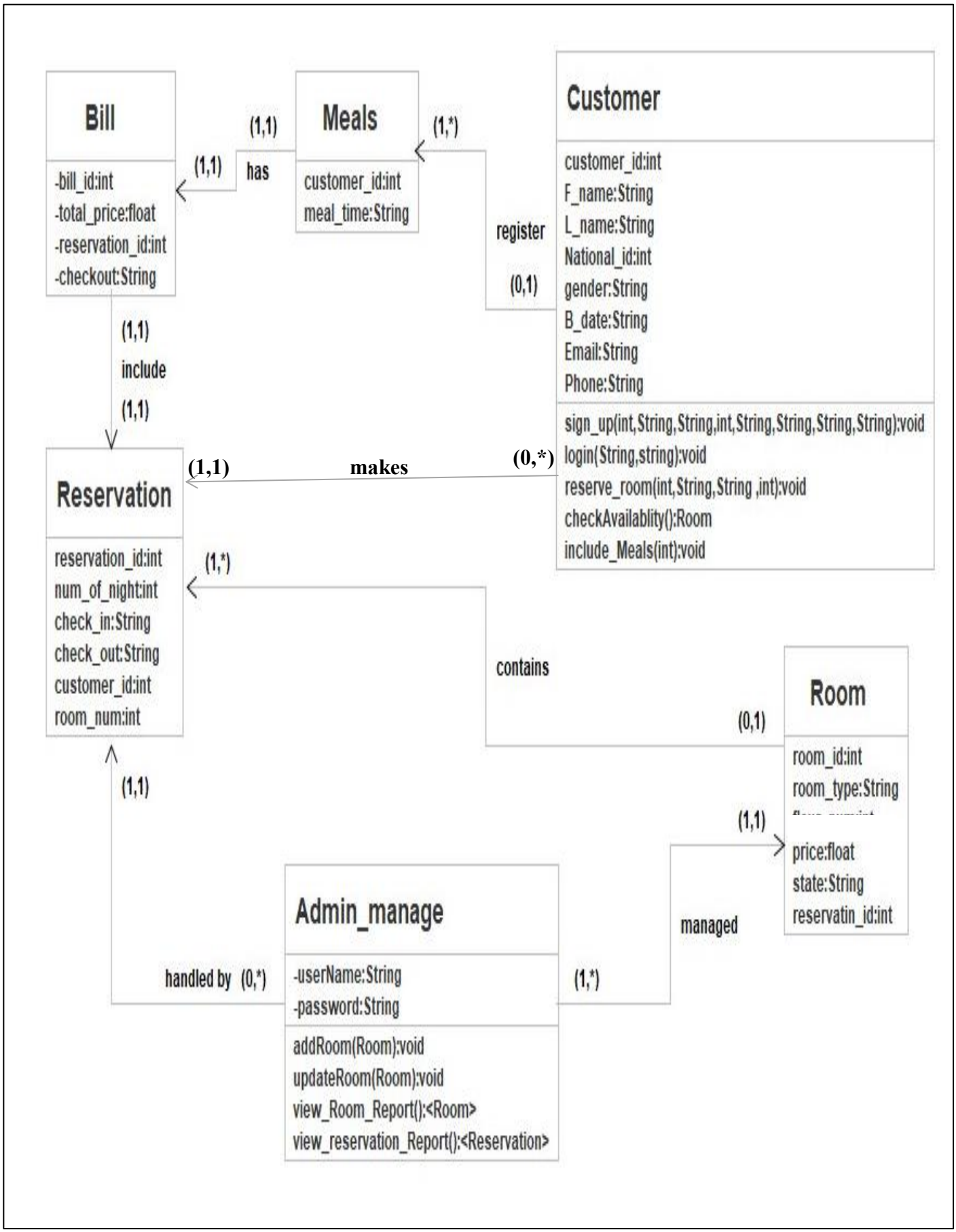
6.3.9 View free facilities

The customer can click (‘view free facilities) button, so he can view the list of free services.



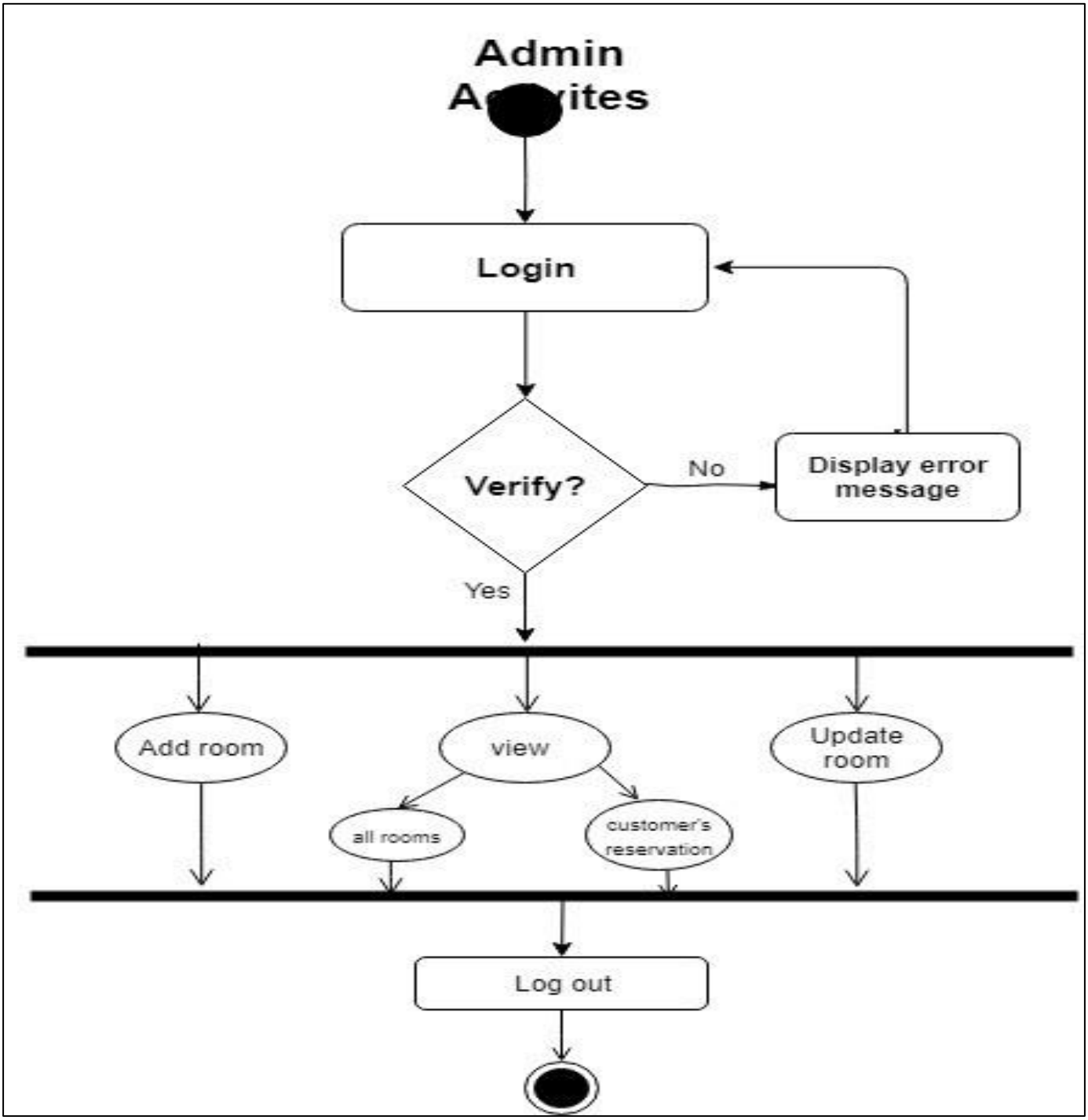
6.4. Class diagram

The following class diagram shows the main entities of HMS.



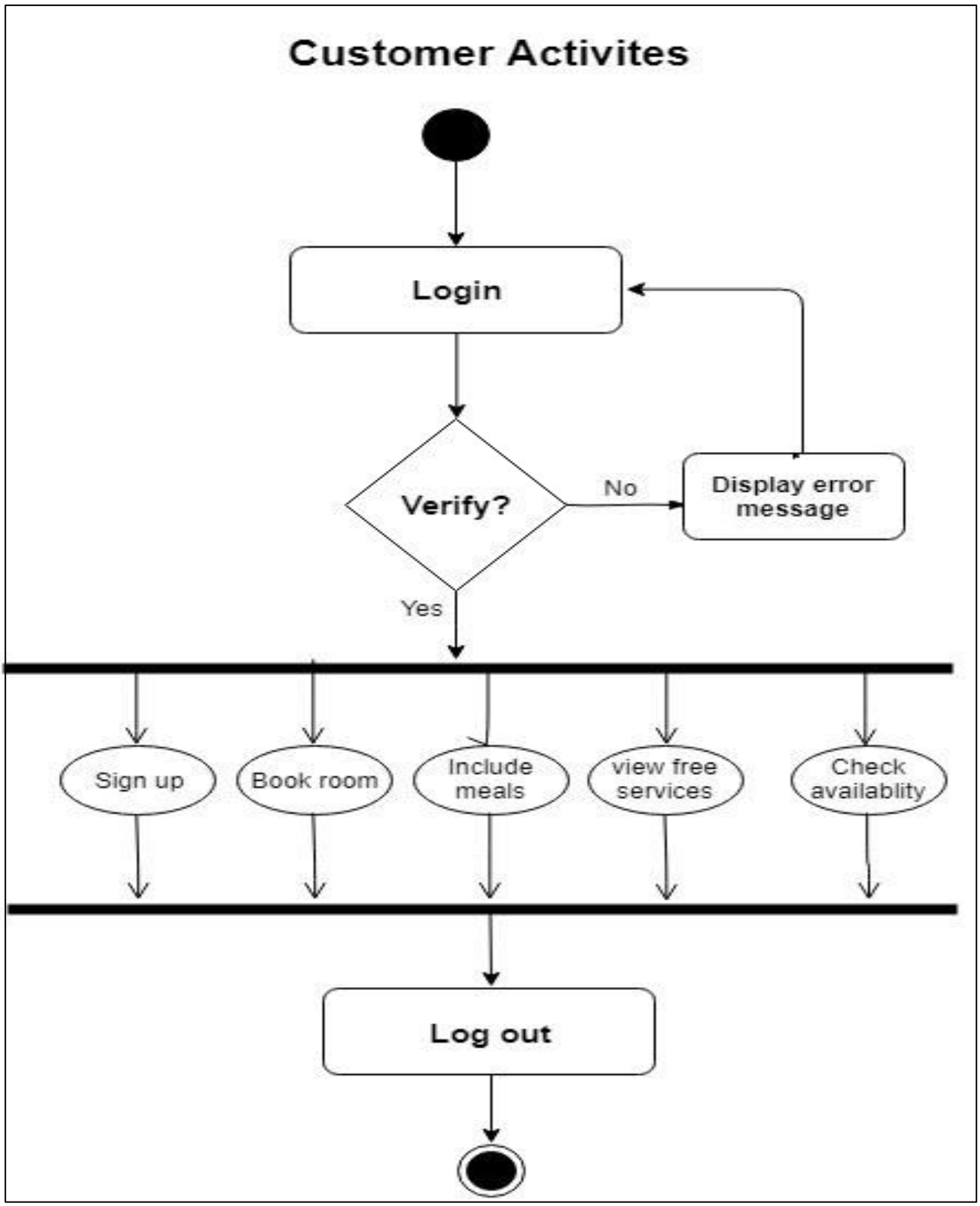
6.5.1 Admin activities

The below graph describes all activities that admin can perform through the system



6.5.2 Customer activities

The below graph describes all activities that customer is able to perform through the system



7.Testing and evaluation

Project Name: Royal Hotel	
Test Case # 1	
Test Case ID: LOGIN-01	Test Designed by: <Salma Maryam>
Test Priority (Low/Medium/High): High	Test Designed date: <8-12-2019>
Module Name: Login screen	Test Executed by: < Salma Maryam >
Test Title: Verify login with valid username and password	Test Execution date: <8-12-2019>
Description: Test the login page	

Pre-conditions: User has valid username and password

Dependencies:

Step	Test Steps	Test Data	Expected Result	Actual Result	Status (Pass/Fail)	Notes
1	Navigate to login page	Username (First name): Maryam	User should not be able to login	The system views an error message to enter information again	Fail	The user will not be able to login since he provides the wrong information
2	Provide valid username	Password (National ID):109876334				
3	Provide valid password					
4	Click on Login button					

.

Post-conditions:
User is validated with database and successfully login to account.
The account session details are logged in database.

Test Case # 2	
Test Case ID: SIGN.UP-02	Test Designed by: <Salma Maryam>
Test Priority (Low/Medium/High): High	Test Designed date: <8-12-2019>
Module Name: Sign up screen	Test Executed by: < Salma Maryam >
Test Title: Filling Customer information	Test Execution date: <8-12-2019>
Description: Test sign up page	

Pre-conditions: Customers fills valid information

Dependencies:

Step	Test Steps	Test Data	Expected Result	Actual Result	Status (Pass/Fail)	Notes
1	Navigate to sign up page	FirstName: Salma	User should be able to sign up	User is navigated to User activity menu	Pass	
2	Fill details in their appropriate blanks	LastName: Alomar				
3	Click on Ok button	NationalId:657789				
4		Gender:Female				
		BD:21-02-1998				
		Email:ss@gmail.com				
		Phone:0505876289				
		Address: Saudi Arabia				

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Post-conditions:
User information is successfully inserted to the database
The account session details started to operate any operation.

Test Case # 3	
Test Case ID: Add_Room-03	Test Designed by: <Salma Maryam>
Test Priority (Low/Medium/High): High	Test Designed date: <8-12-2019>
Module Name: Add room screen	Test Executed by: < Salma Maryam >
Test Title: Adding new room information to the system	Test Execution date: <8-12-2019>
Description: Test Add room page	

Pre-conditions: Admin fills valid information of a new room

Dependencies:

Step	Test Steps	Test Data	Expected Result	Actual Result	Status (Pass/Fail)	Notes
1	After admin log in	Room Number: 1	Admin should be able to add a new room	A confirmation message will be shown	Pass	
2	Navigate to add room page	Room type: twin				
3	Fill details in their appropriate blanks	Floor number:1				
4	Click on ADD button	Price:500				
		State: Available				

.

Post-conditions:
Room information is successfully inserted to the database.

Test Case # 4

Test Case ID: Update_Room-04	Test Designed by: <Salma Maryam>
Test Priority (Low/Medium/High): Medium	Test Designed date: <8-12-2019>
Module Name: Update room screen	Test Executed by: < Salma Maryam >
Test Title: Updating room price and type in the system	Test Execution date: <8-12-2019>
Description: Test update room page	

Pre-conditions: Admin fills valid information of a new room

Dependencies:

Step	Test Steps	Test Data	Expected Result	Actual Result	Status (Pass/Fail)	Notes
1	After admin log in	before Room type: twin after Room type: Single	Admin should be able to update room information	A confirmation message will be shown	Pass	
2	Navigate to update room page	Before Price:500 After Price:400				
3	change details in their appropriate blanks					
4	Click on Update button					

.

Post-conditions:
Room type and price is successfully updated to the database.

Test Case # 5

Test Case ID: Check Availability-05	Test Designed by: <Salma Maryam>
Test Priority (Low/Medium/High): Medium	Test Designed date: <8-12-2019>
Module Name: Check availability screen	Test Executed by: < Salma Maryam >
Test Title: Checking availability of rooms	Test Execution date: <8-12-2019>
Description: Test check availability page	

Pre-conditions: Customer view the available room in the system.

Dependencies:

Step	Test Steps	Test Data	Expected Result	Actual Result	Status (Pass/Fail)	Notes
1	After customer log in		All available rooms should be displayed to the customer	All the available rooms are viewed. Then checking filter choices will change the results according to the selection.	Pass	
2	Navigate to check availability page					
3	Customer can filter the results based on either price or type.					

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Post-conditions:
Available rooms should be displayed to the customer.
Available rooms can be filtered according to the price and type.

Test Case # 6

Test Case ID: Book room-06	Test Designed by: <Salma Maryam>
Test Priority (Low/Medium/High): High	Test Designed date: <8-12-2019>
Module Name: Booking room screen	Test Executed by: < Salma Maryam >
Test Title: Booking a room	Test Execution date: <8-12-2019>
Description: Test Book room service	

Pre-conditions: Customer is able to make one or more reservation.

Dependencies:

Step	Test Steps	Test Data	Expected Result	Actual Result	Status (Pass/Fail)	Notes
1	After customer log in	Room number: 3	Customer should not be able to book a room	Error message is shown to recheck the available rooms .	fail	Customer will not be able to book a room because the is unavailable
2	Navigate book room service	Number_of _nights: 3				
3	Customer should fill the appropriate form to book room/s	Check_in: 8-12-2019				
4		Check_out: 10-12-2019				

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Post-conditions:
Bill information will be generated to the customer.

Test Case # 7

Test Case ID: Include meals-07	Test Designed by: <Salma Maryam>
Test Priority (Low/Medium/High): Medium	Test Designed date: <8-12-2019>
Module Name: Include meal screen	Test Executed by: < Salma Maryam >
Test Title: Include meals	Test Execution date: <8-12-2019>
Description: Test Include meal service	

Pre-conditions: Customer is able to include meal with the reservation.

Dependencies:

Step	Test Steps	Test Data	Expected Result	Actual Result	Status (Pass/Fail)	Notes
1	After Customer log in	Check 'Breakfast 'choice	Customer should be able to choose one or more meals.	Bill information will be shown which includes the reservation details with meals information .	Pass	
2	Navigate to Include meal page	Number of person:3				
3	Choose one or more meals					
4	Click OK button					

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Post-conditions:
Bill information will be generated to the customer.

Test Case # 8

Test Case ID: View free facilites-08	Test Designed by: <Salma Maryam>
Test Priority (Low/Medium/High): Medium	Test Designed date: <8-12-2019>
Module Name: View service facility screen	Test Executed by: < Salma Maryam >
Test Title: View Free Facility	Test Execution date: <8-12-2019>
Description: Test view free facilities service	

Pre-conditions: Customer is able to view the free services.

Dependencies:

Step	Test Steps	Test Data	Expected Result	Actual Result	Status (Pass/Fail)	Notes
1	After Customer log in		The system will provide the customer with a list of free services.	.All the free services should be viewed to the customer	Pass	
2	Navigate to view free services					
3	Click OK button					
4						

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Post-conditions:
System will provide the customer with a list of free services

Test Case # 9	
Test Case ID: View reports -09	Test Designed by: <Salma Maryam>
Test Priority (Low/Medium/High): High	Test Designed date: <8-12-2019>
Module Name: View reports screen	Test Executed by: < Salma Maryam >
Test Title: View reports	Test Execution date: <8-12-2019>
Description: Test view report service	

Pre-conditions: Admin is able to view the all reservation made by customer and all rooms added to the system.

Dependencies:

Step	Test Steps	Test Data	Expected Result	Actual Result	Status (Pass/Fail)	Notes
1	After admin log in		The system will provide the admin with the appropriate report.	The selected report will be generated	Pass	
2	Navigate to view all reservation OR view all rooms					
3	Click OK button					
4						

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Post-conditions:
System will provide the admin with the appropriate report.

8. Conclusion

To sum up, Software Engineering helps us a lot to build a product that is compatible with the user requirement by following several steps. Starting with planning the project, writing SRS which includes functional and non-functional attributes, and divides the project into tasks and set timeline for each. Then, use models to design the project requirements to be clearer and more understandable. After that, develop the product and test it to detect errors and fix them. In fact, Software Engineering is an important discipline in Computer Science that helps to document Software engineers work.