

Project Course Lab Manual

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Introduction

In the dynamic and competitive hospitality industry, the effective management of hotel operations and guest experiences is paramount. The proposed Hotel Management System is an innovative solution designed to revolutionize the way hotels interact with their guests and streamline internal processes. This comprehensive system encompasses a range of features aimed at enhancing user experiences, ensuring operational efficiency, and prioritizing the security of both user data and financial transactions.

Objective

The primary objective of the Hotel Management System is to provide a seamless and user-friendly platform that caters to the diverse needs of both customers and hotel staff. By integrating key functionalities, the system aims to optimize the entire hotel lifecycle, from user registration and room booking to checkout and billing, while maintaining a strong focus on security and customer satisfaction.

Key Features

- User Registration and Login: The system facilitates a straightforward registration process for users, ensuring secure access through robust authentication mechanisms. Password recovery options further enhance user convenience.
- **Profile Management:** Customers can easily create and update their profiles, allowing for personalized experiences. This feature ensures that hotels can tailor services to meet individual preferences and needs.
- **Room Booking:** The system provides a dynamic room booking platform, displaying available rooms based on specified criteria. Customers can effortlessly select, book, and customize their stay, including additional service options.
- Checkout Process: Streamlining the checkout process, the system enables customers to initiate checkout requests, undergo a smooth verification of room conditions and services used, and seamlessly transition into the billing phase.
- **Billing and Payment:** The system automates the billing process, with the hotel manager generating accurate bills based on services utilized. Multiple payment options are provided, and the system ensures prompt updates to payment status and meticulous record-keeping.
- Notification System: Keeping both customers and hotel managers informed at every step, the system incorporates automated notifications. Users can customize their preferences, ensuring timely updates on booking confirmations, checkout requests, and payment statuses.
- **Helpline Support:** A dedicated 24/7 helpline feature offers customers immediate assistance, complemented by access to FAQs and resolutions for common issues, further enhancing the overall customer support experience.
- **Security Measures:** With a paramount focus on security, the system employs industry-standard measures such as secure socket layer (SSL) for data encryption, robust user authentication and authorization, regular system vulnerability updates, and a secure transaction process for financial activities.

The Hotel Management System aspires to redefine hospitality management by integrating advanced functionalities, prioritizing user experience, and ensuring the utmost security.

Scenario Writing

Scenario writing involves describing specific situations or use cases that illustrate how a system or software application will be used by its users. These scenarios help to better understand the system's functionalities, interactions, and outcomes. In the context of the Hotel Management System, let's write some scenarios to depict typical user interactions:

Scenario-1: Add Profile

Scenario Description:

- Request for add profile
- Provide required field
- Filled fill up
- Submit for add profile
- Profile add successful

Scenario-2: Room booking

Scenario Description:

- Request for room booking
- Select room number
- Checking available room
- Entry check in and check out date
- Room Booking confirm

Scenario-3: Room checkout

Scenario Description:

- Request for room checking
- Select room number
- Check checkout date
- Pay bill and submit to checkout
- Room check out confirm

Scenario-4: Make bill

Scenario Description:

- Request for Bill making
- Select room number
- Provide Bill id
- Include service charge
- Bill make successful

Scenario-5: Pay Bill

Scenario Description:

- Request for Bill pay
- Provide Bill id
- Select Payment Method

- Pay Bill
- Bill Pay successful

These scenarios provide practical examples of how different users interact with the Hotel Management System and how the system responds to their actions. Scenarios like these help stakeholders understand the system's behavior and can be used for testing, validation, and refining the software to meet user needs effectively.

Stakeholder

The key stakeholders involved in this Hotel Management System are:

- 1. **Manager:** They use the system to manage hotel reservations and monitor hotel service.
- 2. **Customer:** Customer: They interact with the system to book rooms, room check out, pay bills etc.
- 3. **Admin:** They have elevated privileges to manage the system, provide helpline support.

User Profile

User Profile-01: Manager

User Class	Notes on Characteristic	Requirement Implied
Type of User	Manager	Verification
Age Range	30-40	Verification
Frequency of Use	Most of the time per day	Performance, Operation,
		Acceptance
Mandatory	Yes	
Computer Experience	Experienced	Documentation
Education	B. Sc	
Goals	Provide a best service	Resource, Performance,
		Security, Acceptance,
		Operation
Language Skills	Bangla, English	
Number of Users	15-20	Performance, Operation,
		Acceptance, Portability
Training	May accept some training, but be	Documentation
	unwilling to repeat it	
Other System Used	No	
Ways of Working	Full support from the system	Acceptance, Safety, Security,
		Operation, Maintenance,
		Portability

User Profile-02: Customers

User Class	Notes on Characteristic	Requirement Implied
Type of User	Customer	Verification
Age Range	25-50	Verification
Frequency of Use	When it need	Performance, Operation, Acceptance
Mandatory	No	
Computer Experience	No	
Goals	Take a good service	Resource, Performance, Security, Acceptance, Operation
Language Skills	Bangla, English	
Number of Users	20-25	Performance, Operation, Acceptance, Portability
Training	No	
Other System Used	No	
Ways of Working	Sometime	Acceptance, Safety, Security, Operation, Maintenance, Portability

User Profile-03: Admin

User Class	Notes on Characteristic	Requirement Implied
Type of User	Admin	Verification
Age Range	29-35	Verification
Frequency of Use	Most of the time per day	Performance, Operation, Acceptance
Mandatory	Yes	
Computer Experience	Experienced	Documentation
Education	B. Sc	
Goals	Make the system easy and user- friendly	Resource, Performance, Security, Acceptance, Operation
Language Skills	Bangla, English, and Computer Language	
Number of Users	15-20	Performance, Operation, Acceptance, Portability
Training	May accept some training, but be unwilling to repeat it	Documentation
Other System Used	No	
Ways of Working	Full support from the system	Acceptance, Safety, Security, Operation, Maintenance, Portability

Scope

1. User Registration and Login:

- **a. Objective:** To allow users to register and log in to the system.
- **b.** Functionality: Users will provide necessary information for registration. Secure authentication mechanisms will be implemented for user logins. Password recovery options will be available.

2. Add Profile and Update Profile:

- **a. Objective:** Enable customers to create and update their profiles within the system.
- **b.** Functionality: Customers can input and store personal details. Update profile information such as contact details or preferences.

3. Room Booking:

- **a. Objective:** Facilitate customers in booking rooms and availing services.
- **b. Functionality:** Display available rooms based on specified criteria (e.g., dates, room types). Allow customers to select and book rooms. Provide options for additional services during the booking process.

4. 4. Room Checkout:

- **a. Objective:** Streamline the checkout process after the customer has completed their stay.
- **b.** Functionality: Generate a checkout request from the customer. Verify room condition and service usage. Initiate billing process.

5. Make a Bill and Pay Bill:

- **a. Objective:** Provide a seamless billing and payment process for customers.
- **b. Functionality:** Hotel manager generates a bill based on services used. Customer reviews the bill. Multiple payment options are available. System updates payment status and records transaction details.

6. Notification:

- **a. Objective:** Keep both the manager and customer informed at every step.
- **b.** Functionality: Automated notifications for booking confirmation, checkout requests, and payment status. Customizable notification preferences for users.

7. Helpline:

- **a.** Objective: Offer 24/7 customer support within the system.
- **b.** Functionality: Provide a helpline feature for customers to seek assistance. Access to FAQs and common issues resolution.

8. Security Measures:

- **a. Objective:** Ensure the security of user data and financial transactions.
- **b. Functionality:** Implement secure socket layer (SSL) for data encryption. Secure user authentication and authorization. Regularly update and patch system vulnerabilities.

Feasibility Study

The Hotel Management System (HMS) proposes a comprehensive solution to address the challenges and demands of the hospitality industry. This feasibility study aims to assess the viability of implementing the HMS by analyzing its technical, operational, economic, and scheduling aspects.

1. Technical Feasibility:

- **a.** Hardware Compatibility: The HMS should be compatible with existing hardware infrastructure. A review of current systems and potential upgrades will be conducted.
- **b. Software Compatibility:** Ensure that the system integrates seamlessly with other software used by the hotel. Compatibility with operating systems, databases, and third-party services will be evaluated.
- **c. Technical Expertise:** Assess the availability of skilled personnel or the need for training to operate and maintain the HMS.

2. Operational Feasibility:

- **a.** User Acceptance: Gather feedback from potential users, including hotel staff and customers, to ensure the system aligns with their needs and expectations.
- **b. Impact on Current Operations:** Analyze how the implementation of the HMS will affect current hotel operations. Mitigation strategies for potential disruptions will be identified.

3. Economic Feasibility:

- **a.** Cost-Benefit Analysis: Conduct a thorough analysis of the costs associated with developing, implementing, and maintaining the HMS against the expected benefits such as increased efficiency, improved customer satisfaction, and potential revenue growth.
- **b.** Return on Investment (ROI): Calculate the projected ROI over a specified period, considering both tangible and intangible benefits.

4. Scheduling Feasibility:

- **a. Project Timeline:** Develop a realistic timeline for the different phases of the HMS implementation, taking into account potential delays, testing periods, and staff training.
- **b. Dependencies:** Identify dependencies on external factors, such as third-party integrations or regulatory approvals that may impact the project schedule.

The feasibility study concludes that the Hotel Management System is technically, operationally, economically, and schedulable viable. The benefits of enhanced operational efficiency, improved customer satisfaction, and potential revenue growth outweigh the costs associated with development and implementation. Recommendations for mitigating risks and maximizing benefits will be incorporated into the project plan to ensure successful HMS deployment.

Project Block Diagram

Block Diagram-1: Customer

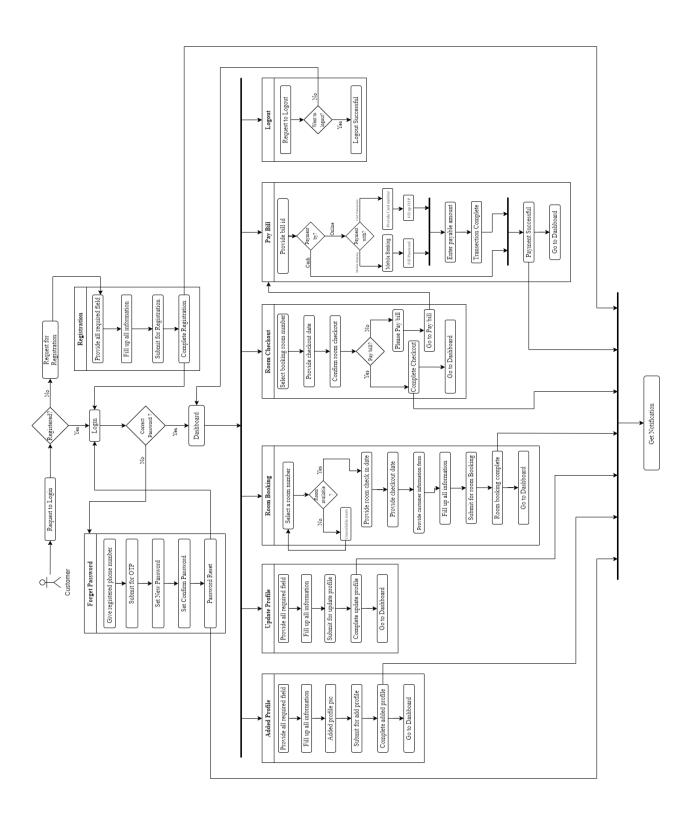


Figure-1: Block Diagram for Customer

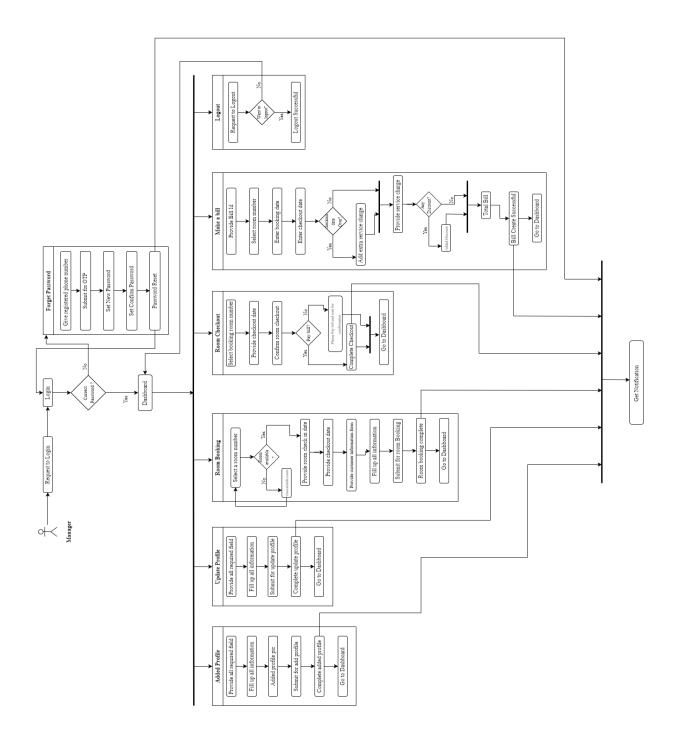


Figure-2: Block Diagram for Manager

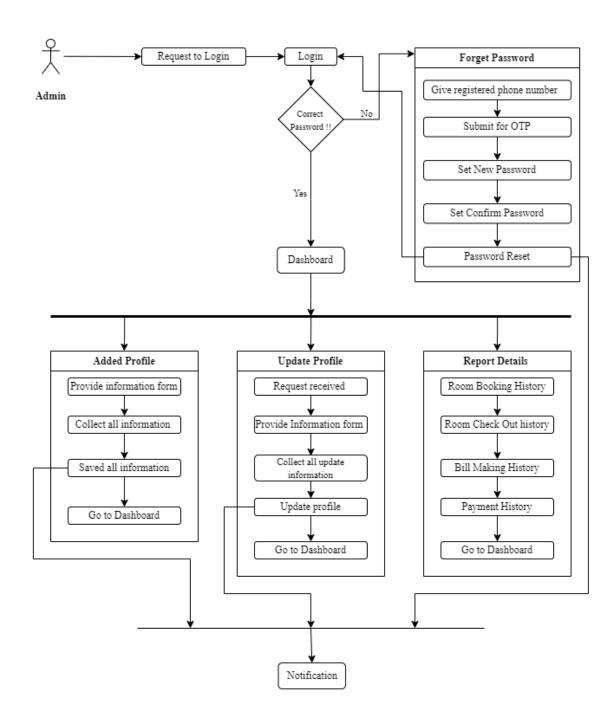


Figure-3: Block Diagram for Admin

Software Requirement Specification

SRS

FR01	Registration
Description	Before using the hotel management system manager and customers must be registered first
Stakeholder	Manager, Customer

FR02	Login
Description	Manager and Customers must login before using the hotel management system
Stakeholder	Manager, Customer, Admin

FR03	Add Profile Info
Description	Customers add his/ her info to the system
Stakeholder	Customer. Manager

FR04	Update Profile Info
Description	Customers update his/ her info to the system
Stakeholder	Customer, Manager

FR05	Rook Booking
Description	Customers can book the rooms as per their choice. The customer can take the room by looking at the price of the room and the type of room.
Stakeholder	Customer

FR06	Room Check Out
Description	Customers can leave the room at the end if they need to.
Stakeholder	Customer

FR07	Make a Bill
Description	Manager can generate bill depending on the service received by the customer
Stakeholder	Manager

FR08	Pay Bill
Description	Depending on the service received by the customer, the bill prepared by the manager can be paid by the customer
Stakeholder	Customer

FR09	Forget Password
Description	If any user forgets their password then they can easily recover his or her password.
Stakeholder	Manager, Customer

FR010	Logout
Description	Users can log out of this system by using this option. The login will be saved if the user wants to save their account.
Stakeholder	Manager, Customer, Admin

User Case Diagram

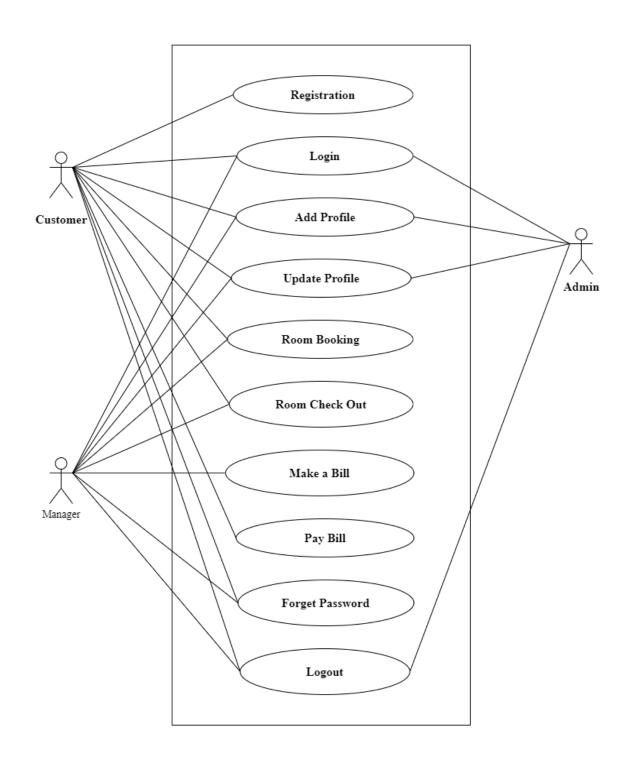


Figure-4: User Case Diagram for Hotel Management System

User Case Description

Case Description-01: Registration

Use Case	Registration		
Goal	Users can register to sign in to the system.		
Precondition	Users must install the Hotel Management app for registration.		
Success End Condition	Notification: !!!Successfully Registered!!!		
Failed End Condition	Notification: "Submission Not Submitted"		
Primary Actors:	Customer		
Secondary Actors:			
Trigger	User will request a registration form to fill up		
Description / Main Success	1. Press "Registration" Button		
Scenario	2. Provide registration form		
	3. Enter Information		
	4. Press "Submit" Button.		
	5. Information saved		
	6. The system saves the details and shows them !!!Successfully Registered!!! Notify		
Alternative Flows			
Atternative Flows	1.1 System Error		
	1.1.a. Try Again!!		
	2.1 System Doesn't work.		
	2.1.a. Try Again Later!		
	4.1 The user Did not fill up the details!		
	4.1.a. Checked By the system & Notify by "Please! Fill Up the Box".		
	5.1 The system did not respond		
	5.1.a. Show Error Message.		
	6.1 The system Doesn't save the details.		
	6.1.a. Notification: "Details did not Save"		
Quality Requirements	The user Will fill up all the details in 30 minutes.		

Case Description-02: Login

Use Case	Login		
Goal	Users can enter the system by the login.		
Precondition	Users must have to be registered First.		
Success End Condition	Notification: "Login Successful"		
Failed End Condition	Notification: "Login Failed!!"		
Primary Actors:	Customer, Manager		
Secondary Actors:	Admin		
Trigger	The user will request a login to enter the system		
Description / Main Success Scenario	1. Press "Login" Button		
Scenario	2. Provide login interface		
	3. Enter user id and password.		
	4. User provide the "Login" button		
	5. Verified and login		
	6. Notification: "Login Successful"		
Alternative Flows	1.1 System Error		
	1.1.a. Try again		
	2.1 Server Not Found		
	2.1.a. Try Again Later!		
	4.1 The system Did not respond.		
	4.1.a. Show error message.		
	5.1 Information Error!!		
	5.1.a. Notification: "Enter the right User ID and Password."		
Quality Requirements	Users fill up the login info within 10 minutes.		

Case Description-03: Add Profile

Use Case	Add Profile Info		
Goal	Adding the required information to create an account.		
Precondition	The user must log in to the system.		
Success End Condition	Notification: "Added Info Successfully"		
Failed End Condition	Notifications: "Submission Not Submitted"		
Primary Actors:	Customer, Manager		
Secondary Actors:	Admin		
Trigger	Users will request to add their profile information in the profile info.		
Description / Main Success	1. Visit Dashboard		
Scenario	2. Press "Added Profile Info"		
	3. Provide information field		
	4. Filled up information		
	5. User press "Submit" button		
	6. Profile info saved		
Alternative Flows	2.1 System Error		
	2.1.a Try again		
	3.1 Not responding		
	3.1.a Try later		
	4.1 Check empty field		
	4.1.a. Field up required information		
	5.1 Info not saved		
	5.1.a Notification: "Info Not saved"		
Quality Requirements	Users have 30 minutes to fill up		

Case Description-04: Update Profile Info

Use Case	Update Profile Info		
Goal	Users update their profile info if they need any changes on the update.		
Precondition	Must visit profile info.		
Success End Condition	Notification "Profile Info Updated"		
Failed End Condition	Notification "Update Profile Failed".		
Primary Actors:	Customer, Manager		
Secondary Actors:	Admin		
Trigger	Users will request to update their profiles.		
Description / Main Success	1. Visit Dashboard		
Scenario	2. Press "Update Profile Info"		
	3. Provide information field		
	4. Filled update information		
	5. User press "Submit" button		
	6. Profile information updated.		
Alternative Flows	2.1 System Error		
	2.1.a Try again		
	3.1 Not responding		
	3.1.a Try later		
	5.1 Information not updated		
	5.1.a Notification: "Information Not Updated"		
Quality Requirements	Users will get 30 mins to fill up		

Case Description-05: Room Booking

Use Case	Room Booking		
Goal	Users will book their room.		
Precondition	Must visit Room Booking Option in Dashboard.		
Success End Condition	Notification "Room Booked Successfully"		
Failed End Condition	Notification "Room Not Booked Yet".		
Primary Actors:	Customer, Manager		
Secondary Actors:			
Trigger	Users will request to book an empty room.		
Description / Main Success	1. Visit Dashboard.		
Scenario	2. Select "Room Booking" 3. Select "Room Number"		
	4. Check room Available		
	5. Enter "Booking Date".		
	6. Enter "Check Out Date"		
	7. Provide Customer information form.		
	8. Fill the information field.		
	9. Then press "Submit" button		
	10. Information save		
	11. Notification: "Room booking Successful"		
Alternative Flows	2.1 System did not respond.		
	2.1.a. Try again		
	3.1 System error		
	3.1.a. Try again Later.		
	4.1 Not Available room		
	4.1.a Select another room		
	5.1 Select date		
	5.1.a. Must be added date		
	6.1 Select date		
	6.1.a. Must be added date		
	7.1 Check empty field		
	7.1.a. Fill up required field		
	10.1 Information did not save		
	10.1.a. Try again		
Quality Requirements	Users will get 20 mins to fill up		

Case Description-06: Room Check Out

Use Case	Room (Room Check Out		
Goal	Users can leave the room at the end if they need to.			
Precondition	Must be a booked room.			
Success End Condition	Notification "Check Out Successful"			
Failed End Condition	Notification "Check Out Not Successful".			
Primary Actors:	Customer, Manager			
Secondary Actors:				
Trigger	Users v	vill request to checkout their booked room		
Description / Main Success	1.	Visit Dashboard.		
Scenario	2.	Select "Room Checkout"		
	3.	Select "Room Number"		
	4.	Enter "Checkout Date"		
	5.	Then sent check out request		
	6.	Provide Bill		
	7.	Payment Bill and confirm to checkout		
	8.	Check Out Successful		
Alternative Flows	2.1	The system did not respond.		
		2.1.a. Try again.		
	4.1	Check out date does not match.		
		4.1.a. Please input a valid date.		
	5.1	Server Error		
		5.1.a. Request not sent. Try again		
	6.1	Date Extend		
		6.1.a. Added extra charge		
	7.1	Bill id not match		
		7.1.a. Provide Correct bill id		
Quality Requirements	Users will get 20 mins to fill up			

Case Description-07: Make a Bill

Use Case	Make a Bill		
Goal	Users can make bills by using this system.		
Precondition	Must be logged in this system.		
Success End Condition	Notification "Bill Create Successful."		
Failed End Condition	Notification "Bill Not Created.".		
Primary Actors:	Manager		
Secondary Actors:			
Trigger	Users will request to make a bill by providing service.		
Description / Main Success	1. Visit Dashboard.		
Scenario	2. Select "Make a Bill"		
	3. Provide "Bill ID"		
	4. Select "Room Number"		
	5. Enter "Booking Date".		
	6. Enter "Checkout Date"		
	7. Then add room cost and other service costs.		
	8. After that press "Create Bill"		
	9. Bill Create Successful		
Alternative Flows	2.1 Server Down.		
	2.1.a. Try again later.		
	3.1 System doesn't respond		
	3.1.a. Try again later.		
	5.1 Booking date does not match.		
	5.1.a. Please input a valid date.		
	6.1 Extend Date		
	6.1.a. Added extra charge		
	8.1 System Error		
	8.1.a. Try again		
Quality Requirements	Users will get 30 mins to fill up		

Case Description-08: Pay Bill

Use Case	Pay Bi	Pay Bill		
Goal	Users can pay their bills by using this system.			
Precondition	Must be logged in this system.			
Success End Condition	Notification "Bill Pay Successful."			
Failed End Condition	Notific	Notification "Bill Not Pay.".		
Primary Actors:	Custon	Customer		
Secondary Actors:				
Trigger	Users	will request to pay their bill by providing service.		
Description / Main Success	1.	Visit Dashboard.		
Scenario	2.	Select "Pay Bill"		
	3.	Enter "Bill ID Number".		
	4.	Provide payment option		
	5.	Enter "Payment Option"		
	6.	Then payment the bill.		
	7.	After that press "Complete Payment"		
Alternative Flows	2.1	Server Down.		
		2.1.a. Again Later.		
	3.1	Bill ID not match		
		3.1.a. Enter the correct Bill ID.		
	4.1	System Not responds		
		4.1.a. Please try again later		
	5.1	Server not respond		
		5.1.a. Try again		
	6.1	System Error		
		6.1.a. Try again		
Quality Requirements	Users will get 30 mins to fill up			

Case Description-09: Forget Password

Use Case	Forget Password		
Goal	Users can restore forgotten passwords.		
Precondition	The user must log in to the system.		
Success End Condition	Notification: "Password Restored Successfully".		
Failed End Condition	Notification:" Password Restored Failed."		
Primary Actors:	Customer, Manager		
Secondary Actors:			
Trigger	The user will request to Restore the pin.		
Description / Main Success	1. Log in to the system.		
Scenario	2. Select the "Forget Password" Option.		
	3. Enter the registered number		
	4. Press the "Send Verification Code" Button.		
	5. Enter the verification code		
	6. Set new password		
	7. Press "Save & Apply".		
Alternative Flows	1.1 Server down		
	1.1.a try again		
	2.1 Not Responding		
	2.1.a Reload		
	3.1 Wrong phone number		
	3.1.a Notification: Choose the Valid Phone Number.		
	5.1 Wrong OTP Code		
	5.1.a Notification: Choose the Valid OTP Code.		
	6.1 System Error		
	6.1.a. Try again		
Quality Requirements	Users will get 30 mins to fill up		

Case Description-10: Logout

Use Case	Logout	
Goal	Users can Log Out from the system.	
Precondition	The user must log in to the system.	
Success End Condition	Notification: "Logout Successful".	
Failed End Condition	Notification: "System Error".	
Primary Actors:	Customer, Manager	
Secondary Actors:	Admin	
Trigger	The user will request a Logout	
Description / Main Success	1.	Log in to the system.
Scenario	2.	Select the "Logout" Option.
	3.	Press the "Logout" Button.
	4.	Logout successful
Alternative Flows		
	1.1	Server down
		1.1.a try again
	2.1	Not Responding
		2.1.a Try again
	3.1	Not Responding
		3.1.a Reload
Quality Requirements	The user will Immediately Logout After hitting the Logout Button.	

System Design

Data Flow Diagram

Data Flow Diagram Level-0:

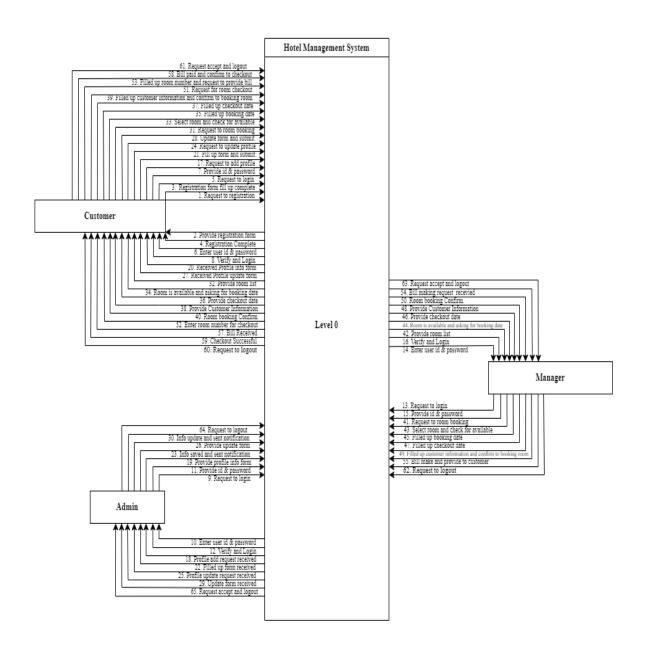


Figure-5: Data Flow Diagram Level 0

Data Flow Diagram Level-1:

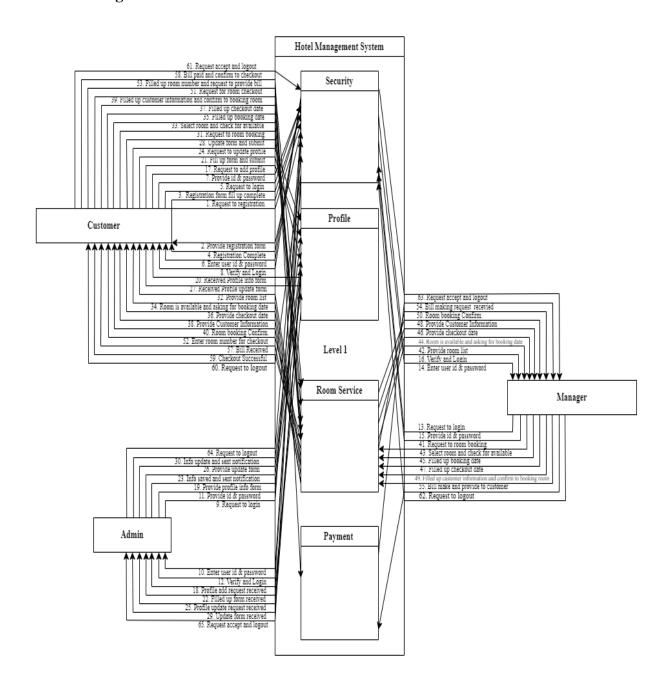


Figure-6: Data Flow Diagram Level 1

Activity Diagram

Activity Diagram-1: Add Profile

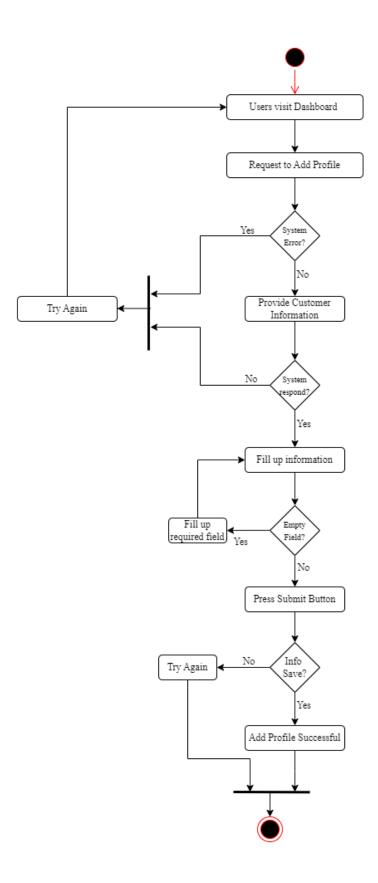


Figure-7: Activity Diagram for Add Profile

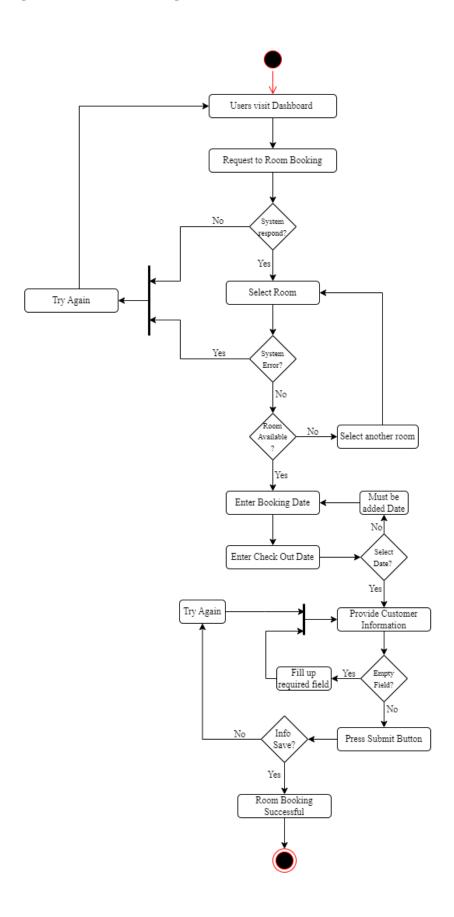


Figure-8: Activity Diagram for Room Booking

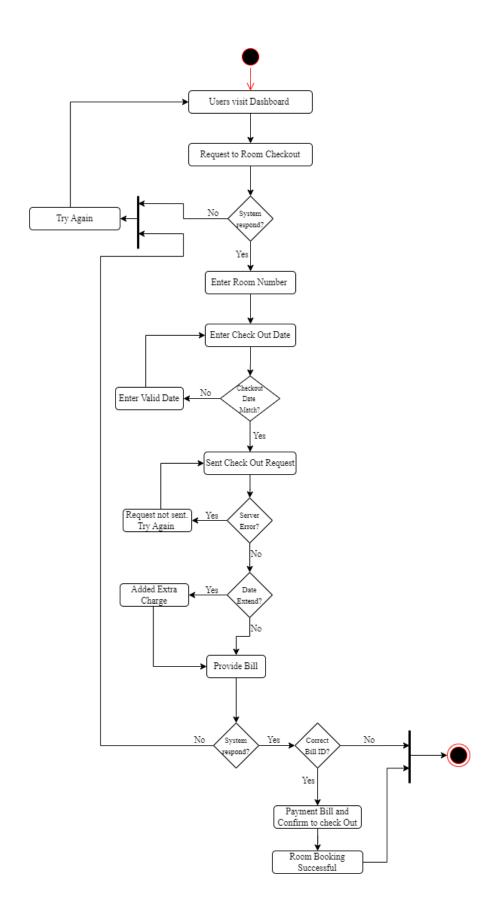


Figure-9: Activity Diagram for Room Check Out

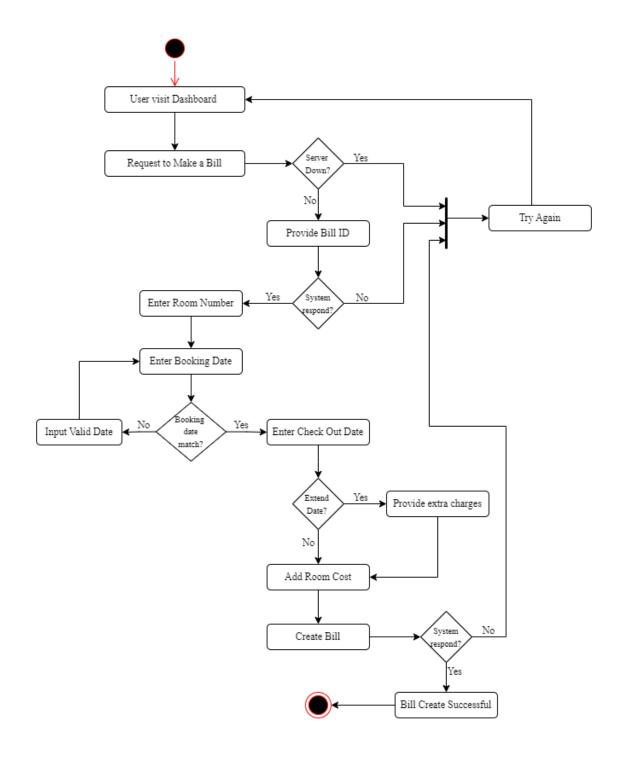


Figure-10: Activity Diagram for Make a Bill

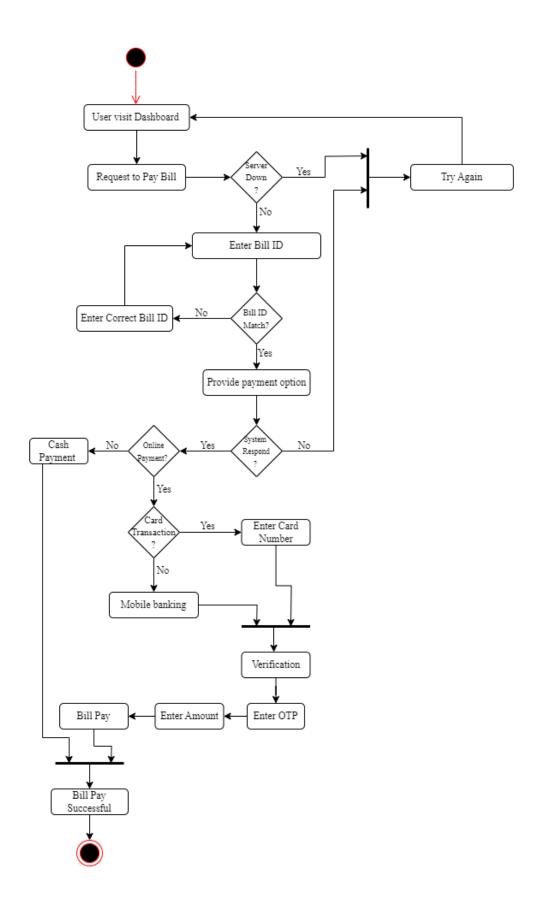


Figure-11: Activity Diagram for Make a Bill

State Diagram-1: Add Profile

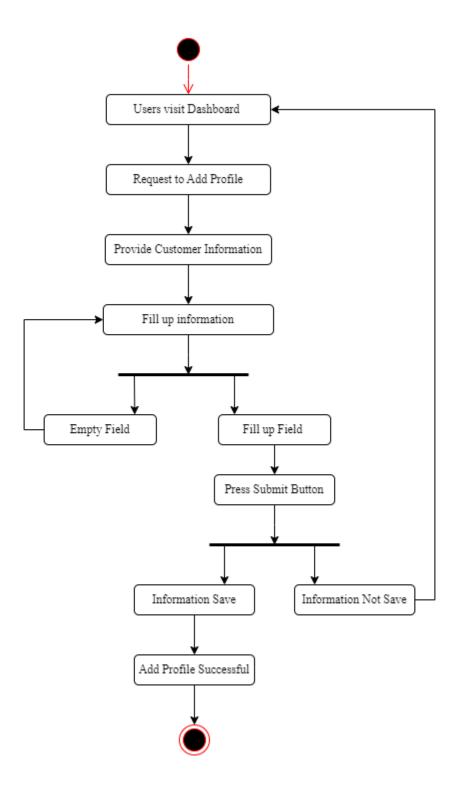


Figure-12: State Diagram for Add Profile

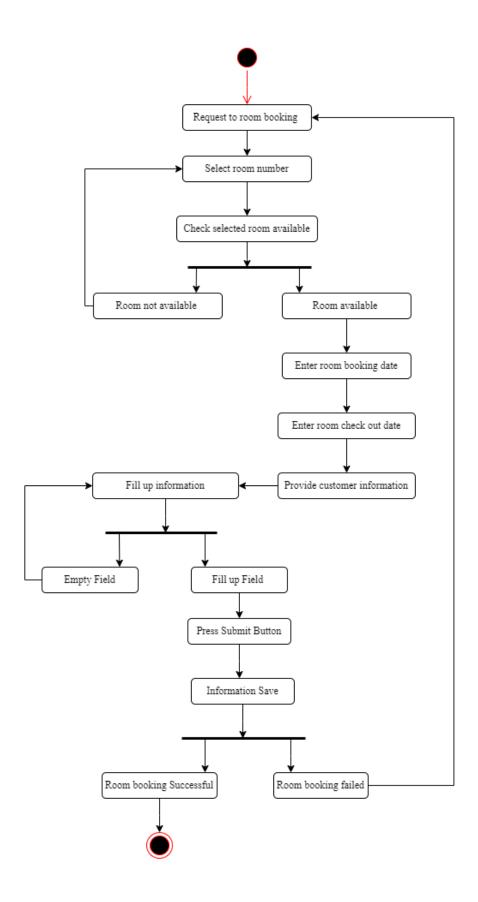


Figure-13: State Diagram for Room Booking

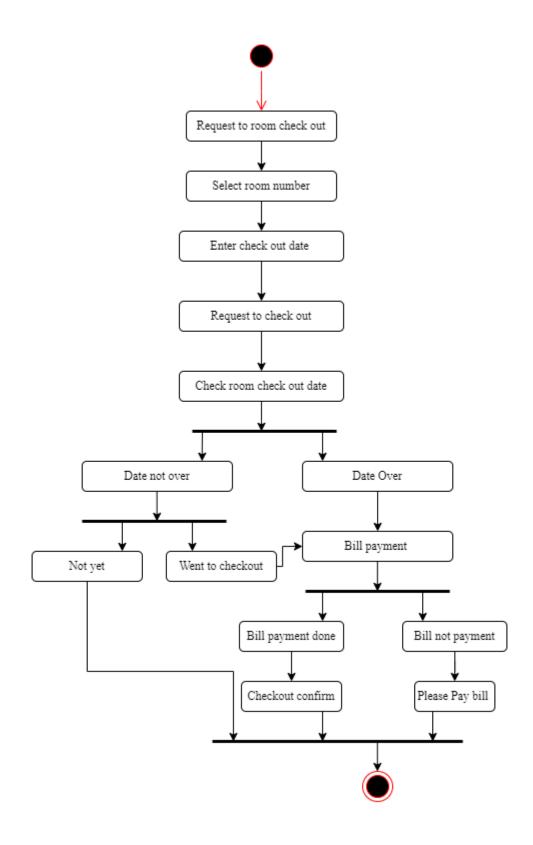


Figure-14: State Diagram for Room Check Out

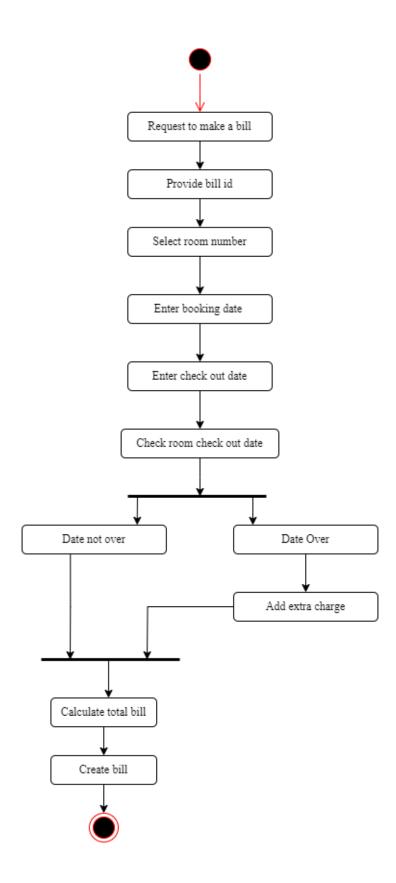


Figure-15: State Diagram for Make a Bill

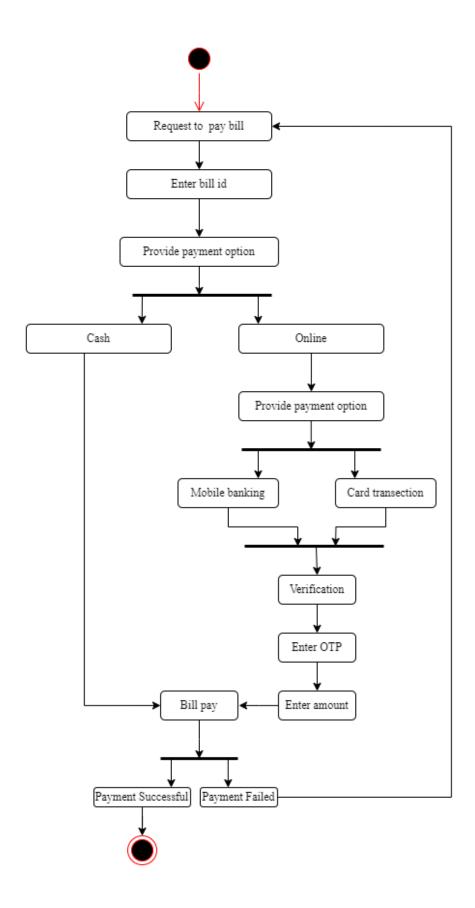


Figure-16: State Diagram for Pay Bill

Sequence Diagram

Sequence Diagram-1: Add Profile

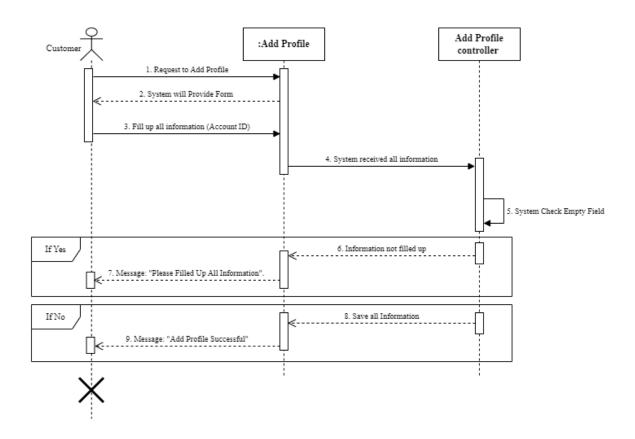


Figure-17: Sequence Diagram for Add Profile

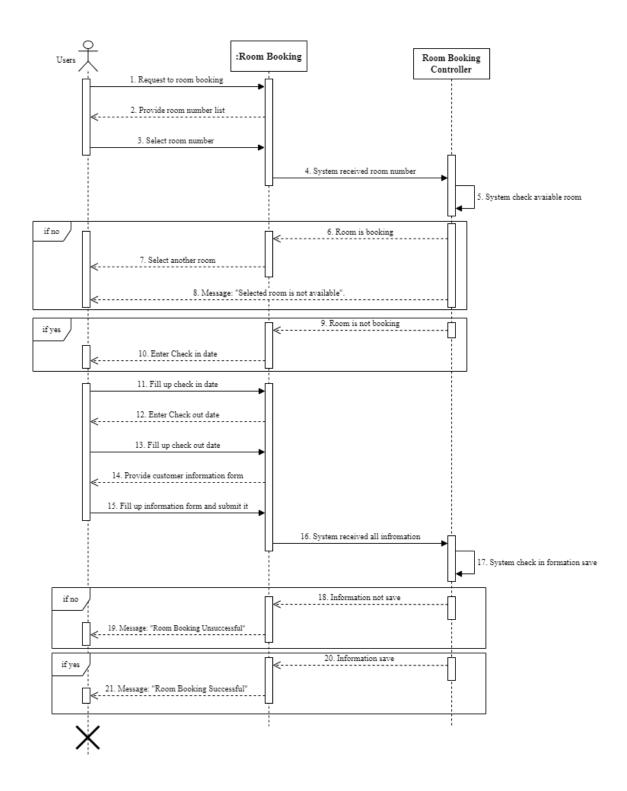


Figure-18: Sequence Diagram for Room Booking

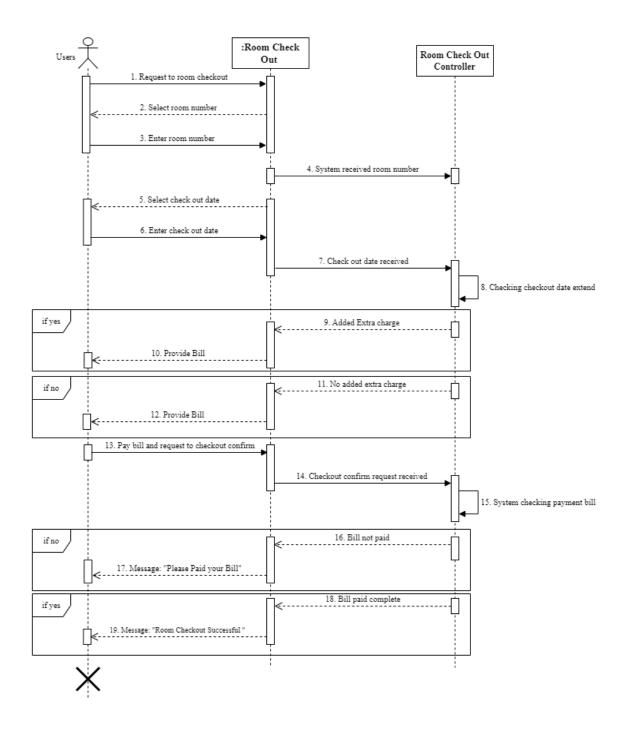


Figure-19: Sequence Diagram for Room Check Out

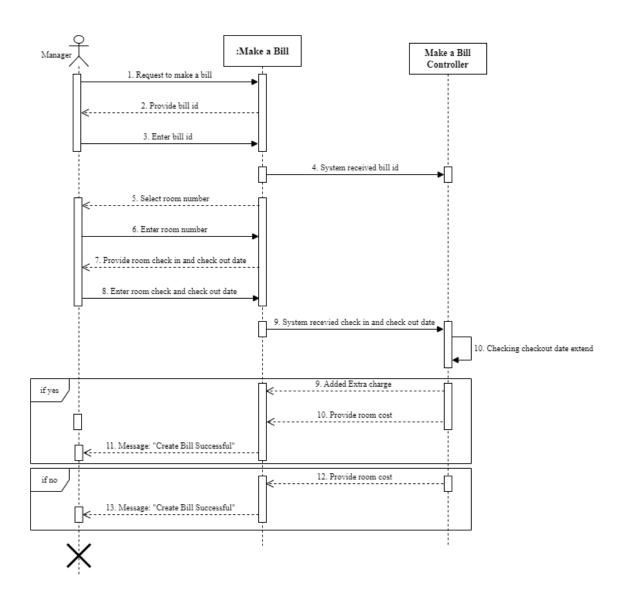


Figure-20: Sequence Diagram for Make a Bill

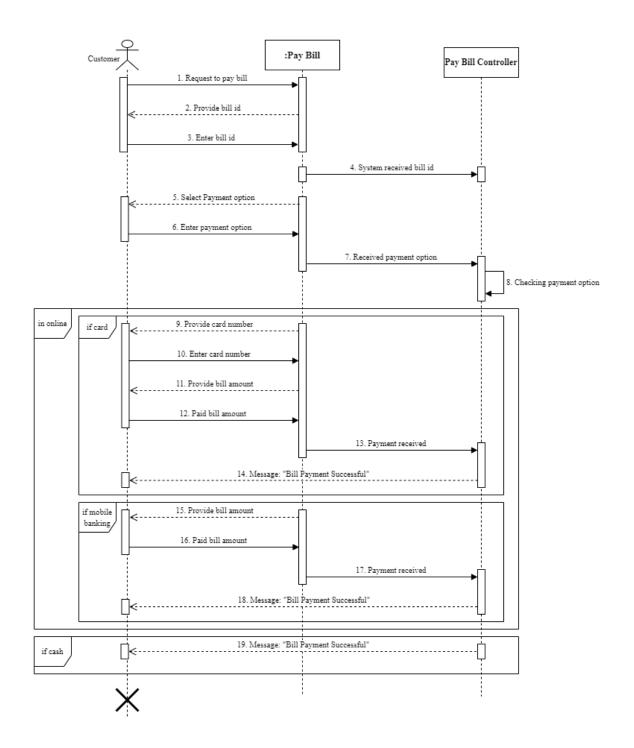


Figure-21: Sequence Diagram for Make a Bill

Class Diagram

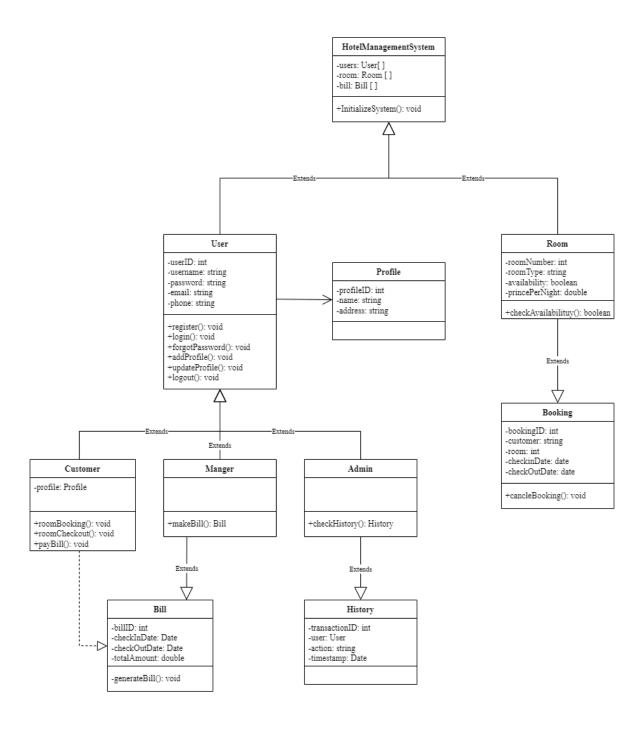


Figure-22: Class Diagram for Hotel Management System

Er Diagram

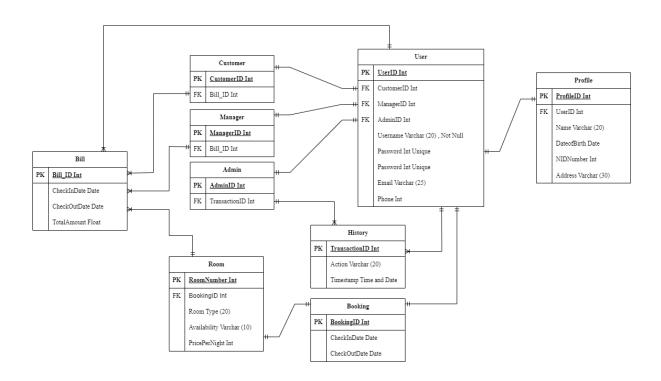


Figure-23: ER Diagram for Hotel Management System