Hotel management sysytem

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HOTEL MANAGEMENT AND
BOOKING SYSTEM

SOFTWARE REQUIREMENTS SPECIFICATIONS

Software Requirements Specification
for

Hotel Management System

Version 1.0 approved

1. Introduction:

The Hotel Management System is a tool for booking rooms of Hotel through online process by the customer.

It provides the proper management tools and ease of access to the Customer Information by providing 360 panoramic photos.

1.1 Purpose:

The main purpose of this document is to illustrate the requirements of the project **Hotel Management System.** This document describes the design decisions, architectural design and the detailed design needed to implement the system. It provides the visibility in the design and provides information that is essential for software support. The document provides the detailed description of functional and non-functional requirements put forward by the client. The document is completed and finalised after a series of consultations with the client and taking into consideration the complete requirement specifications. The final project of the development team is intended to meet the requirements of this document.

1.2 Document Conventions:

1.2.1 Formatting Conventions:

Font use for this document is *"Calibri Body"* for paragraphs and *"Times New Roman"* for Headings and Sub-Headings. Sizes are different for every type of text; for title the size is 16, sub-headings are in size 14. Text in sub-headings (2) is in size 13 and for the text written in paragraphs the size is 11: *the standard*

size. The main points are written in keywords, some of them are highlighted and bullet point's notation is used for brief descriptions. Formatting used is justified.

1.2.2 Naming Conventions:

The headings name is given in well-established and rife script.

1.2.3 Requirements Conventions:

Higher-level requirements are inherited by detailed requirements and some of the requirement statements have their own priority. The requirements that hold immense important and are highly significant for development process are highlighted for document reader ease of use.

1.3 Intended Audience and Reading Suggestions;

The intended audience for this **Hotel Management System** document is the internal guides of the organization where the team has developed the project. Further modifications and reviewing will be done by the organization and deliver a final version. The final version of this document is reviewed by the Internal Guides and Head of the **National Hotel Association of Pakistan**. Intended Audience of this document include Receptionist, Customer and Administration.

1.4 Product Scope:

The world is changing so is the scope of Hotel Management. Today Hotel Management is not only confined but has taken into account many aspects with it such as tourism, catering, airlines, membership clubs, etc. Making it a promising career option.

1.5 References:

There are no notable references for this SRS just some old projects of seniors available in the library. And some requirements gathered from looking at different pre-existing systems.

1.6 Definition:

The HMS is an online Administration System for the Hotels that is used for reservation, availability and Occupancy Management and further on provides the ease of Check-In / Check-Out.

1.7 Abbreviations:

SRS	**S**oftware **R**equirements **S**pecification

HMS	**H**otel **M**anagement **S**ystem
DBMS	**D**ata**b**ase **M**anagement **S**ystem

1.8 System Overview:

The Hotel Management System is an online platform for Booking Rooms. Our System has three end-users:

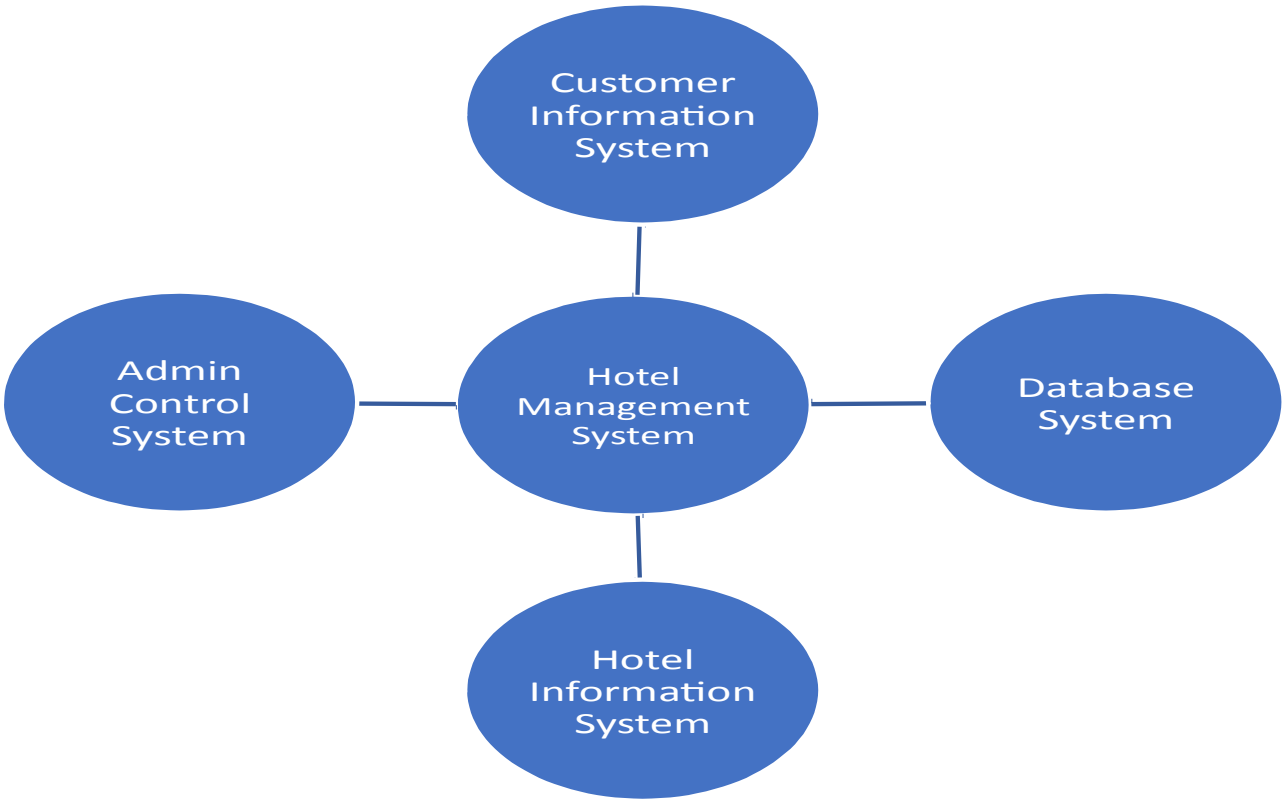
- **Receptionist**: Receptionist will have access to update or modifying booking details.
- **Admin:** Admin such as managers and board of directorate will be able to view financial reports and able to update the room information and inventory update.
- **Customer:** Customer is able to check availability of room and cancel concurrent bookings.

2. Overall Description:

2.1 Product Perspective:

The proposed **Hotel Management System** is an online system. This system will provide a view, submit, online payment, and other miscellaneous resources. This view will be based on the categories like room bookings. Further the hotel management staff personnel (Manager) can add/update/remove the resources.

The system will have an **ADMIN** who has proficient rights with regards to managing resources across branches. The users can view, submit, online payment, and information about their account. There are two main users: one is the customers and other are the Hotel Staff. Each user has different account number with password for private use. Both users differ from each other due to the accessing limits to online **Hotel Management System**.



2.2 Product Functions:

2.2.1 Booking:

- Details
- Book rooms
- Additional services booking
- Booking for food only
- Cancel booking

2.2.2 Price:

- Room price
- Additional services prices
- Discounts

2.2.3 Payment:

- Online Payment:
  - Jazz Cash
  - Easy Paisa
  - Master and Visa Cards
- On Cash payment
- Non-refundable booking
- Online booking terminates after 48 hours
- Half payment at time of booking
- Fares of car rental

2.2.4 Account:

- Create Account
- Check services
- Adding and removing of services

2.2.5 Server:

- Store Data
- Find records

2.2.6 Multi-Language GUI:

- 30 other languages included.

2.2.7 Help and Support:

- Online inquiry portal
- Helpline phone number
- Support email

2.2.8 Interface:

- News and Updates
- Deals and Offers

2.2.9 Car Services:

- Car wash
- Car parking
- Car rental

2.2.10 Receptions:

- Bookings for weddings and functions
- Décor options

2.2.11 Encryption:

- Data encryption for privacy
- Account information encryption

2.2.12 Lag free system:

- Responsive system
- Bug free
- Report a bug or lag

2.2.13 Easy and accessible:

- Easy to understand interface
- Every customer has access to every activity available in the hotel.

2.2.14 Season Deals:

- Vacation packages
- Business packages

2.2.15 Things to do:

- Explore city
- Explore using geolocation
- Personal photographer

2.2.16 Analysis system:

- Business intelligence
- Business reporting
- Financial analysis

2.3 User Classes and Characteristics

There several kinds of users for the product. Usually web products are visited by various users for different reasons.

The users include:

- **Admin –** the Hotel Managers, and board of Directors**.**
- **Receptionist**
- **Customer**

- **Admin:**
  Admin will have access to the whole system. Admin is responsible for all the managing of hotel resources and staff. Admin can view the financial reports, booking information room information with the update on inventory of the hotel.

- **Receptionist:**
  The receptionist has the purpose of providing quality services to the customer. Receptionist have less access than the admin, they can search for the room's availability, confirm the bookings and update the booking details.

- **Customer:**
  Customer is a vital part of the HMS system. They are able to check room availability, price changes and even is able to see their status. Customer has also access to inquiry portals to forward their queries.

2.4 Operating Environment

The product will be operational with its full functionalities under the following ***hardware*** and ***software*** requirements.

HARDWARE:

- ***PROCESSOR:*** Intel Core i3-3770S or more.
- ***RAM:*** 4GB (DDR3) or more
- ***Hard Disk:*** 40GB hard disk is recommended for the primary partition

SOFTWARE:

- **Windows** environment will be ideal for all features to run smoothly.
- Great performance is also compatible on **MacOS** systems.
- **Google Chrome** and **Opera 7.0** or higher versions are the recommended browsers.

2.5 User Documentation:

In our user manual, we are going to keep the information regarding our product which can be understandable by a new person who is going to use it. If a new person is using it online help will be

provided in that we are going to explain each and every step clearly by our product can be useful for any user. There will be a **video tutorial** for the new user to get acquainted with the environment of the system.

2.6 Assumptions and Dependencies:

- Each user must have a valid id and password.
- Users must log in to the system to access their status.
- Records can only be updated by the ADMIN and RECEPTIONIST.

2.7 Design and Implementation Constraints:

- The system needs sync with server after every 15 minutes in order to maintain data efficiently.
- Implementation constraint is that the application should be based on Java only.
- The RAM of system needs at least 500mb of free space for the system to work properly.

3. External Interface Requirements:

3.1 User Interfaces:

The web application will permit the complete navigation along the website using ***haptics*** if logged on from touch screen devices allowing the use of virtual keyboards.

3.1.1 Description:

The user interface is **customizable** by the administrator.

3.1.2 Criticality:

All the modules provided with the software will fit into this graphical user interface and will be able to accomplish to the standard defined.

3.1.3 Technical Issues:

To overcome these issues the design will be kept simple and all interfaces will follow a standard template. Possibility of switching between interfaces is defined but with the minimum impact for the users.

3.1.4 Risks:

To reduce the circumstances for this requirement, all designers will have to have the basic knowledge of html and cross browsers implementations.

3.1.5 Dependencies with other Requirements:

All user interfaces will be able to interact with user module and some part of it will be dedicated to the login/logout module.

3.2 Hardware Interfaces:

- Printers will be used to print customers' bill and order details.
- The hotel should have computers on which employees will check customer details and these computers should have RAM of 4GB or more and intel core i3 chips or more.
- The customer will have to use a computer with at least 4GB of RAM or a Android phone – iOS phones will also work.

3.3 Software Interfaces:

- The software interactions are as follows
- The customer will have to use a computer with window operating system or Mac
- Operating system and Android 7 above devices can be used for booking.
- The Hotel should have computers on which the employees will check and get details of booking of customer and these computers should also use latest Windows or Mac
- Operating system.
- There will be ADO NET data transmission with Microsoft. SQL Server Management Studio.

4. System Features:

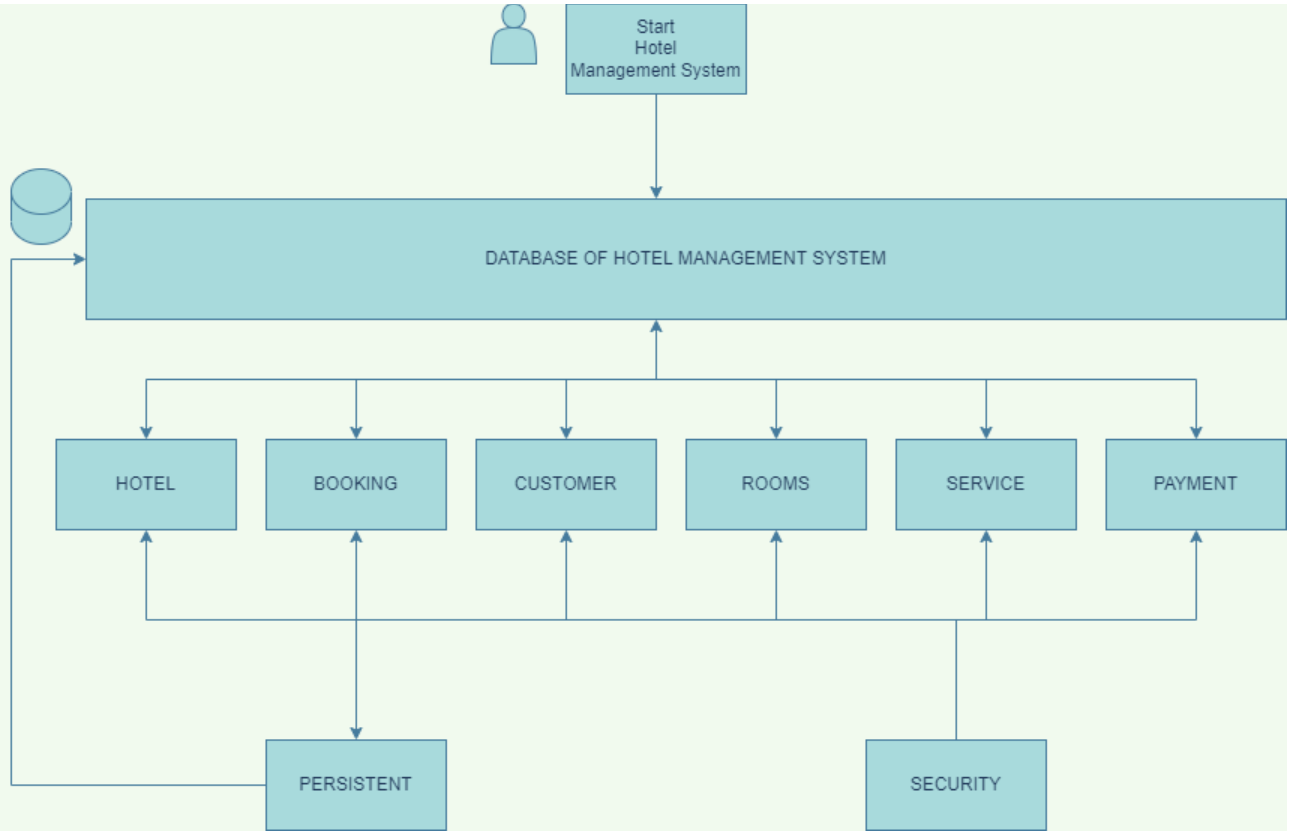
4.1 Functional Requirements:

- **Room bookings:** The system checks room availability and status, shows free rooms across different channels and the website booking engine. This function monitors double bookings and allows group reservations. Then it schedules bookings and displays information about current and upcoming bookings on a dashboard.
- **Collection of e-payment:** And identification of types and categories of payments that are processed via this module.

- **Management of room inventory and allocation**: That prevents overbookings and duplication of bookings. In some software, this function is part of a channel management module.
- **Reservation emails**: The system sends confirmations to guests after they complete booking. In some PMSs, this function is a part of the front-desk operations module.
- **Activities booking**: Some software allows guests to book not only accommodation but also activities with this system.
- **Reports and analytics:** To monitor current processes and understand business performance, rely on analytics. A PMS can serve as a business intelligence tool, collecting relevant data and providing hoteliers with various types of automated reports.

5. System Design:

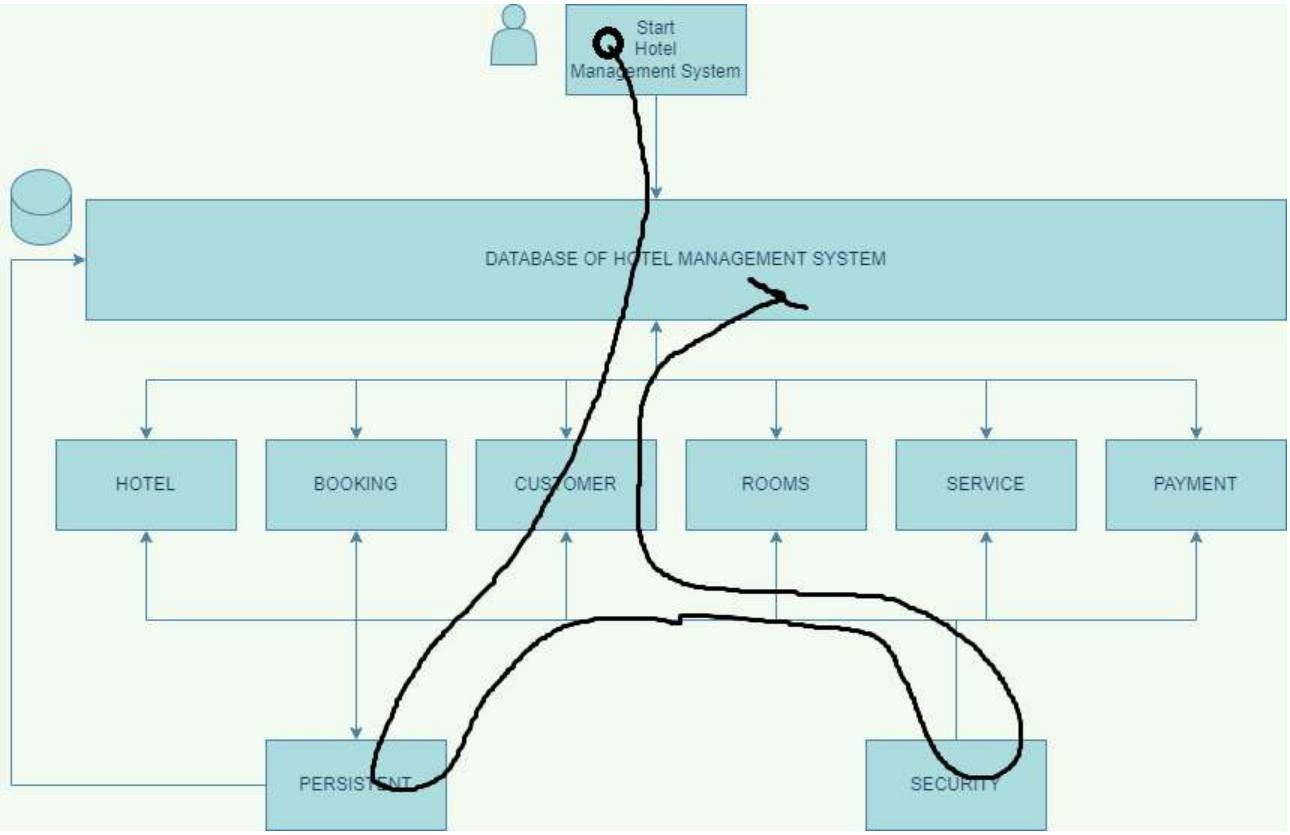
5.1 Conceptual Architecture Diagram:



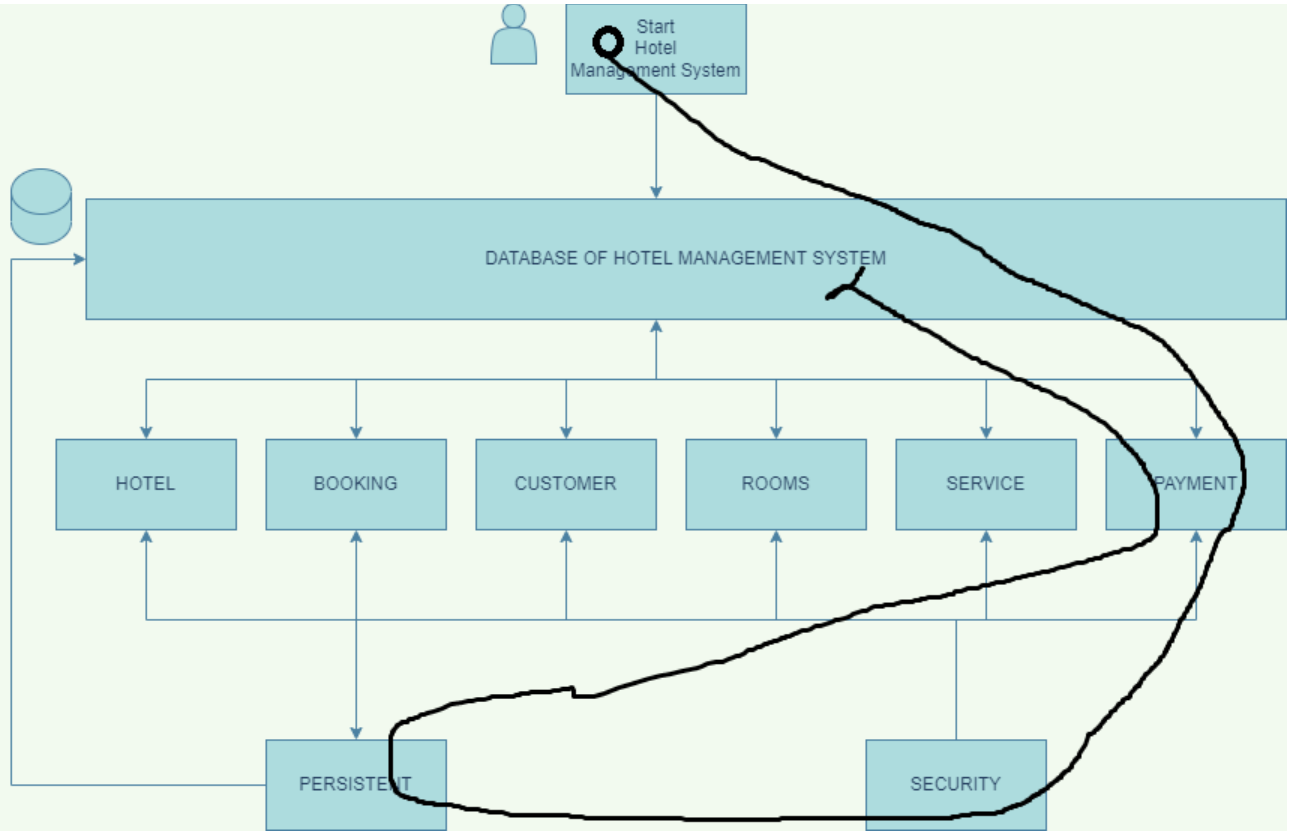
List of Components and their Responsibilities:

1. **Services Component:** All the data related to the services provided by hotel and recreational activities are processed through this component. The data passes through the security protocols and is then processed.
2. **Booking Component:** The booking details of all customers i.e. reservations, cancellations and conformity are processed by this component.
3. **Rooms Component:** The details of rooms and i.e. room availability and related information is handled by the rooms' component.
4. **Hotel Component:** Details of Hotel is treated inside this component.
5. **Customers Component:** Customers data that is very sensitive and is to be handled with precision has its own component and is refined by this component.

5.2 Behavioral Exploration Diagram (1): → Use Case Map



5.3 Behavioral Exploration Diagram (2): →Use Case Map



6. Other Non-functional Requirements:

6.1 Performance Requirements:

6.1.1 Response time:

Average response time shall be less than 2 seconds.

6.1.2 Throughput:

The system shall accommodate 1000 booked per minute.

6.1.3 Recovery Time:

In case of system failure, redundant system shall resume operations within 30 seconds. Average repair time shall be less than 1 hour.

6.1.4 Start-up/Shutdown Time:

The system shall be operational within 1 minute of starting up.

6.1.5 Capacity:

The system accommodates 4000 concurrent users.

6.1.6 Utilization of Resources:

The system shall store in the database no more than one million transactions.

If the database grows over this limit, old transaction shall be backed up and deleted from database that is operational.

6.2 Safety Requirements:

The database may get crashed at any certain time due to virus or failure of operating system. Therefore, it is required to take the database backup.

6.3 Security Requirements:

1. ***Firewall Protection:*** The *Hotel Management System* will run inside a firewall.
2. ***Support Different Roles:*** The system will support different roles for users, such as customers, Receptionist, and Admin
3. . The user logged in with given role will only be allowed access consistent with that role. **For example,** a customer will only be allowed to book rooms and other activities defined to their role.
4. ***Users' Passwords*** must be stored by encryption method.
5. The ***authentication and validations will be applied*** to text fields and buttons to avoid SQL injection.
6. The system shall have authentication measure at ***front panel*** and in ***network connectivity***.

6.4 Software Quality Attributes

- **Efficiency:**
  HMS books rooms and other activities in no time making the user rely on the system.

- **Correctness:**
  The behaviour of the system observed by the user and the developer must confirm to the functional requirements of the system which are stated in this document.

- **Reliability:**
  HMS must book and store the records accurately.

- **Portability:**
  HMS can be accessed through different devices and platforms.

- **Robustness:**
  If the connection between the ***HMS*** and the server can somehow not be maintained due to the non-availability of active internet connection then, ***HMS*** must store the last data updated and update the database as soon as an active connection is available.

7. System Architecture:

The proposed ***HMS*** is distributed, composed of agents. Agents are the basic building blocks of the system that receives process, manipulate and store information. The functional agents corporate and coordinates with each other to accomplish system functionality.

They are autonomous and can collect information from the environment and can make decisions. Each agent is named according to its functionality. All agents are connected to JADE layer which provides services for interaction and coordination between agents within the system and the user.

8. System Testing:

8.1 Static Testing:

A static test assesses the quality of a framework without really running the system. On the off chance that a problem is identified within the prerequisites before it develops into a bug within the framework,

it'll spare time and cash. In the event that a preparatory code survey leads to bug discovery, it spares the inconvenience of building, introducing, and running a system to discover and settle the bug.

8.2 Behavioural Testing:

Behavioural Testing centres on how a system acts instead of the component behind its functions. It centres on workflows, setups, execution, and all components of the client travel. The point of these tests, regularly called “black box” tests, is to test web site or app from the point of view of an end-user.

8.3 Test Cases:

8.3.1 Admin login form test case:

Test case No.	TC-1
Test Case Name	User login action
Test Method	Enter the valid username and password
Actual Result	Login Successfully
Expected Result	Login Successfully

8.3.2 Customer registration form test case:

Test case No.	TC-2
Test Case Name	Customer registration
Test Method	Input registration details
Actual Result	Registration Successful
Expected Result	Registration Successful

8.3.3 Update reserved Data form test case:

Test case No.	TC-3
Test Case Name	Reserved Data
Test Method	Enter reserved data correctly
Actual Result	Update reserved data successfully
Expected Result	Update reserved data successfully

9. References:

Websites:

- www.tutorialspoint.com
- www.scribd.com
- www.slideshare.net

10. Glossary:

- **SQL Injection:** a common attack vector that uses malicious SQL code for backend database manipulation to access information that was not intended to be displayed.
- **DBMS:** software systems used to store, retrieve, and run queries on data. A DBMS serves as an interface between an end-user and a database, allowing users to create, read, update, and delete data in the database.
- **HMS:** Hotel Management System
- **Jade Layer:** The combination of peer-to-peer networking and multi-agent systems seems be a perfect solution for the realization of applications that broaden on the Internet. In fact, while peer-to-peer networking infrastructures and protocols provide the suitable discovery and communication services necessary for developing effective and reliable applications.
- **Throughput:** the amount of a product or service that a company can produce and deliver to a client within a specified period of time.

HOTEL MANAGEMENT AND
BOOKING SYSTEM

NOTE: This document is subject to change based on changes made in development phase by the stakeholders.

TEXTUAL USE CASES AND USE CASE DIAGRAM

USE CASES:

1) ROOM RESERVATION:

Use case Name	ROOM BOOKINGS	
Primary Actors	CUSTOMER, ADMIN	
Stakeholders and interests	CUSTOMER	Is concerned with booking and cancelling the room reservations.
	ADMIN	Is primarily concerned with allocation of rooms and managing the rooms allotted.
Precondition	• Availability of vacant rooms.	
Post condition	• Room booked successfully. • Room not Available	
Main Success Scenario	Step No.	Action
	1.	Customer will log in the system and navigates to booking option.
	2.	Customer shall look and browse for the rooms of choice.
	3.	Customer will select room and date for booking.
	4.	Admin is notified.
	5.	Admin shall approve the request.
	6.	Customer shall enter payment details and room is booked.
	7.	Customer shall be notified via email and booking details updated in admin record and sent to customer.
Extensions	1.	Admin shall cancel the request if the room is not available.
	2.	Customer will be notified about unavailability of desired room and showed alternative options.

2) COLLECTION OF PAYMENTS:

Use case Name	PAYMENTS	
Primary Actors	CUSTOMER, ADMIN	
Stakeholders and interests	CUSTOMER	Is the source and will be the concerned party for payments.
	ADMIN	Notifies customers about the payment and collects payments.
Precondition	• Bill generated according to facilities used.	
Post condition	• Payment collected successfully. • Receipt will be given out to customers.	
Main Success Scenario	Step No.	Action
	1.	Bill will be generated at the time of booking.
	2.	Bill shall be updated according the facilities customer uses during stay at hotel.
	3.	Customer is given several e-Payments options and cash payment option.
	4.	Customer will pay according to most their most feasible option of payment.
	5.	Admin shall update the record and generate the receipt.
	6.	Customer shall be handed out a receipt.
	7.	Record updated in Database.
Extensions	1.	If payment is unsuccessful a message shall be generated and the customer and the admin must be notified.

3) Reports and Analytics:

HOTEL MANAGEMENT AND BOOKING SYSTEM

Use case Name	Reports and Analytics	
Primary Actors	ADMIN	
Stakeholders and interests	ADMIN	Requires the weekly business analysis report generated by the system.
Precondition	• System shall collect automated various reports	
Post condition	• Admin gets automated business intelligence reports.	
Main Success Scenario	Step No.	Action
	1.	System will gather weekly data.
	2.	System shall generate automated audit reports.
	3.	Admin will be presented the data reports.
	4.	Reports are updated in database.
Extensions	1.	If data is outlier or not up to weekly target, warning message must be generated and Admin is notified.

HOTEL MANAGEMENT AND BOOKING SYSTEM

Use case Name	Food Booking	
Primary Actors	CUSTOMER, ADMIN	
Stakeholders and interests	ADMIN	Receives food bookings and process it
	CUSTOMER	Shall browse through food menu and book at what time to get it delivered to them.
Precondition	• System shall be updated with the latest menu from restaurants.	
Post condition	• Food booking is done and updated in the system.	
Main Success Scenario	Step No.	Action
	1.	Customer shall browse through menu.
	2.	Customer selects and places order of food.
	3.	Admin is notified about the order.
	4.	Admin forwards the order to restaurant.
	5.	Customer will be notified that order is placed.
Extensions	1.	If food is not available, the customer will be notified and an appropriate message will be shown.

4) FOOD BOOKING:

HOTEL MANAGEMENT AND BOOKING SYSTEM

Use case Name	UPDATING ROOM INVENTORY	
Primary Actors	ADMIN	
Stakeholders and interests	ADMIN	Interested in knowing room inventory and keeping it up to date.
Precondition	• Room service checks and marks the missing items in the system	
Post condition	• Room inventory is updated and system is updated.	
Main Success Scenario	Step No.	Action
	1.	Room service employees checks the room.
	2.	Employee marks the missing inventory items in the list.
	3.	Admin shall be notified if inventory item is missing.
	4.	Admin will forward the request to housekeeping.
	5.	Housekeeping shall place the missing items and update the record in system.
Extensions	1.	Item is short in general inventory, housekeeping forwards the request to ADMIN to restock.

5) UPDATING ROOM INVENTORY:

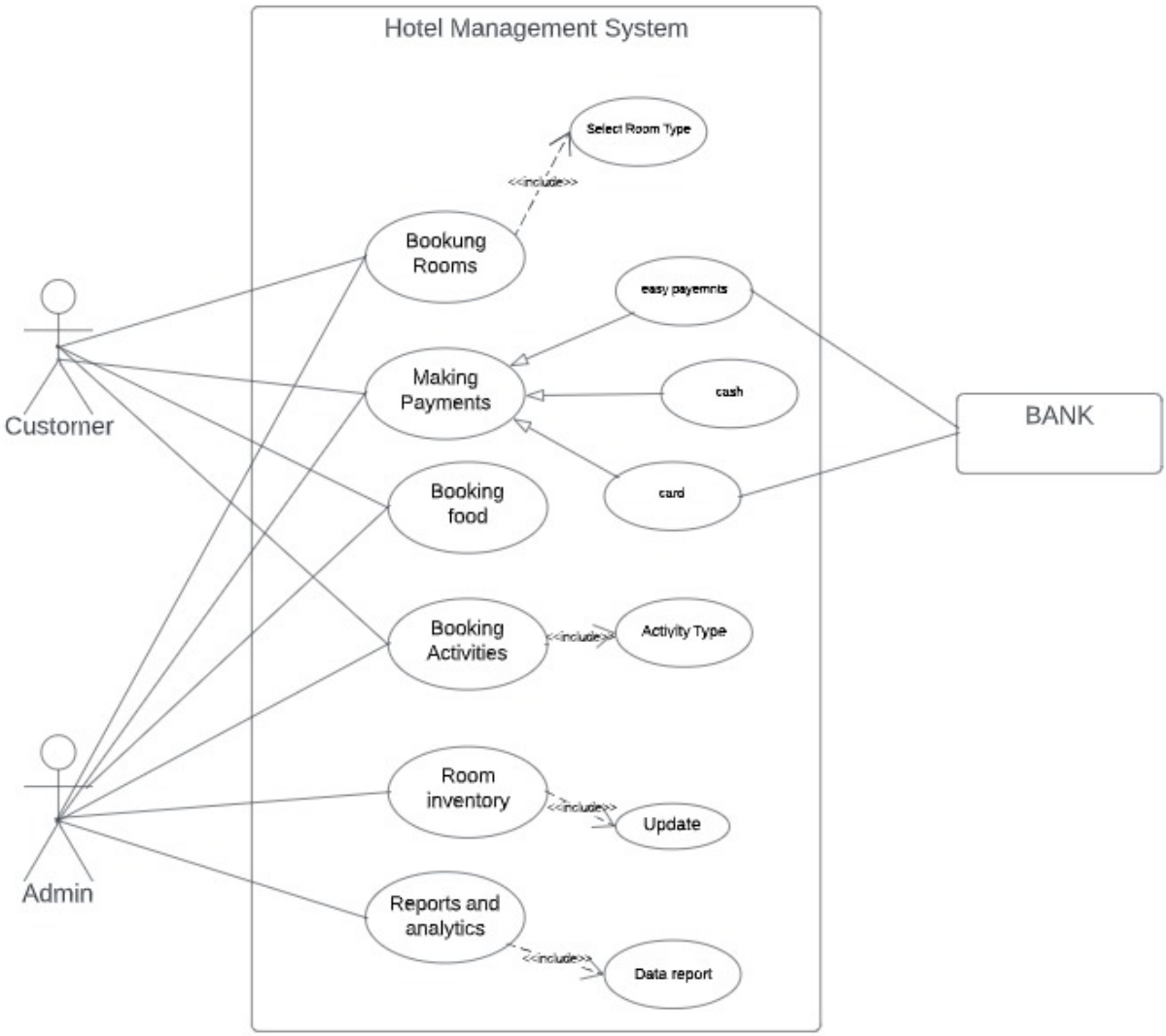
HOTEL MANAGEMENT AND BOOKING SYSTEM

Use case Name	Activities Booking	
Primary Actors	Customer, ADMIN	
Stakeholders and interests	ADMIN	Interested in accepting and notifying customers about bookings
	CUSTOMERS	Interested in booking recreational activities.
Precondition	• Activity availability on desired time is checked.	
Post condition	• Activity is scheduled	
Main Success Scenario	Step No.	Action
	1.	Customer will browse through activities and book desired one
	2.	Admin will be notified and check availability of activities
	3.	Admin will confirm booking and notify the customers.
Extensions	1.	If customer desired time slot is full, admin notifies the customer and ask them to book some other time.

6) Activities Booking:

HOTEL MANAGEMENT AND BOOKING SYSTEM

USE CASE DIAGRAM:

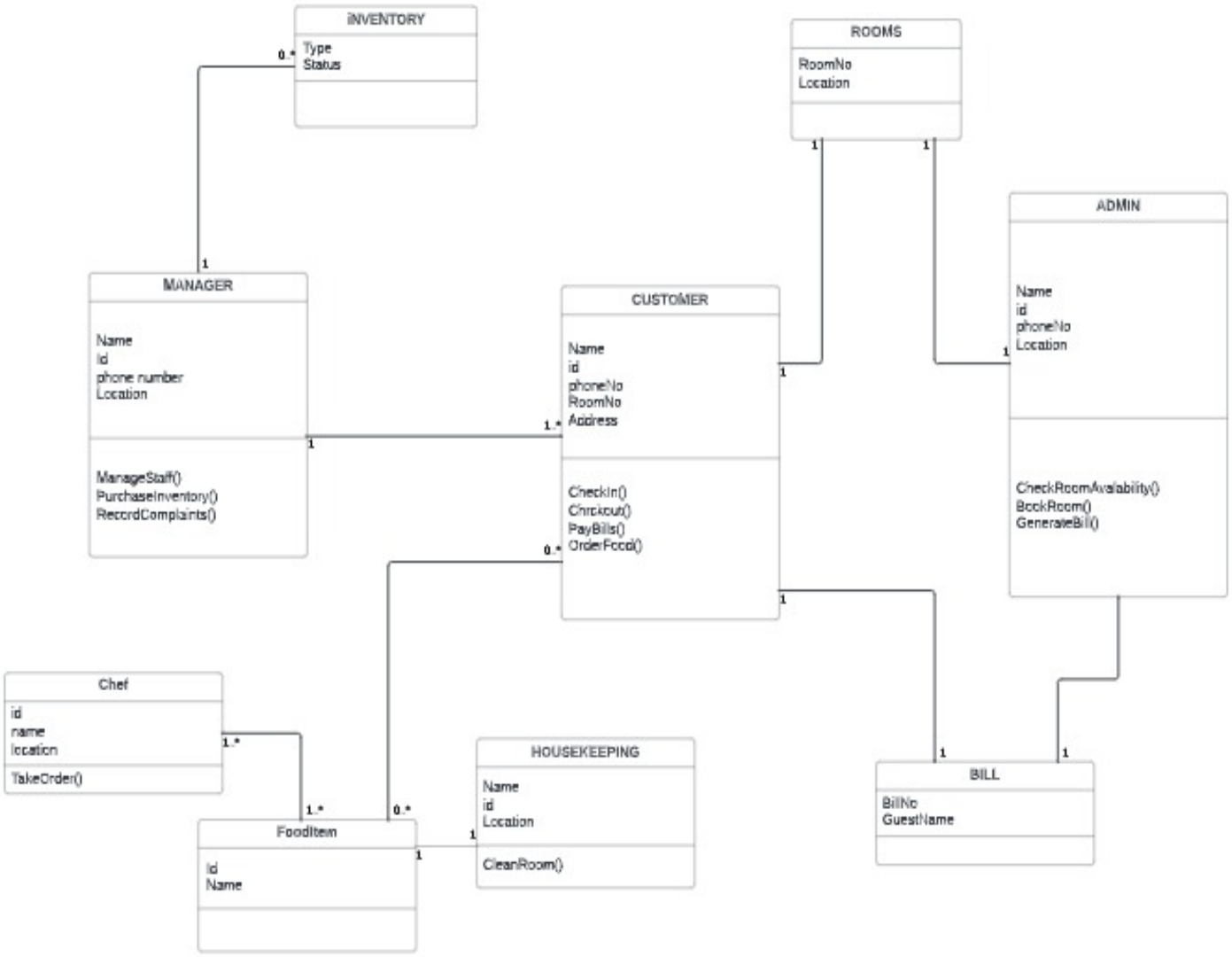


HOTEL MANAGEMENT AND
BOOKING SYSTEM

DOMAIN MODEL, SEQUENCE DIAGRAM AND SYSTEM SEQUENCE DIAGRAM

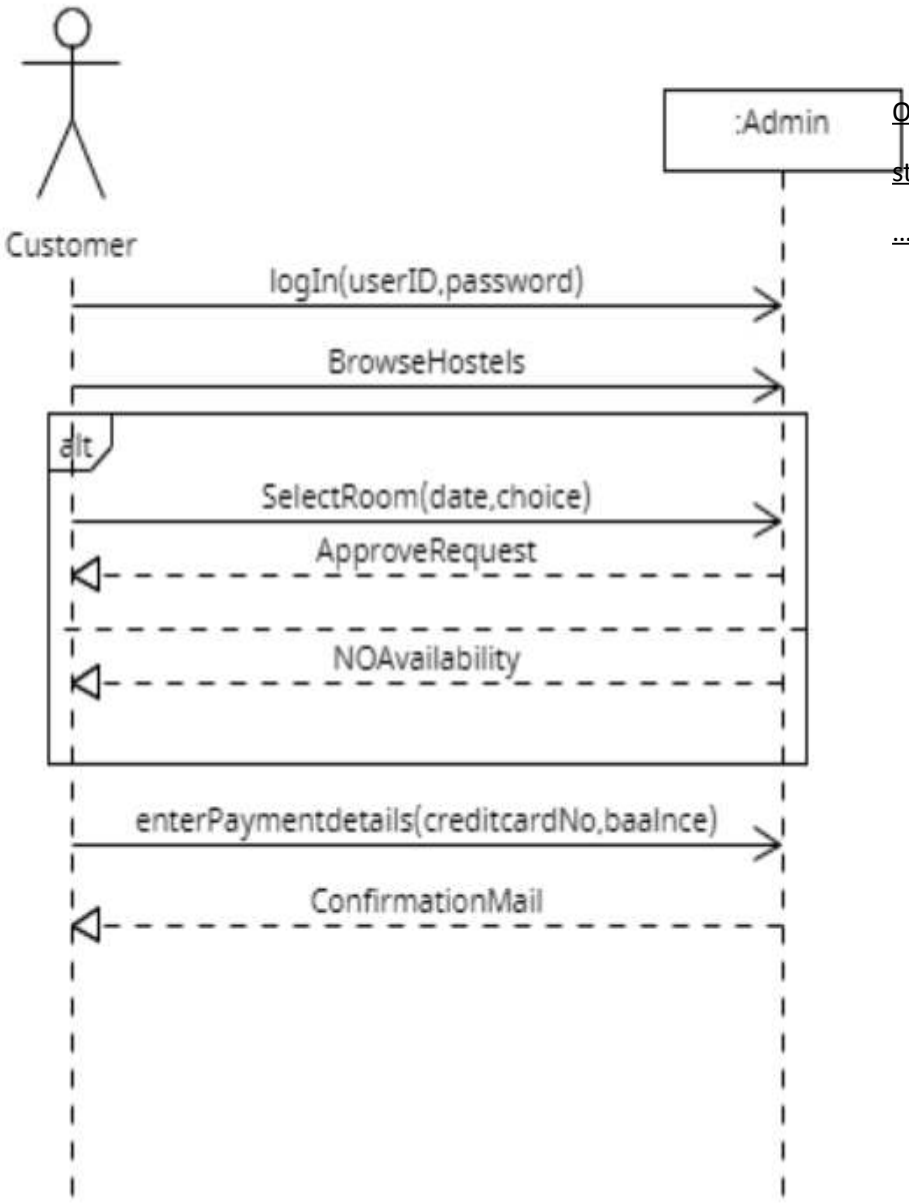
HOTEL MANAGEMENT AND BOOKING SYSTEM

TASK 1: (DOMAIN MODEL)



HOTEL MANAGEMENT AND BOOKING SYSTEM

TASK 2: (SYSTEM SEQUENCE DIAGRAMS)



OPERATION

OPRATION

storeinDataBase

enterPaymentdetails()

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OPERATION

selectRoom(date,choice)

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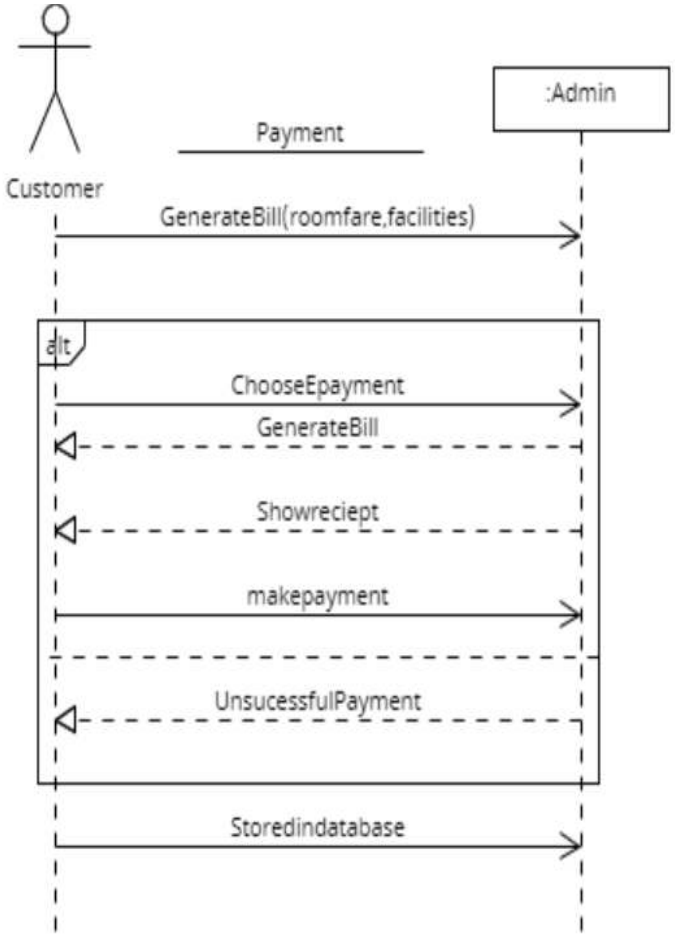
HOTEL MANAGEMENT AND BOOKING SYSTEM



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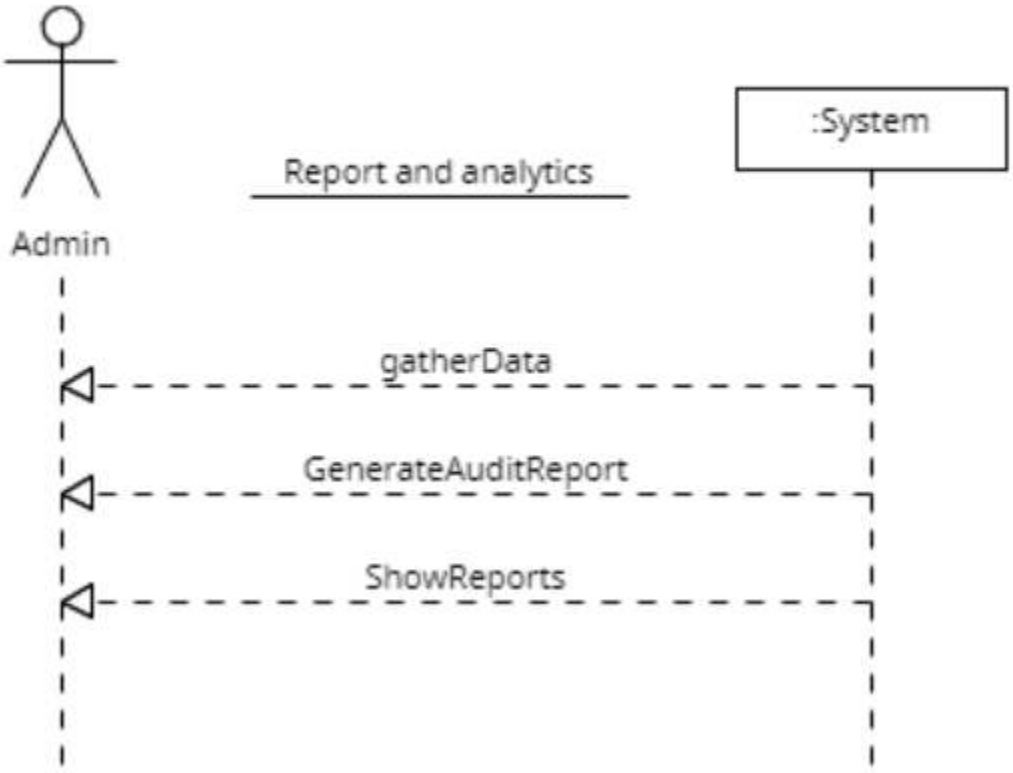

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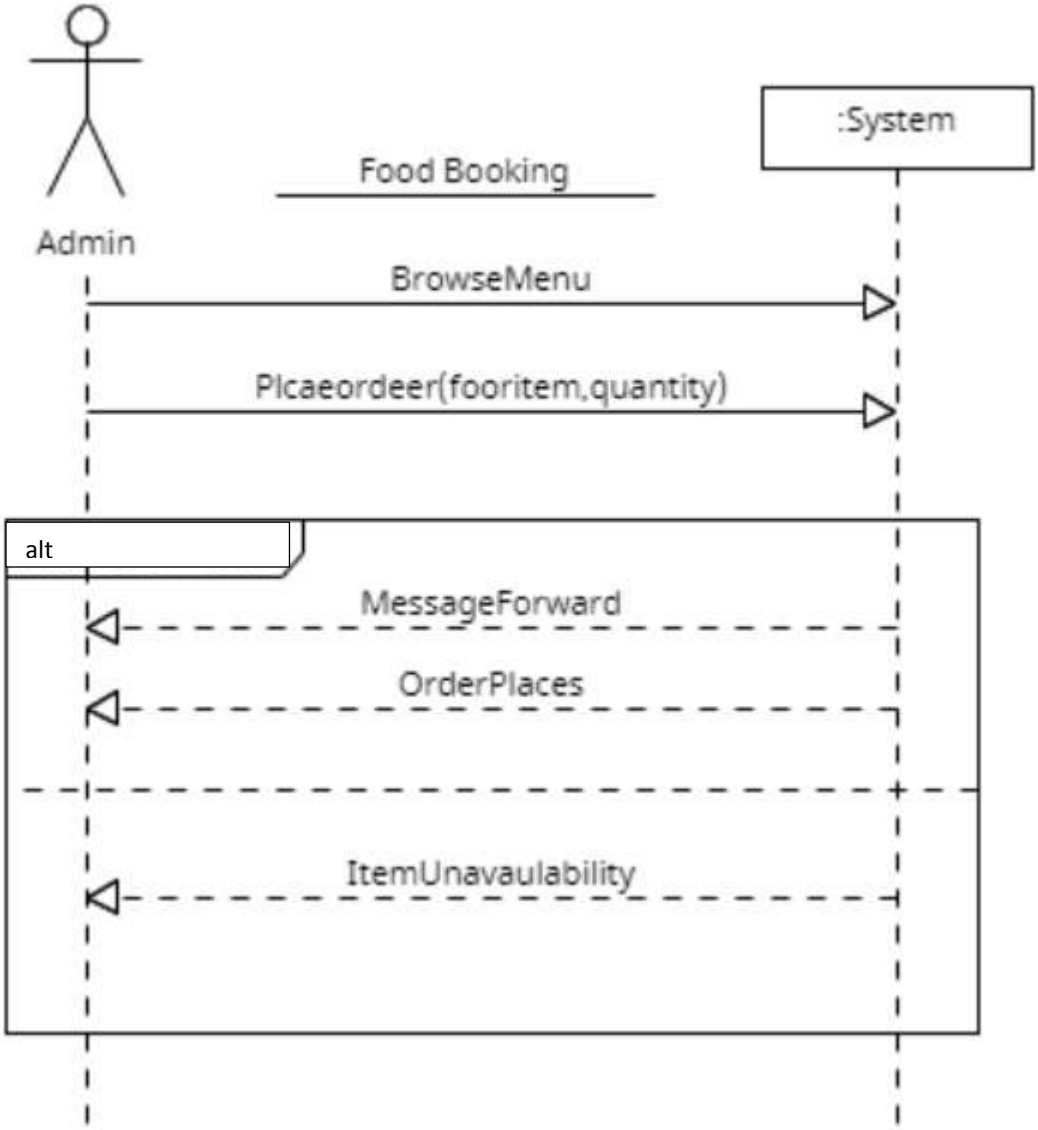

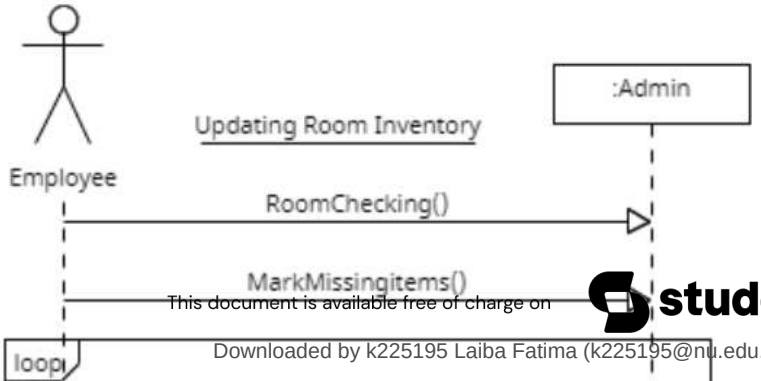

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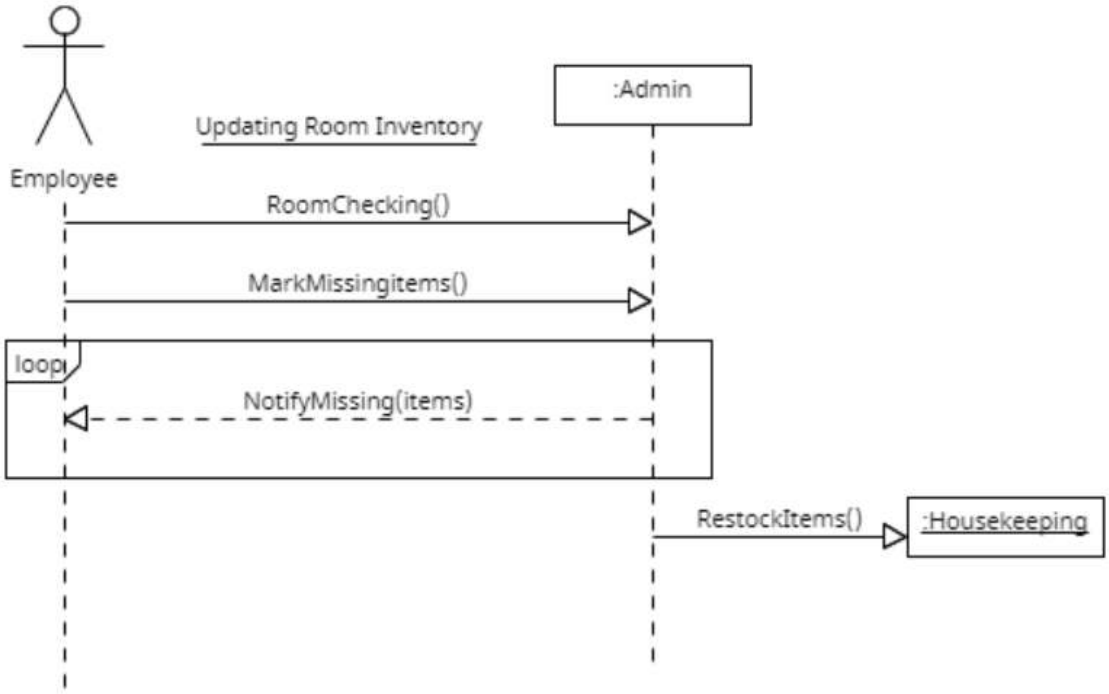

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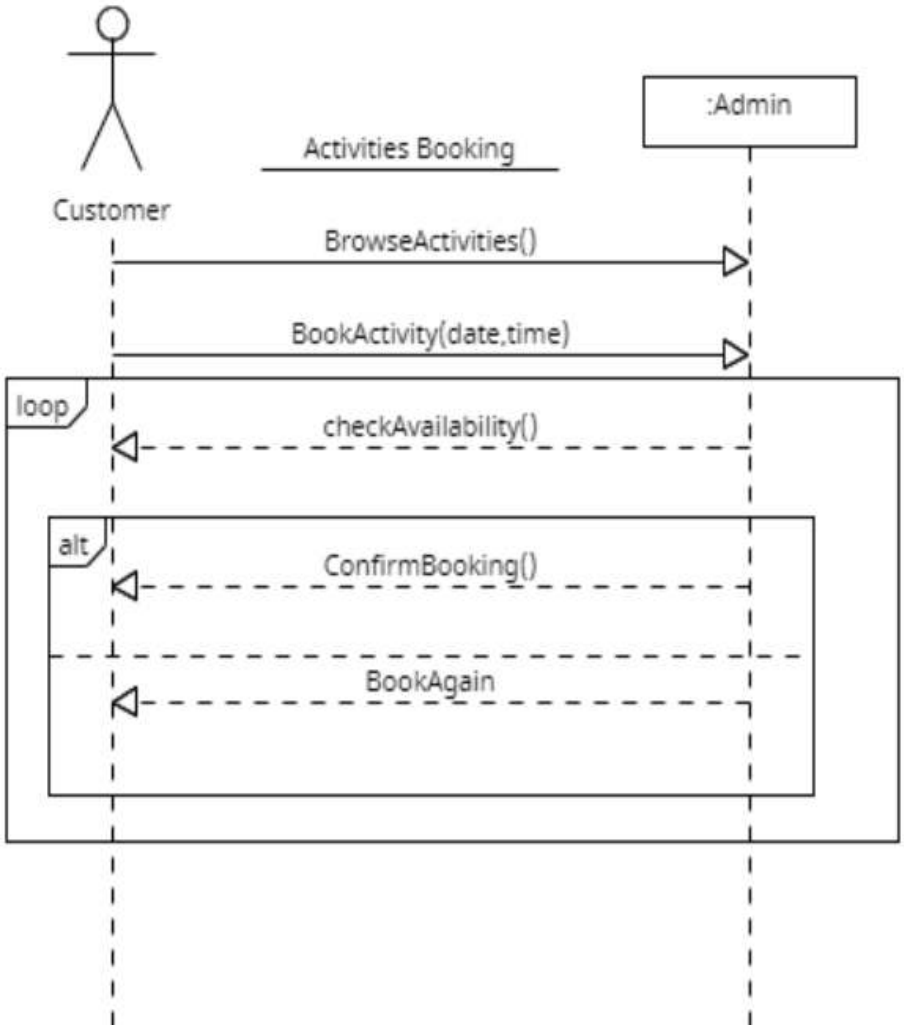

OPERATIONS

BookActivity()

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HOTEL MANAGEMENT AND BOOKING SYSTEM

TASK 3: (LIST OF OCs)

Operation: selectRoom(date,choice)

Cross References: Use Cases: Room Reservation

Pre-Condition: There is a room reservation underway.

Post-Condition:

A selectRoom instance was created.

selectRoom was associated with date and choice.

selectRoom.date was set to date.

Operation: enterPaymentdetails(creditCardno,balance)

Cross References: Use Cases: Room Reservation

Pre-Condition: The room is reserved and bill is shown

Post-Condition:

A selectRoom instance was created.

selectRoom was associated with enterPaymentdetails.

enterPaymentdetails.method was set to card.

Operation: storeinDatabase

Cross References: Use Cases: Payment

Pre-Condition: Payment is done and details are stored.

Post-Condition:

GenerateBill instance was created.

GenerateBill was associated with paymentDeatils.

Payment.generatBill was set paid.

storeinDatabase is set to store all details in the back server.

HOTEL MANAGEMENT AND BOOKING SYSTEM

Operation: bookActivity(date,time)

Cross References: Use Cases: Book Activities

Pre-Condition: browseActivities instance was created.

Post-Condition:

browseActivies.date is associated with bookActivity.

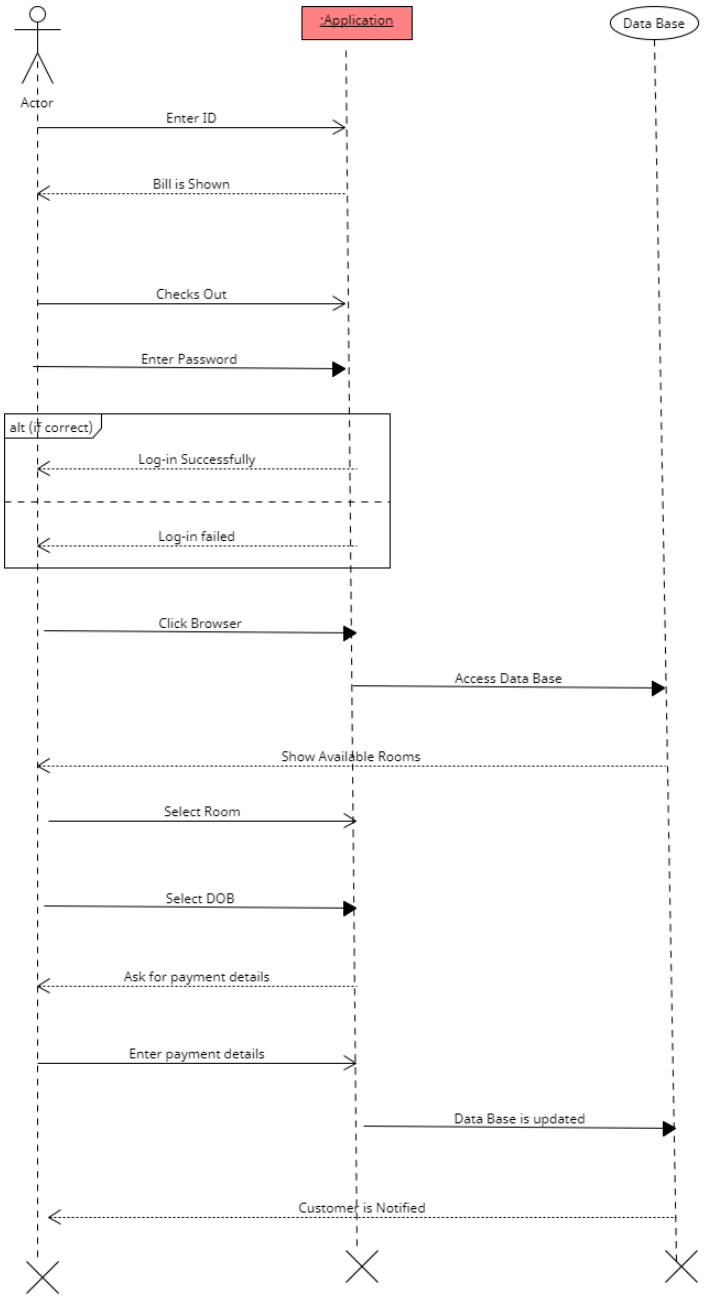
bookActivity.date is set to time.

aACtivity is booked and user is shown the bill.

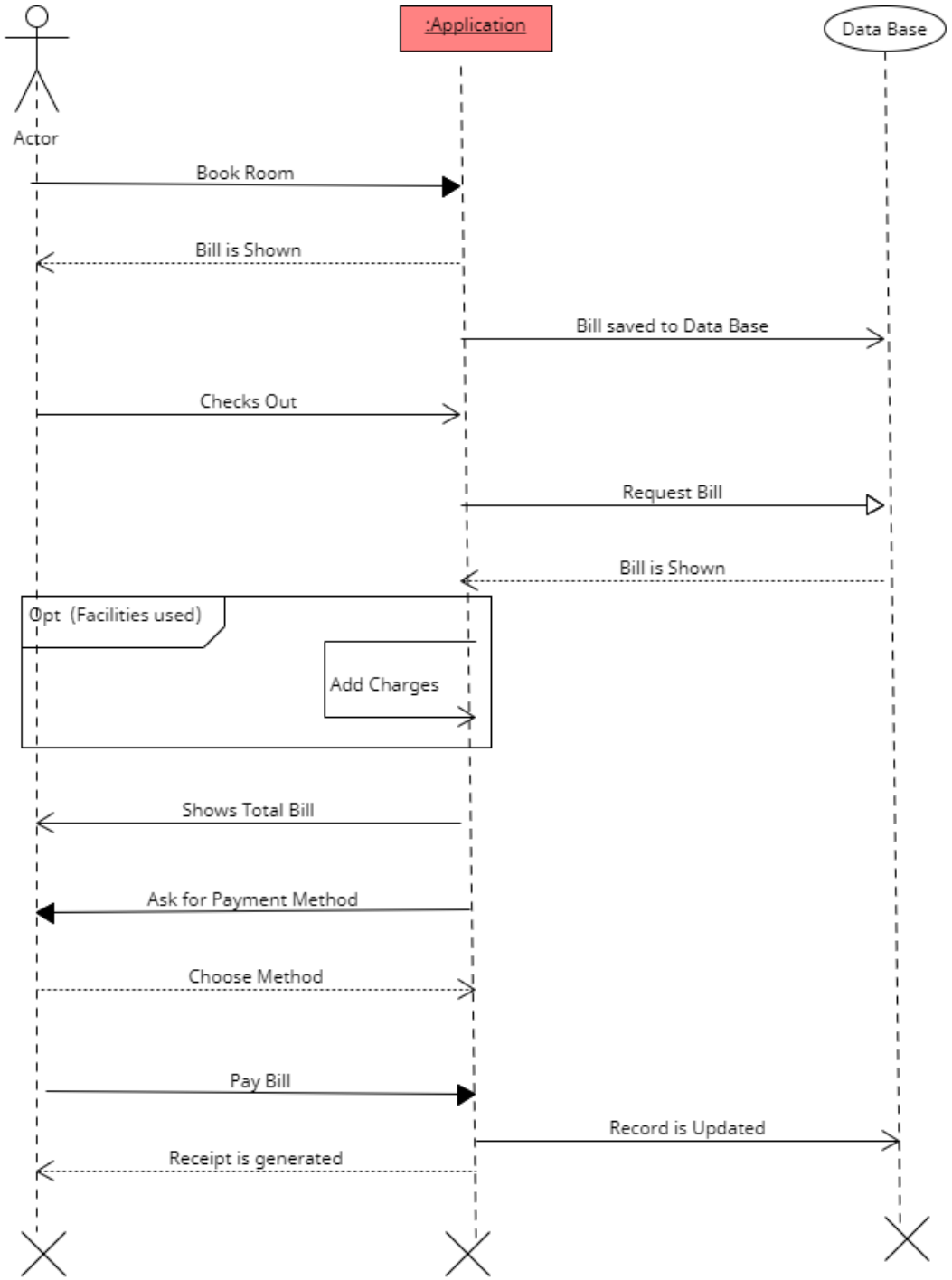
HOTEL MANAGEMENT AND BOOKING SYSTEM

TASK 4: (SEQUENCE DIAGRAM)

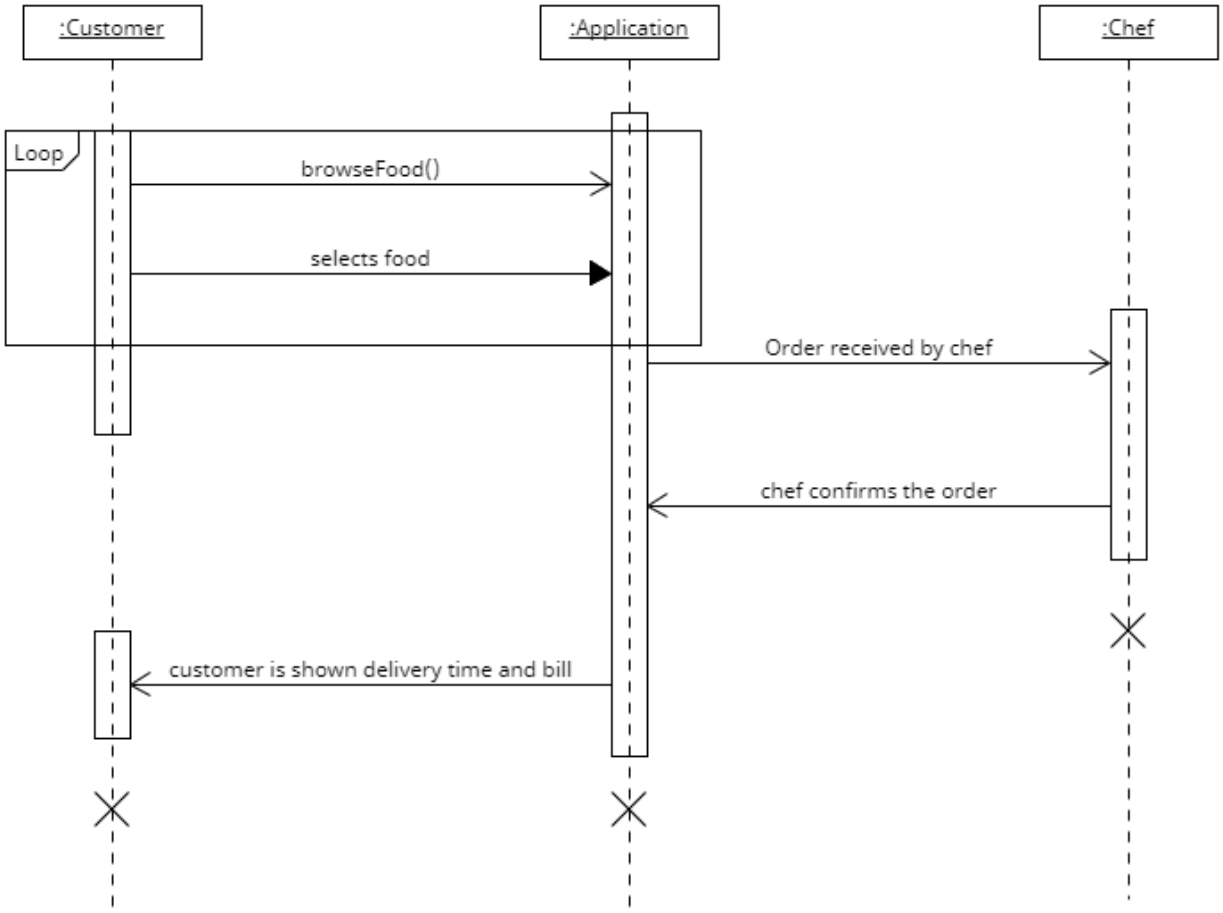
1. Room Reservation:



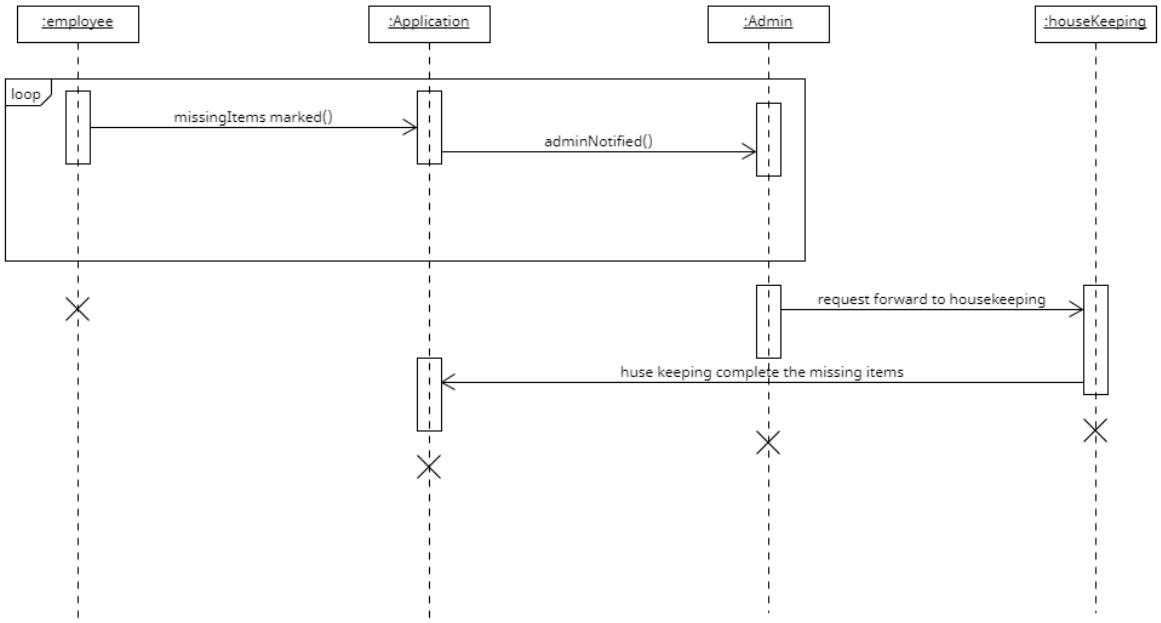
2. Payment:



3. Food Booking:

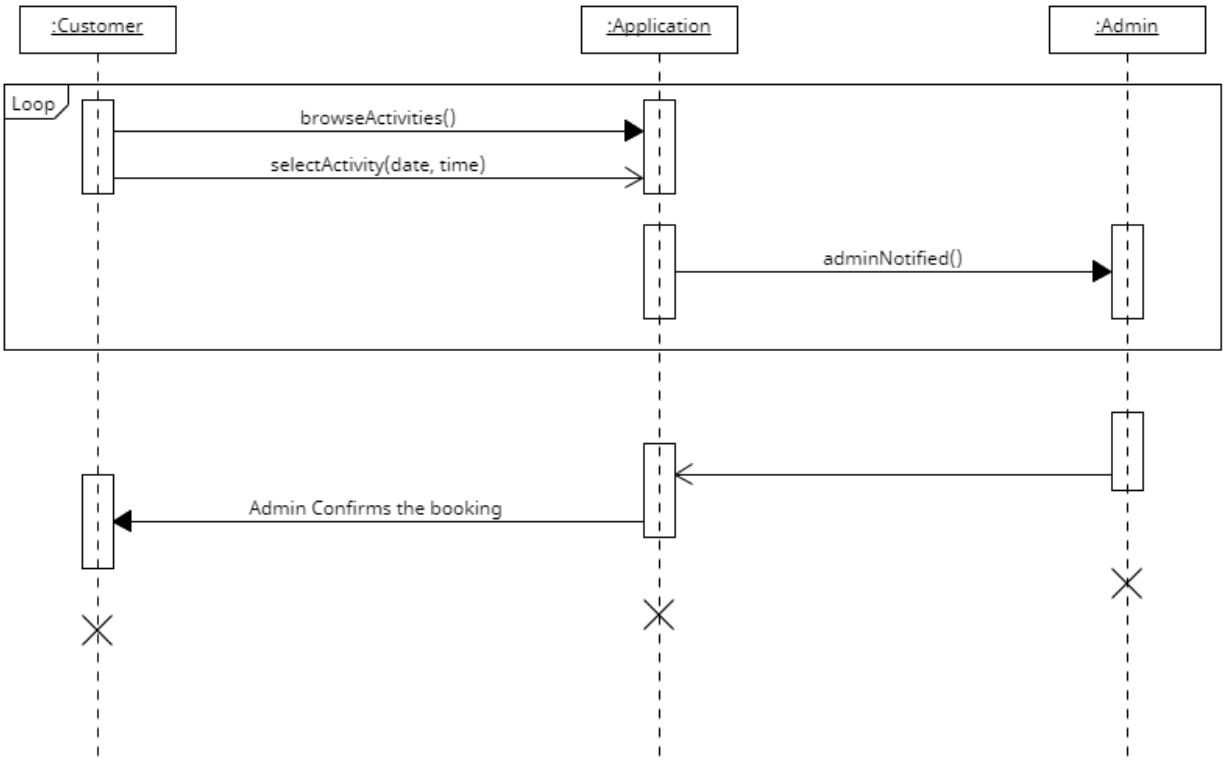


4. Updating Room Inventory:



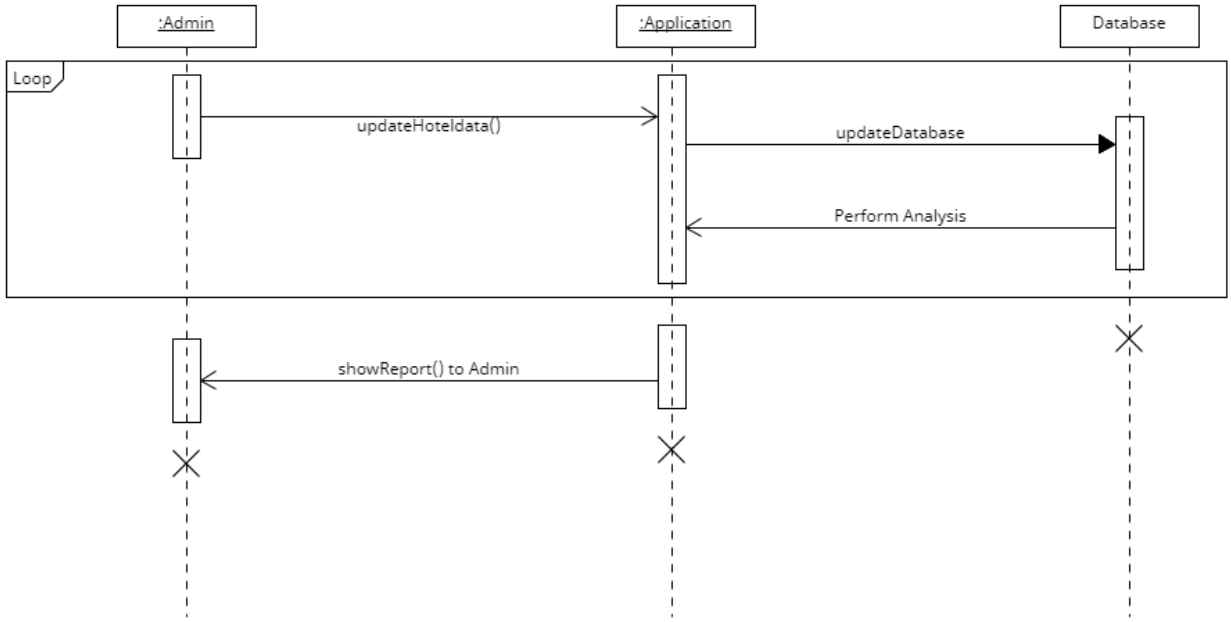
5. Activities Booking:

HOTEL MANAGEMENT AND BOOKING SYSTEM



6. Reports and Analytics

HOTEL MANAGEMENT AND BOOKING SYSTEM

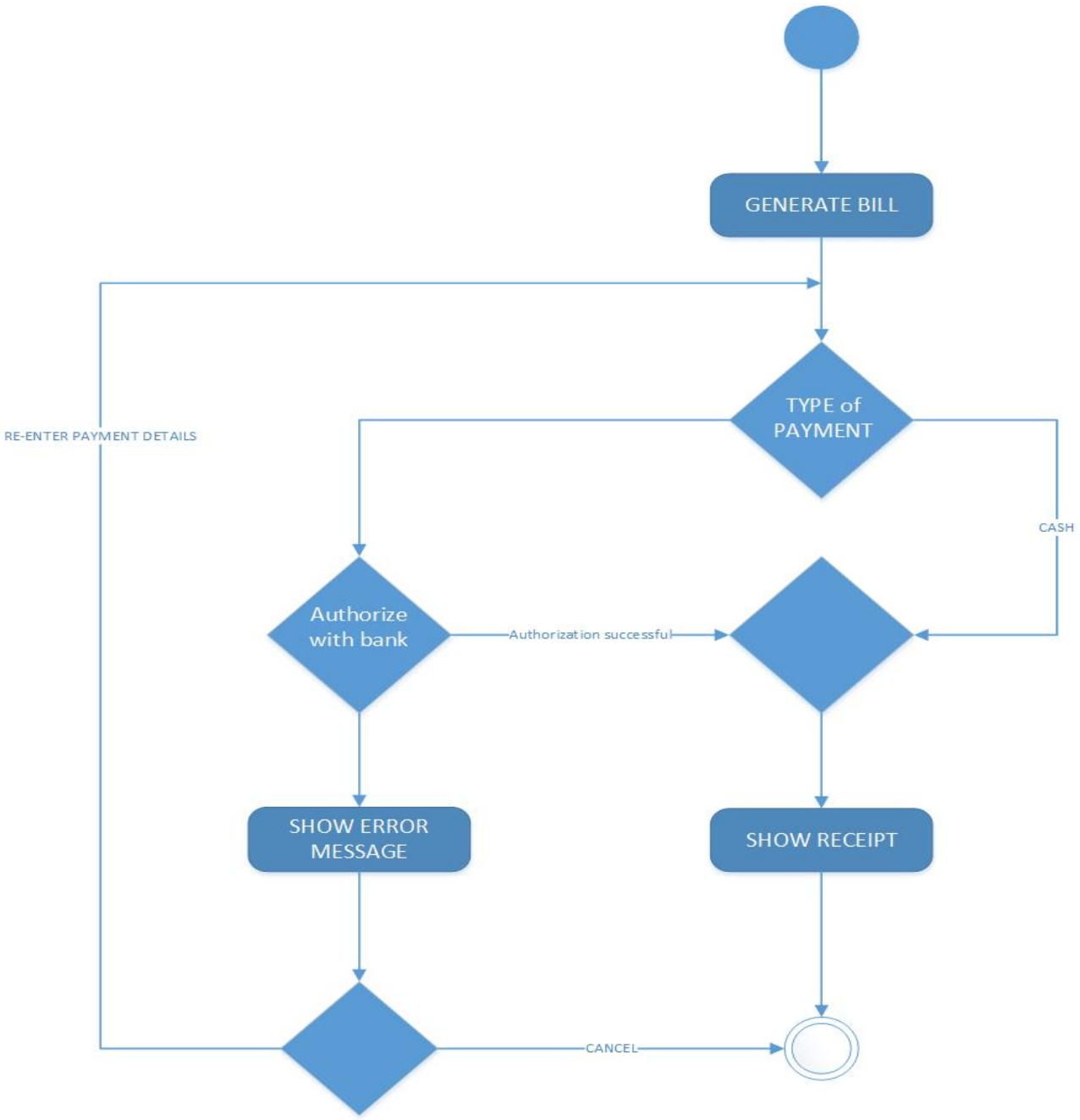


HOTEL MANAGEMENT AND
BOOKING SYSTEM

ACTIVITY DIAGRAMS, STATE MACHINE DIAGRAMS, COMPONENT DIAGRAM AND DEPLOYMENT DIAGRAM

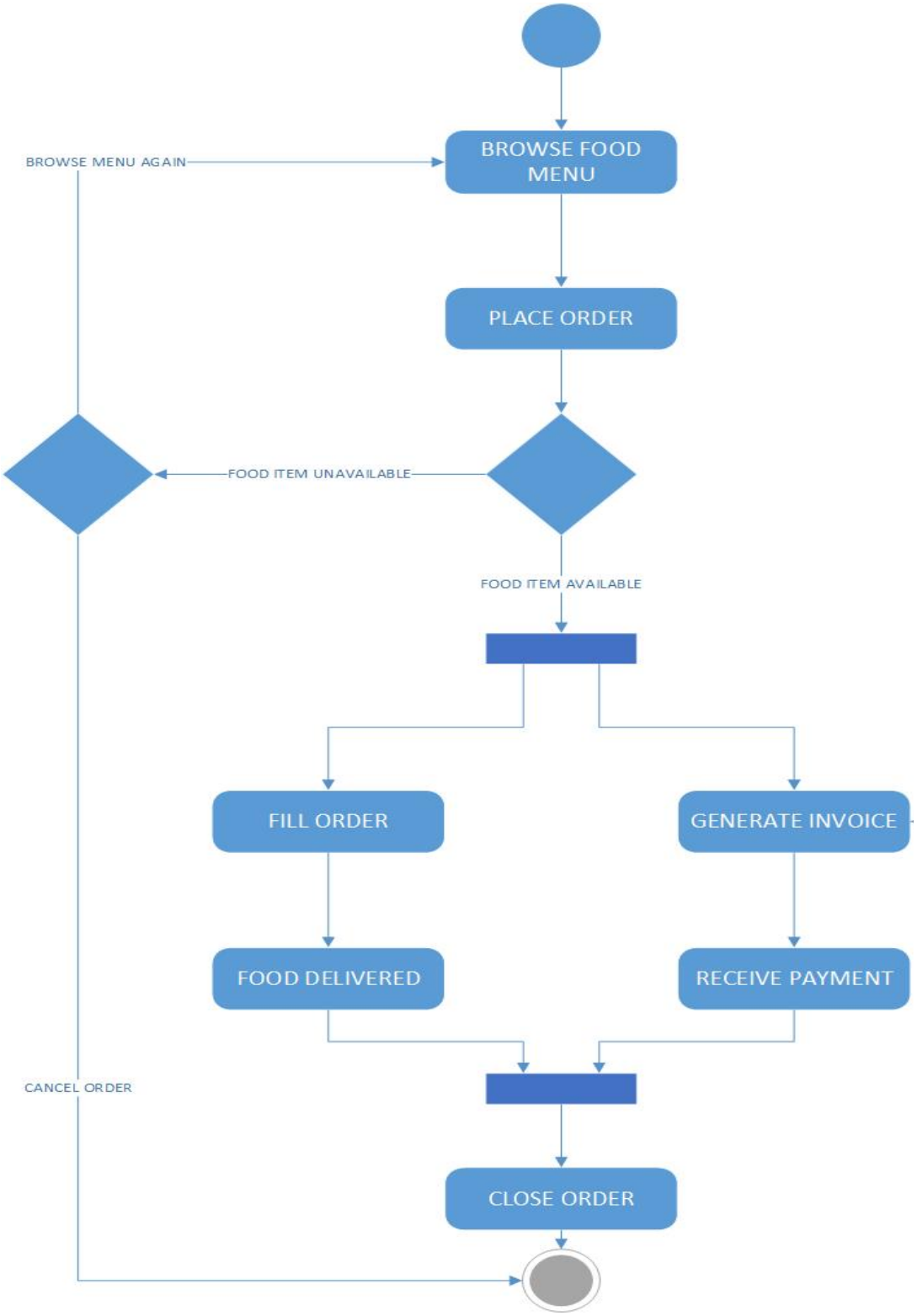
1. ACTIVITY DIAGRAMS

1. PAYMENT:



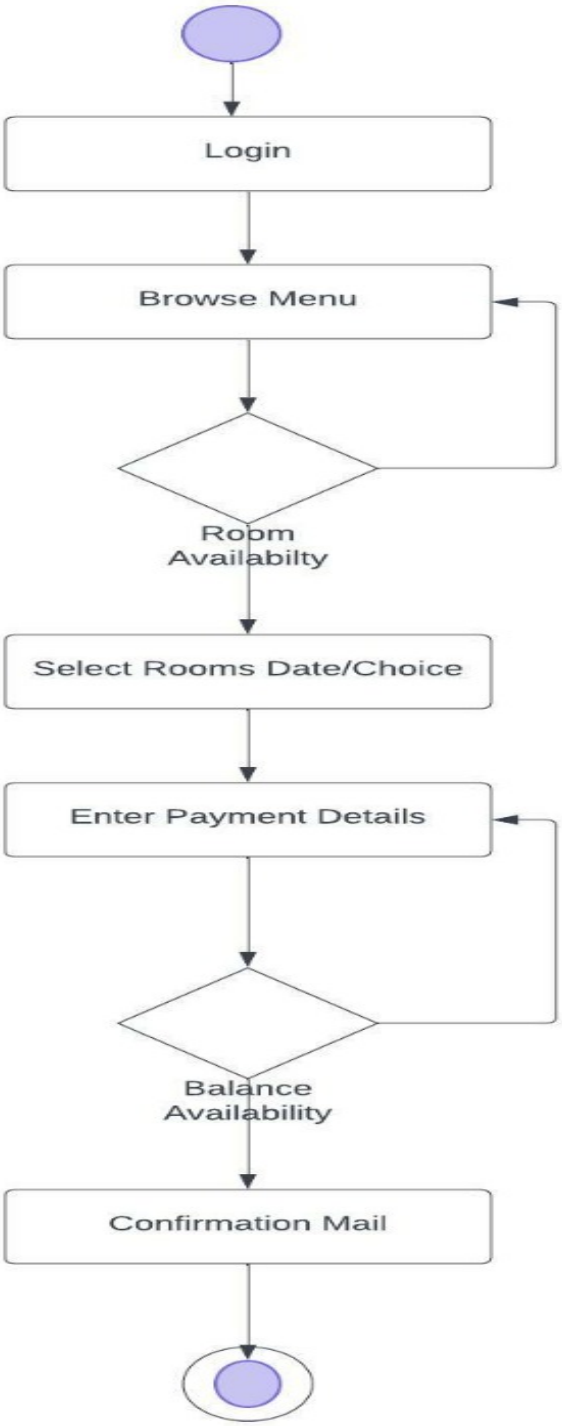
HOTEL MANAGEMENT AND BOOKING SYSTEM

2. FOOD ORDERING:



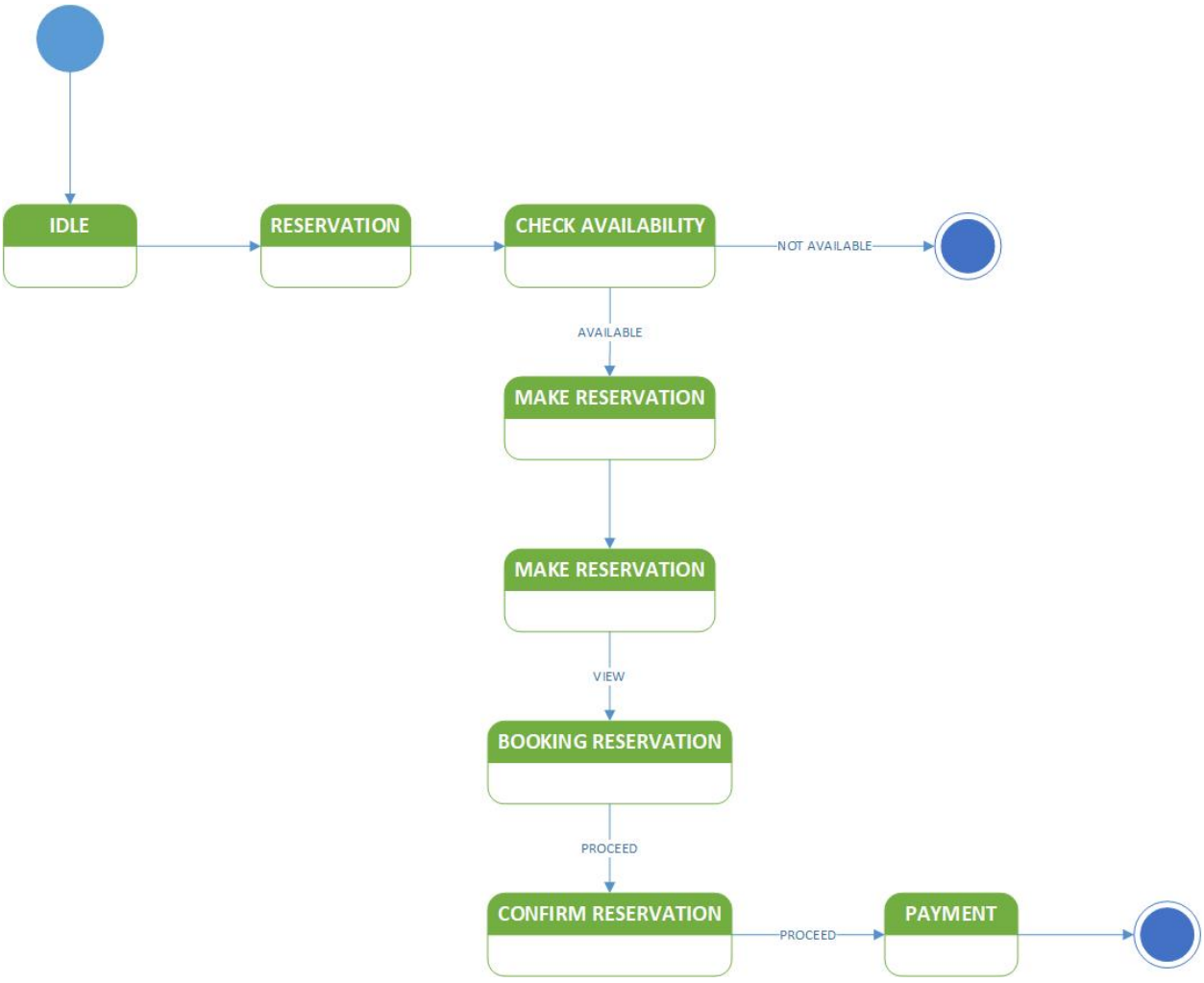
HOTEL MANAGEMENT AND BOOKING SYSTEM

3. ROOM BOOKING:

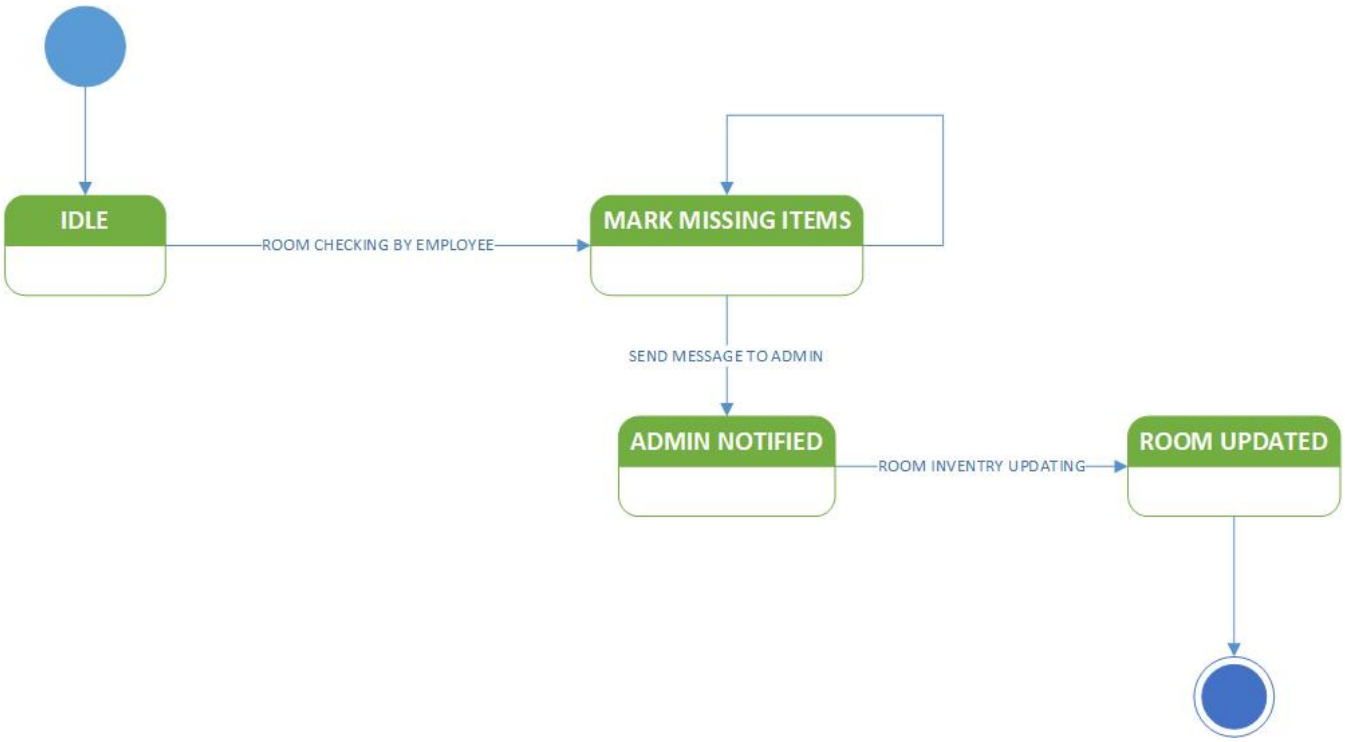


2. STATE MACHINE DIAGRAMS

1. ROOM BOOKING:



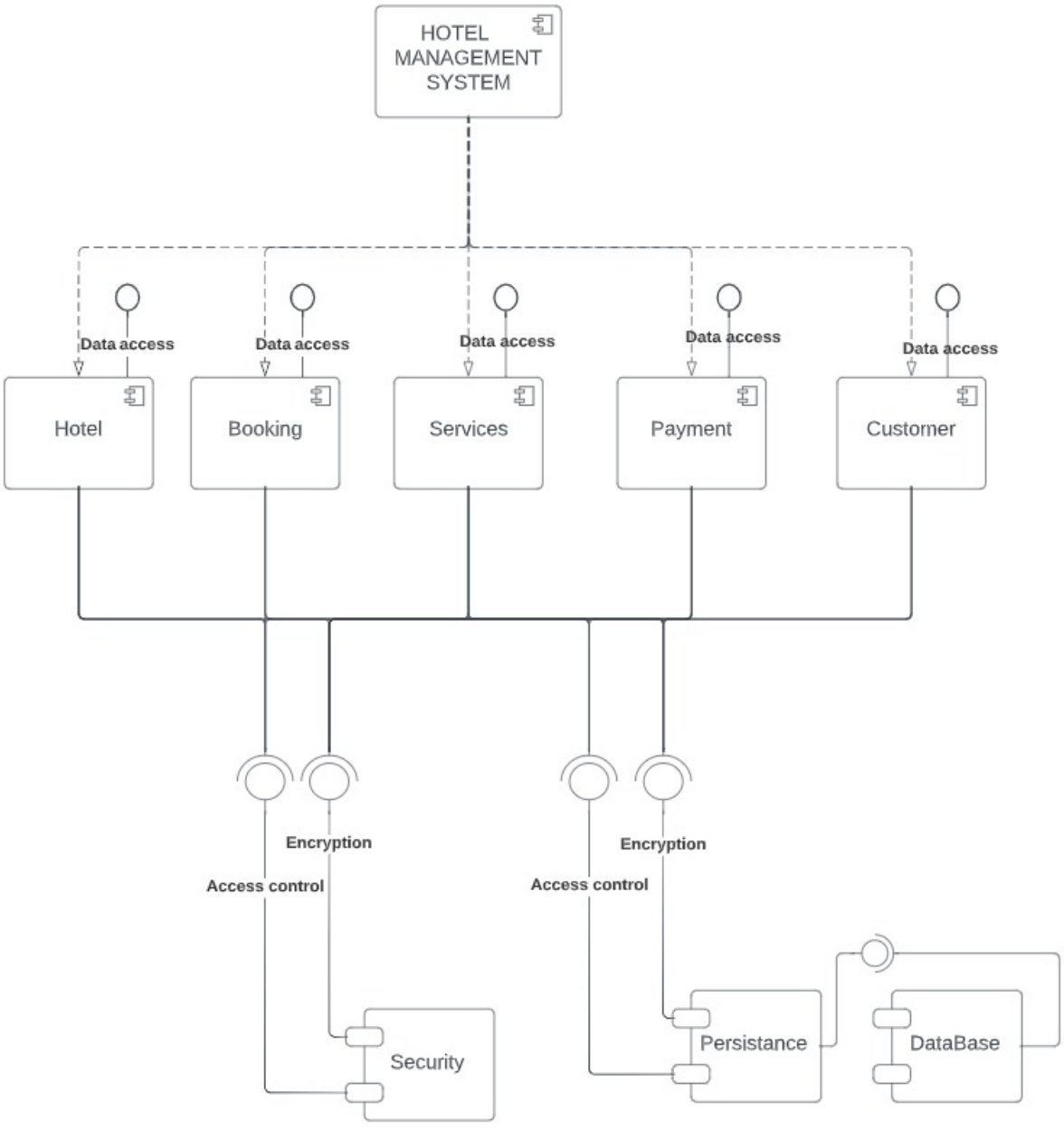
2. UPDATING ROOM INVENTORY:



HOTEL MANAGEMENT AND BOOKING SYSTEM

3. REPORTS AND ANALYTICS:

3. COMPONENT DIAGRAM



4. DEPLOYMENT DIAGRAM