Software Requirements Specification

Document

For

Online Hotel Management System

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1. Introduction

This Software Requirement Specification(SRS) details how the requirements should be implemented. It's a blueprint for the developers. It should be detailed enough that somebody who understands the problem could code the project without having to make any significant decisions.

1.1 Purpose

The purpose of the Online portal for Hotel Management System is to provide a web and mobile based application that can help in the daily activities of a hotel like reservation, check-ins, maintenance and finances. The Software Requirements Specification would help the client to evaluate if their requirements are met or not. They can evaluate the functionalities designed and can specify the changes at an early stages if necessary. At this stage the changes can be modified easily by the developers rather at the later stages of the project except they are small changes. Using SRS documentation developers can develop a low level design that can act as a sample to show the client. Testers can also design test plan and write test cases.

The main purpose of the project is to develop an online web and mobile portals that will run the hotel operations and develop a scalable system that can carry out the hotel activities efficiently. The hotel through this system wants to centralize all the functionalities into a single online portal. With the advancement in technologies hotel management wants eliminate the time constraints associated with the older techniques that were currently in use and provide an efficient service to customers. This would reduce a burden on the staff eliminating time constraint. The hotel end users will be able to use this SRS as a "test" to see if the software engineers will be constructing the system to their expectations. If it is not to their expectations the end users can specify how it is not to their liking and the software engineers will change the SRS to fit the end user's needs.

1.2 Scope

The project is intended for the reservations of room and business rooms that can be made through online. It will be able to automate the various operations of the Hotel. Our Hotel Management System will have three end users: Customer, Receptionist, Hotel Manager and the Owner. Hotel Management Customers will able to check for room's availability, select the rooms, and pay for the room. Receptionist will have access to update or modify booking details. Manager will able to view the financial report and able to update room information such as cost and category. Owner would be able to access all the details has has the highest authorization and can set authorization to his staff accordingly. He can also view and set the salaries of the employees, set the prices of rooms.

The main goal of this introduced automated HMS software is to simplify every day process of hotel. Day to day Hotels are increasing and also AirBnb also being a tough competitor it's very essential to automate and provide customer ease of access. It will be able to take care of services to customer in a quick manner. This automation will be able to replace the drawbacks of large customer information physical files which were difficult to handle. Secure Transaction, quick retrieval of information, ease of use, quick recovery of errors, fault tolerance are some of the benefits that development team will be working on to achieve end user satisfaction.

1.3 Document Conventions

The document is prepared using Microsoft Word 2013 and has used the font type Times New Roman. The fixed font size used is 12pt with 1.15line spacing. Bold property is used to set the headings of the document. Use case scenarios are written according to Alistair Cockburn's template. UML diagrams have been created according to UML 2.0 standards.

1.4 References

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2. Product Overview

The Hotel Management System is a new self-contained software product which will be produced by the project team in order to overcome the problems that have occurred due to the current

manual system. The newly introduced system will provide an easy access to the system and it will contain user friendly functions with attractive interfaces. The system will give better options for the problem of handling large scale of physical file system, for the errors occurring in calculations and all the other required tasks that has been specified by the client. The final outcome of this project will increase the efficiency of almost all the tasks done at the Hotel in a much convenient manner.

2.1 Product Perspective

The Online HMS is an independent comprehensive standalone system. It is totally self-contained software product which will be produced by the project team in order to overcome the problems that have occurred due to current manual system. The online system will provide an easy access to the system and will contain user-friendly functions with attractive interfaces. The final outcome of the project will increase the efficiency of almost all the tasks done at the Hotel in a much convenient manner.

2.2 Product Functions

- Make Reservations
- Search Rooms
- Add Payment
- Issue Bills
- Manage Guest (Add, Update Guest)
- Manage Room Details (Add, Update, Delete)
- Manage Staff (Add, Update, Delete, View)
- Manage Inventory (Add, Edit, Delete)
- Set Rates
- Retrieve Reports (Staff payment, Income)
- Manage Users (Add, Update, Delete)
- Taking Backups
- E-mail notifications

Functional Requirements

Function 1	Make Reservations
Input	Code, Number of children, Number of adults, check-in date, check out date, status, Number of nights

Output	Database Record, Database successfully updated message
Processing	Validate the given details and record the information in to the database.

Function 2	Add Guest
Input	Member code, Phone number, Company, Name, E-mail, Gender, Address
Output	Database Record, Database successfully updated message
Processing	Validate the given details and record the information into the database.

Function 3	Add staff member
Input	Code, Employee Name, Employee Address, NIC, Salary, Name Age, Occupation, E-mail
Output	Database Record, Database successfully updated message
Processing	Validate the given details and record the information into the database.

Function 4	Search Rooms
Input	Period, Check-in, Check-out, Guest
Output	Display a message with available room details
Processing	Validate the given details and check for the available rooms in a given time period and return its availability.

Function 5	Add Payments
Input	Total, pay time, Credit card details
Output	Database Record, Database successfully updated message
Processing	Validate the given details and record the information into the database.

Function 6	Issue Bill
Input	Billing no, Quantity, Price, Taxes, Date, Services, Unit
Output	Printed version of the bill
Processing	Validate the given details and total cost is calculated according to the Services gain by the customer.

Function 7	Set Rates
Input	Check-in, Check-out, Day, No.of guests, First night price, Extension price
Output	Database Record, Database successfully updated message
Processing	Validate the given details and record the information in to the database.

Function 8	Taking Backups
Input	Location to save the backup file
Output	Display a message showing backup successfully created
Processing	Validate the user given location to save the backup file. Save the backup file to the user specified location

2.3 User Classes and Characteristics

2.3.1 User Classes

There are three user levels in Hotel Management System.

1. Owner
2. Manager
3. Receptionist
4. Customer

Characteristics of User Classes :

Owner:
Hotel owner has the privilege of Monitoring and authorization of all the tasks handle by the system. He can access every function performed by the system. Owner of the company as well as the system can access to the administration panel which is consider the core of the system. As the main authorized person of the company owner gets the ability to manage the other users including their user levels and privileges. Taking backups of the system and restoring system can also be done by the Owner. Meanwhile he will be able to take all the kinds of reports available in the system. As the owner of the system and the company he has the power to set room rates as well. Hotel owner has the sole right of deleting a staff member from the system database.

Manager:
Manager is responsible for managing resources available in hotel management system. Manager also has most of the privileges mentioned above except the things regarding the payment handling. The reason for using a Manager is to reduce the workload done by the owner that cannot be assigned to the receptionist, as those tasks seem much responsible. The user level, Manager has the authority to take all the reports available in the system but here also except the reports related to financial stuff, hotel income. Manager has other abilities that receptionist, user level has. Such as, adding new staff member to the system, Modifying them or removing them, Adding new guests to the system, Modifying them and removing them from the system, Adding new inventory to the system, Modifying them and removing them. Adding new room types to the system, modifying them and removing them.

Receptionist:
As a hotel receptionist, he or her role will be to attain the goals of bookings and to ensure that all guests are treated with a high standard of customer service. Hierarchically receptionist role has

the least accessibility to the system functions. Receptionist plays the boundary role of the system .He or she can perform limited functions such as registering new guest to the system, make reservations, Sending email reminders to clients for booking confirmation. Management of hotel will prefer to hire receptionist who have a good standard of general education and possibly in subjects such as English, math and IT.

Customer:
As per the customer's perspective he can reserve a room through the online portal. He can view the reservation through the portal. He can select from single or double or a suite based on his choice. He could also order for an extra mattress for an extra charge. Check in times being 3 pm and check out times is noon so the customer if did not check out by noon then he may be chargeable. He could request room service which starts at 6 am in the morning. He could also give and view reviews on the hotel.

2.4 Operating Environment

Hardware and software requirements :

Hardware:

1. Operating System Supports all known operating systems, such as Windows, Linux.
2. Computer 512 MB+ RAM, monitor with minimum resolution of 1024x768, keyboard, and mouse.
3. iPhones and iPad all models of 8GB or more.
4. Android mobiles and tablets of all dimensions.
5. Hard Drive should be in NTFS file-system formatted with minimum 10 GB of free space
6. A Laser printer will need to be used to print these reports and notes

Software:

1. Software is designed to run on any platform above Microsoft Windows 7 (32bit).
2. While coming to mobile it supports iOS (8 or above) and Android (4.1 or above).
3. Microsoft .NET Frameworks 4.0 or above.
4. Microsoft SQL Server Management Studio Express 2010.
5. Xcode 8 and Android Studio 2.3.3.

2.5 Design and Implementation Constraints

Software development crew provides their best effort in developing the system. In order to maintain the reliability and durability of system, some design and implementation constraints are

applied. Availability of an android and iOS app for hotel management system could make the system portable but due to time constraint it is not possible. System will need a minimum memory of 512MB. But it is recommended to have a memory of 1GB. When designing interfaces of system, we had the capability of work with new tools such as Devexpress. Considering the client's budget we decided to create those interfaces in a simple realistic manner using affordable technology.

2.6 Dependencies and Assumptions

Some software used in implementing the system is with high cost and the client has agreed to afford the amount of money needed to purchase them. It's assumed that client won't change that decision on the next phases of the software development. Although we assume that client is using windows 7 or windows 8. Otherwise if client use an open source operating system, there is a need of changing the SRS accordingly.

3. External Interface Requirements

3.1 User Interfaces

We can broadly classify user interfaces into two namely:
Administration user interface
Customers user interface

Administration user interface has login module that allows only users with admin role to get into the system. The interface accessible to admin's is completely different from customers. Admin have special rights on the system. They can add, delete, update any information on the site whereas customers can't.
On the other hand customer user interface is where customer's login/register and book their rooms or enquire for any further information or cancel/pre-postpone their reservations.

User Interface Screens

1. Home Page : This is a common interface which contains advertisements, announcements, and sign in, register menus visible to all.
2. Login Page: User is prompted to sign in, depending on their role (admin/customer) and they will be navigated to different screens.
3. Registration Screen: If the guest has visited the system for the first time, he/she will be prompted to register and create an account.
4.Administrator's interface: This interface will have add/delete/edit options for details of rooms, customers, meals menu and they would be able to view,assign appropriate tasks to staff.They can add, modify, delete current users.
5.Accounting Screen: This interface will have accounting/billing information along with customer information. These activities will be recorded into database.
6. Staff: This interface will have rooms assigned, schedule and logout options.

7.User's Screen: This is visible to users where they can checkin, checkout, retrieve, update/save, view, cancel reservations.They can also adjust their room type, update/change their payment method, order meals etc.

3.2 Hardware Interfaces

The system will be installed on desktop systems and mobiles.

Hardware requirements:

Broadband connection with high speed internet to communicate effectively with customers and staff.

RAM : Server side a minimum of 512MB whereas client side minimum of 128MB is good.

Processor: Intel Pentium 4

Network interface card, this allows the computer to connect to the network

Mouse and keyboard

Smart phones with all room assistants to access mobile app.

3.3 Software Interfaces

This software is going to be installed on Windows, Mac, Android and ios. On server side a database MySQL is used to store hotel rooms, staff, customer, payment and booking information in the form of tables. These can be modified only by administrators. The room database will include the room numbers and if they are vacant or occupied. The customer's information database will contain all the information of the customer such as first name, last name, number of occupants, assigned room, default room rate (may be changed), phone number, whether or not the room is guaranteed, credit card number, confirmation number, automatic cancellation date, expected check in date and time, actual check in date and time, expected check out date and time, amount owed by customer, and abbreviated customer feedback. Staff information will be stored in databases along with their work schedules.

Software Requirements:

Windows/Mac operating system.

Internet Browser

Apache Tomcat Server

MySQL

Red Hat Linux Enterprise

3.4 Communication Interfaces

Emails:

When a specific reservation is made, an e-mail notification will be sent to both concerned staff and customer. Customer will be notified with the

- check in date and time
- check out date and time

- payment confirmation
- room details
- no of guests

Alerts:

There are different scenarios where the staff receives alerts, alerts are generated from the front desk and directed towards the staff. Some of the scenarios where alerts will be generated are described below:

- when a customer checks out
- when a customer requests for room service
- when customer orders for necessary services such as taxi, online food ordering and other entertainments from the guest portal

Other type of alerts include any emergency alerts that are sent both to staff and customers. These alerts include:

- Alerts on tornado, floods or any upcoming drastic weather changes.
- Fire alerts.
- Any other emergency alerts.

Nature of the alerts:

Alerts are received in the form of the text messages on the mobile devices of staff and to email and mobile for customers. A provision will be made to choose which type would users prefer to get notified of alerts. So there are two types of alerts:

Alerts in the form of text message

Alerts in the form of e-mail

Alerts in the form of notifications if the user allows the application to send notifications (for mobile application)

Alerts in the form of popup windows (for application installed on computer)

4. System Features

4.1 Functional Requirements

Functional requirements are the like the basic actions that the system would perform.

The functional requirements for this online portal which we identified are customer interface, staff interface and the backend booking details that are required to be stored.

4.4.1 Customer interface functional requirements

1) Search room

The portal would show the availability of the rooms.

2) Price

The portal would show all the prices of the single, double bedrooms and the suite prices.

The portal would show the prices for extra amenities if required like extra mattress.

The portal would also show the prices of the restaurant menu.

3) Details of room

The portal would show the details of the room like TV, fridge, AC availability in the room based on the customers selection.

4) Booking

The portal shall have next button or cancel button for booking procedure.

The portal shall enable customer to visit booking page, allow booking the room and confirming the room.

The portal shall send an email notification of booking confirmation to customer.

The portal shall redirect customer to payment page if they click the confirmation.

5) Payment

The portal would display the total bill amount.

The portal would allow the customer to pay through credit/debit cards.

The portal shall display a confirmation page after payment is made.

4.1.2 Staff interface functional requirements

1) Login function

The portal will have login credentials for every staff member.

The accessibility will be different based on his position in the hotel.

2) Edit Information

The portal would allow staff to view the customer details.

Some members of the staff can edit the details.

Owner can change any information in the portal.

4.1.3 Booking Details Functional Requirements

The portal would record the following information of the customer:

1) Customer_ID

2) Customer_Fname

3) Customer_Lname

4) Customer_DOB

5) Customer_Address

6) Customer_Mobile

7) Customer_Email

8) Customer_IDProofNo

4.2 Use Case Diagram:

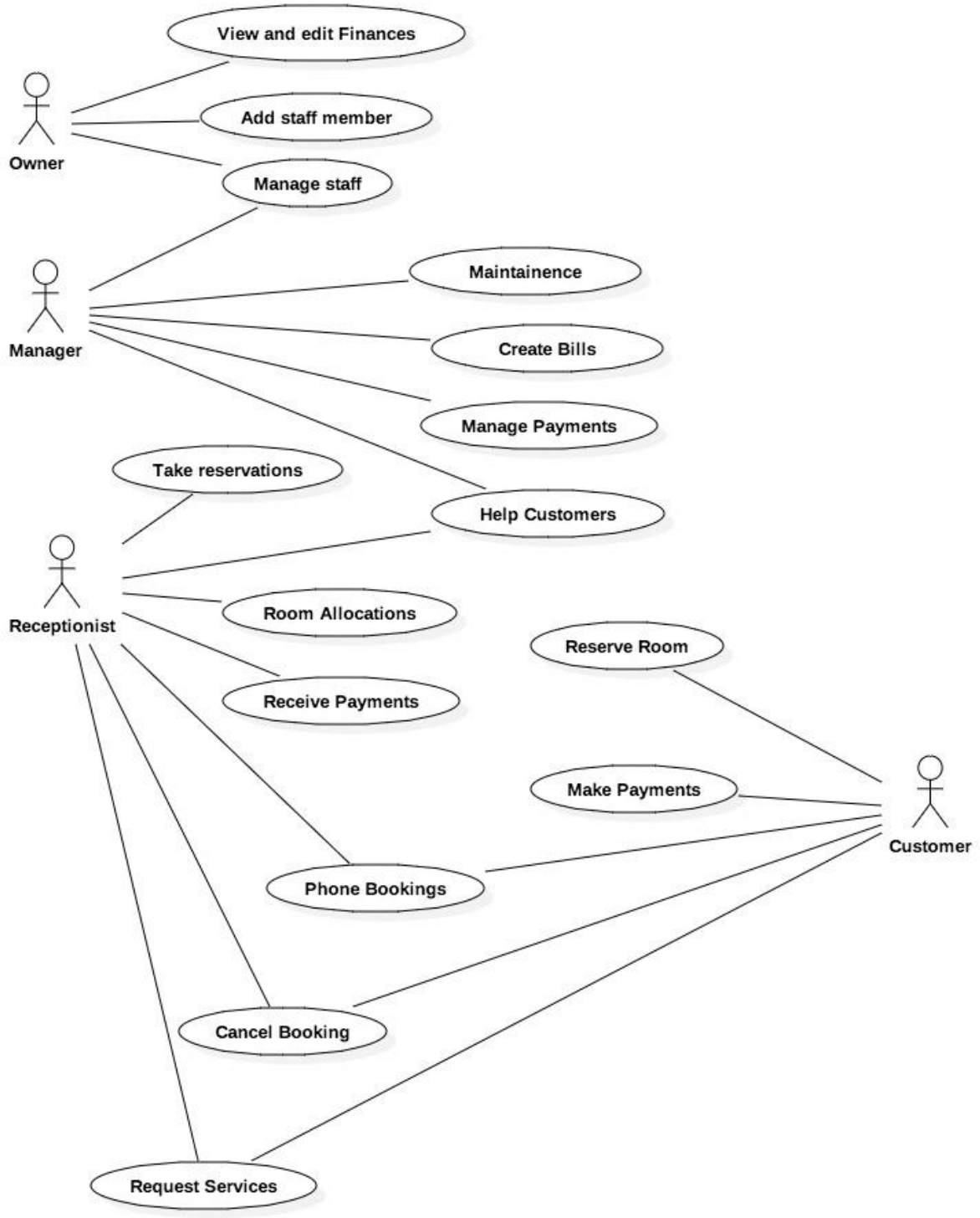
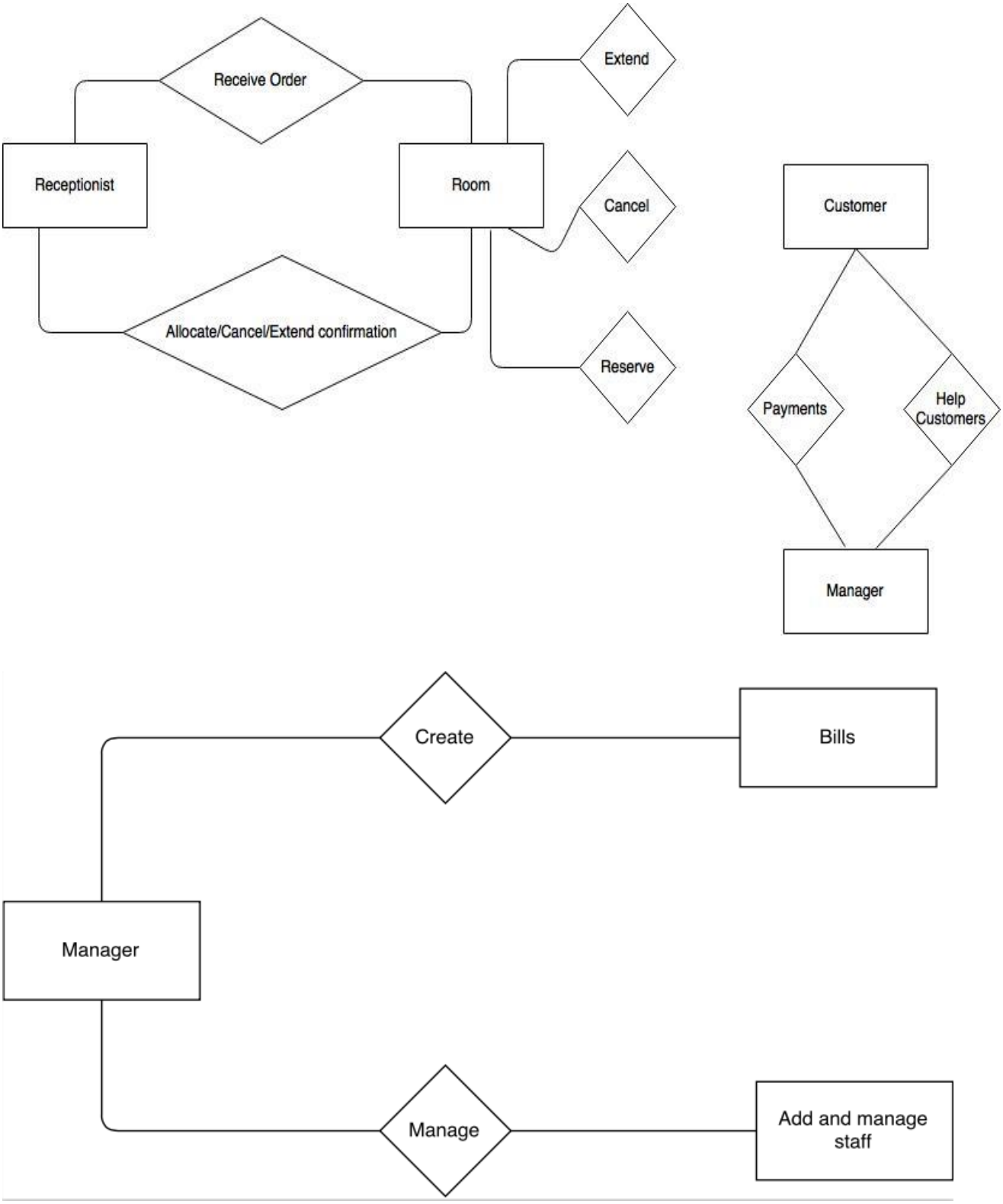


Figure 1: Use case diagram of the online portal

4.3 ER Diagrams:



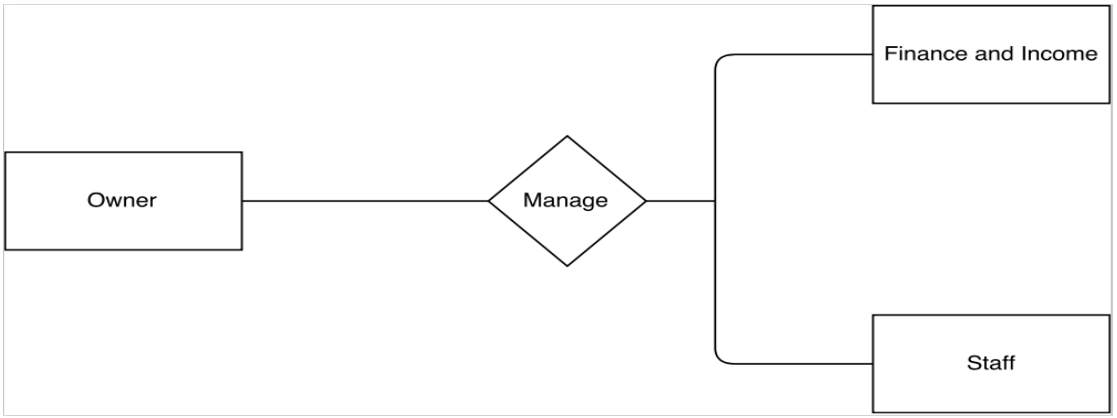


Figure 2: ER Diagrams of the online portal

4.4 Class Diagram:

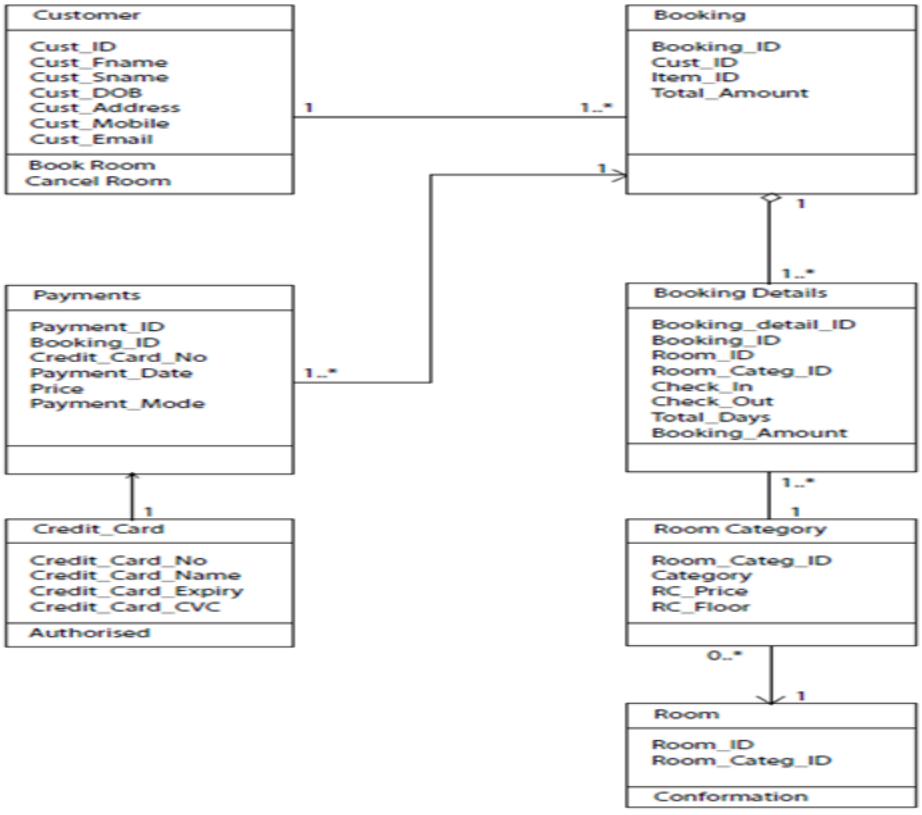


Figure 3: Class Diagram of the online portal

4.5 Sequence Diagram:

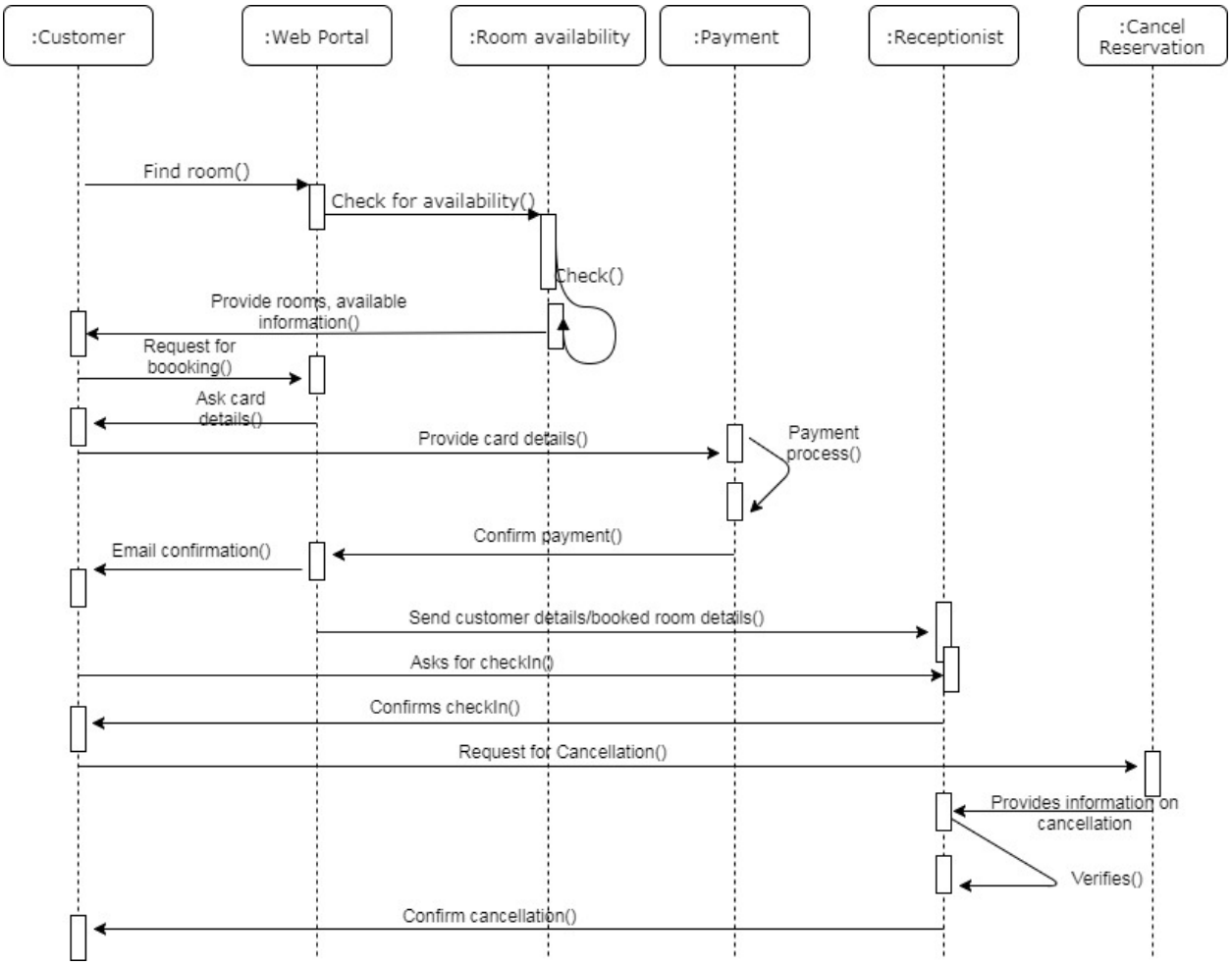


Figure 4: Sequence Diagram of the online portal

5. Nonfunctional Requirements

5.1 Performance Requirements

Performance requirements define acceptable response times for system functionality. The performance of the system highly depends on the performance of the hardware and software components. Some of the performance metrics to ensure would be load time of user interface screens taking no longer than two seconds.The log in information shall be verified within five seconds. Returning any search query results within five seconds.

5.2 Safety Requirements

As we saw earlier in this documentation, there are different user levels in hotel management system. Access to the various subsystems will be protected by a user login screen that requires a username and password. This gives different views and accessible functions of the systems to different users. Maintaining backups, logs ensures system is secure and can be restored in case of emergency.

5.3 Security Requirements

Customer Service Representatives, Managers and owner will be able to log in to the Hotel Management System. Customer Service Representatives will have access to the Reservations/Bookings. Managers will have access to the Management subsystem as well as the Reservation/Booking subsystems. Owners have the maximum privilege. They will be having access to all subsystems. Due to the increased cyber threats, it becomes important that we protect our customer's credit/debit card details, personal details. Payment gateway implements high security module and access to various subsystems are password protected.

6. Software Quality Attributes

- Availability:- The system shall be available all the time so that customers can make their booking at any time.
- Correctness:- Extent to which program satisfies specifications, fulfills user's mission objectives
- Efficiency:- How much less number of resources and time are required to achieve a particular task through the system.
- Flexibility:- Ability to add new features to the system and handle them conveniently.
- Integrity:- How the system would insecure the information in the system and how it avoids the data losses. Referential integrity in database tables and interfaces
- Maintainability:- How easy is to keep the system as it is and correct defects with making changes.
- Portability:- The Hotel Management System shall run perfectly in all Operating Systems desktops and mobiles.
- Reliability:- Factors required to establish the required reliability of the software system at time of delivery. Mean time between failures and mean time to recovery
- Reusability:- What is the ability to use the available components of the system in other systems as well.
- Testability:- Efforts needed to test to ensure performances.
- Usability:- How easily can a person take benefits of the system and the user friendliness.
- Robustness:– Strength of the system to handle system functions accurately and maintain the database without facing to unexpected failures
- Maintainability: – How flexible is the system developed to ease maintenance process.