Requirements by Models

For

Online Hotel Management System

I. Actors:

Owner:

The Owner is the distinct main holder of the hotel system and has the advantage of monitoring and authorization of all the tasks of the system. Owner can access the core administration panel. He has the ability to manage the other users, including the user levels and permission levels. He has the sole right of adding and deleting a staff member from the system database. He has the abilities to add or remove staff, add new guests to the system, add new rooms and features, etc.He can also review all kinds of reports in the system like payroll,income,transactions, staff, tax, etc., in the central level of all the platforms (Mobile and Web).

Manager:

The Manager can be considered next to the Owner and is responsible for managing the resources available in the hotel. The reason for using a manager is to reduce the workload of the owner that cannot be assigned to the receptionist, as those tasks seem much responsible.Manager handles all the employees day to day duties and the escalations from the receptionist to deal with the customers. The manager has authority to take all reports of the hotel system except those related to finance and income.

Receptionist:

The goal of receptionist is to deal with bookings and completing procedures when guests arrive and leave like handing and taking the keys. He should also ensure that all the guests are treated with a high standard customer services like answering questions, dealing with special requests like parking etc and dealing with complaints or problems. As per the design , the receptionist has the least access to the system functions and plays the boundary role of the system. He has limited functions such as: registering new guests to the system, make reservations, booking confirmations, etc.

Customer:

The customer is the one who purchases and utilizes the services provided by the hotel management. The customer can reserve bookings and access hotel facilities through online web source. The customer has no accessibility into the hotel management system. He can only access room details, reserve rooms, payment and order room service online.His satisfaction is the ultimate goal of the whole management process.

Housekeeper:

The actor ‘Housekeeper’ represents a group of staff acting as housekeepers. The housekeeper looks after the cleaning, laundry and food service jobs. He takes orders from the manager, receptionist and the customer. He can also get requests via mobile app and responds to them accordingly. He does not have any access to the database.

Chef:

The Chef is the head of the food department and looks after the food facility in the hotel. He prepares the menu and dishes as per the customer’s order and according to the timings of the restaurant. The menu

prepared will be given to the web developer to update on the portal. He takes orders from the customer, manager and owner. He does not have any access to the database.

Development Team:

Web:

The developer has the duties of creating login id for the owner, manager and employees and takes care of any trouble shooting of the system. He is responsible for maintain the web portal and provide support if required by the users. He has access and control of the whole system, but is restricted to making any changes without the consent of the owner/manager.

Mobile/Tablets (iOS and Android):

Mobile developer duties are most similar to web developer with few add ons. The developer updates app to the current running version of the OS periodically. Different level of privileges are given as per the requirement.

List of Use cases:

i) Browses hotel facilities.
ii) Checks room availability and makes booking
iii) Cancel booking
iv) Check in
v) Order Food
vi) Room service
vii) Checkout
viii) Prepare Menu
ix) Login
x) Manages Employees tasks.
xi) Controls all employee privileges, finances
xii) Adds/Deletes rooms, Hires/Fires Employees.
xiii) Updates menu and other details on web

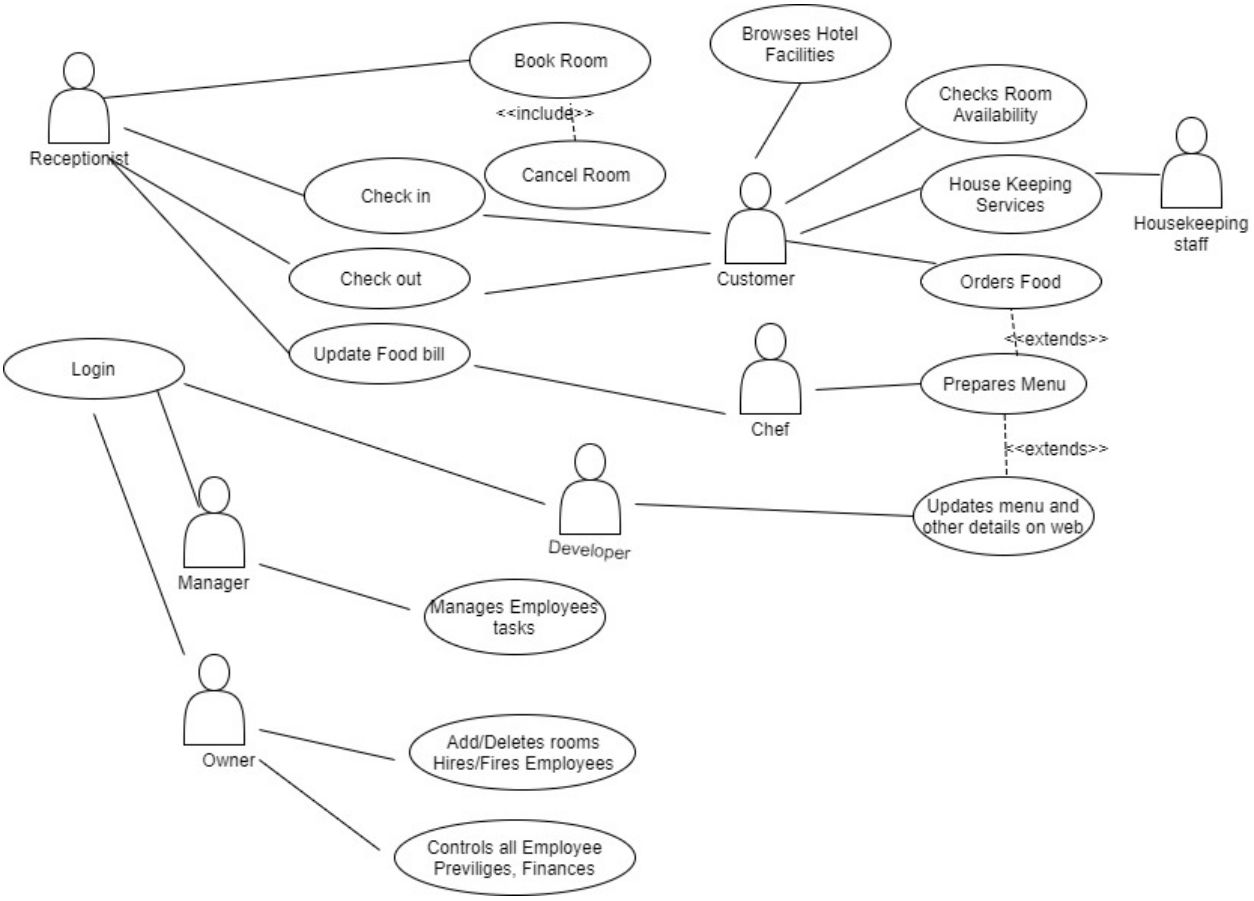

Figure: Use Case Diagram

Use case Descriptions:

i) Use Case Name: Browses hotel facilities.

Goal in context: To know about the hotel infrastructure, features, etc. and check if rooms are available.
Actors Involved: Customer
Preconditions:
1.The web portal is updated with the required information.
Trigger: When a customer starts browsing the hotel webpage.
Scenario:
1.The customer opens the hotel webpage.
2.Views the infrastructure, gallery, prices, reviews, etc.
Exceptions:
1.Server errors.
2.Customer not satisfied with the hotel service and the reviews.
Post-conditions: The customer has browsed enough, satisfied and is ready for booking.

ii)Use Case Name: Checks Room Availability and makes booking

Goal in context: Checks room availability and confirms booking
Actors Involved: Customer, Receptionist

Preconditions:
1.The customer is ready to make payment with credit/debit card.
Trigger: Customer is satisfied with the hotel reviews and facilities and proceeds to check room availability and confirm booking, has his/her credit/debit card and other info ready.
Scenario:
1.Customer enters the corresponding page to check room availability
2.If rooms are available,customer chooses the room with her/his preferences.
2.Fills in all the required details, provide payment details.
3.Submits request.
4.The receptionist verifies the request and updates in the database.
5.Once updated, a confirmation is sent to the customer about reservation.

Exceptions:
1.Invalid credit/debit details.

Post-conditions: The room is reserved for the customer with a confirmation from the receptionist.

iii)Use Case Name: Cancel booking
Goal in context: To cancel a reserved room.
Actors Involved: Customer, Receptionist
Preconditions:

1. A room has been reserved by the customer.

Trigger: When a customer decides to cancel his booking and opens the corresponding web page.
Scenario:

1. Customer goes to his reservations page on the portal.
2. Selects the reservation he wishes to cancel.
3. Clicks on “Cancel Booking” and confirms cancellation.
4. The receptionist verifies the request.
5. If valid, the receptionist deletes the record from database.
6. The receptionist notifies the customer about the cancelled room and refund policy.

Exceptions:

1. No room has been reserved by the customer.

Post-conditions: The customer has successfully cancelled his/her room reservation.

iv) Use Case Name: Check in
Goal in context: To check-in to the hotel in person
Actors Involved: Customer, Receptionist
Preconditions:

1. The customer should have reserved a room.

2. The customer should present in person and bring valid identification card with him.

Trigger: When the customer enters the hotel and reports the receptionist

Scenario:

1. The customer reports in person to the receptionist
2. The receptionist verifies the customer details by id proof and room confirmation print out.
3. If valid, handovers room keys to the customer and provides details about room service.

Exceptions:

1. The customer is not a valid person.
2. The customer doesn't provide proper id proof or confirmation letter.

Post-conditions: The customer has successfully checked in to the hotel

v)Use Case Name: Orders Food

Goal in context: To order food by call.

Actors Involved: Customer, Chef, Housekeeper, Receptionist

Preconditions:

1. The Chef should have prepared the menu
2. The Web developer should have updated the menu and prices on the web portal

Trigger: Customer is ready to order his/her meal.

Scenario:

1. The customer chooses from the list of items on the menu posted on the web portal
2. The customer places an order to the chef through telephone.
3. The Chef prepares the food and handovers it to housekeeper with room and bill details.
4. The Chef updates food bill to the receptionist.

Exceptions:

1. Orders items not available on the menu.
2. Item on menu not available.

vi) Use Case Name: Room Service

Goal in context: To provide all room services like serving food, cleaning the room and helping customers with any room related needs.

Actors Involved: Customer, Housekeeping Staff

Preconditions:

1. Availability of housekeepers.

Trigger: When a customer requests for room service

Scenario:

1. The customer connects to housekeeper through telephone service number.
2. Housekeeper can also get a request on mobile app when it is placed by receptionist or manager etc.,
3. The call/request connects to one of the available housekeepers.

4. The customer requests the housekeeper for cleaning or any other service.

Exceptions:
1. No housekeeper available for service
2. Bad telephone service connection or internet problems on an app.

Post-conditions: The housekeeper serves the customer with the requested service.

vii) Use Case Name: Check out

Goal in context: To check out from the hotel by making all payments.

Actors Involved: Customer, Receptionist

Preconditions:
1. The customer has a valid room reservation.

Trigger: When the customer wishes to vacate the room.

Scenario:
1. The customer reports the receptionist on/before the reserved check out time.
2. The receptionist verifies all the details of the customer and room.
3. The receptionist provides the customer with bills for food, extra services, damages and late check out penalty (if any).
4. The customer pays the amount (cash/card) and receives the bill.
5. The customer handovers room keys to the receptionist.
6. The receptionist deletes the customer record from database.
7. The receptionist then passes the information to other cleaning departments.

Exceptions:
1. Invalid payment

Post-conditions: The customer has checked out of the hotel

viii) Use Case Name: Prepare Menu

Goal in context: To prepare menu for the customer

Actors Involved: Chef, Developer

Preconditions:

1. Availability of utilities and required food items

Trigger: When the Chef decides and lists all the items

Scenario:
1. The Chefs decides the food items to prepare, lists their names and prices on the menu.
2. Send the menu to Development team.
3. The Development updates the menu on the centralized portal.

Exceptions:
1. Server failure for menu uploading.

Post-conditions: The menu is successfully prepared and uploaded.

ix) Use Case Name: Login

Goal in context: To create a login id password for Owner, Manager and Receptionist

Actors Involved: Developer

Preconditions:
1. Should have approved details of the administrators.
2. Have knowledge about HTML, Mobile API, Web Services and other dependencies.

Trigger: When the developer adds code to create login id.

Scenario:
1. The designer gathers all the details of an owner, manager, receptionist and their levels of access of privileges.
2. Writes code to create login id, password with submit button and the information they can access and updates the database.

Exceptions:
1. In efficient code and failure of creating login id.

Post-conditions: A login ID is created for Owner, Manager, Receptionist with respective permissions.

x) Use Case Name: Manages Employee Tasks

Goal in context: To access all employees and hotel details

Actors Involved: Manager

Preconditions:

1. Should have a database to manage all the records.
2. A valid login details

Trigger: When the manager login into the database.

Scenario:

1. The manager logins into the database with the valid login id password.
2. Views and modifies any data related to employees, guests and other hotel details except financial details.
3. Assigns duties to every employee and manages their day to day activities.

Exceptions:

1. Details not properly updated in the database which creates a confusion.

Post-conditions: The manager is able to access all the required database.

xi) Use Case Name: Controls all employee finances

Goal in context: To access all the details that can be accessed by manager as well as financial details of the hotel.

Actors Involved: Owner

Preconditions:

1. Should have a database to manage all the records.
2. Valid login details

Trigger: When the owner login into the database.

Scenario:

1. The owner logins into the database with the valid login id password.
2. Views/add/deletes/modifies any data related to employees, guests and other hotel details including financial details.
3. Manages financial operations such as hotel income, expenses, taxes, etc.
4. The manager decides the levels of authority of each employee
5. Set access privileges to manager and receptionist to the level of data they can access

Exceptions:

1. Details not properly updated in the database which creates a confusion.
2. Invalid login ID

Post-conditions:

1. The owner is able to access all the required database.

xii) Use Case Name: Adds/Deletes rooms, Hires/Fires Employees.

Goal in context: To manage the hotel rooms, features, infrastructure, prices etc.

Actors Involved: Owners

Trigger: When the manager/owner lists the specifications about hotel features

Scenario:

1. Assigns room numbers to the rooms
2. Decides the type of rooms and the features needed for it.
3. Organizes the rooms on every floor with necessary infrastructure.
4. Assigns pricing for every feature of the hotel.
5. Sends all these details to Web developer to update in the portal.

Post-conditions: Arranges all the infrastructure and necessities required for customers.

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xiii) Use Case Name: Updates menu and other details on web.

Goal in context: To update the web/mobile portals with all necessary information required by the customer.

Actors Involved: Web Developer

Preconditions:

1 The web developer is provided with the necessary information by Chef, manager, owner.

Trigger: When the developer starts writing code

Scenario:

1. The Web developer gathers all the information like for menu from Chef, Infrastructure, facilities and photos from manager and owner
2. Updates to the web portal with all the information.

Post-conditions:

1. The web portal is developed and is ready to view for customers.

iii) Data Flow Diagrams

Data flow diagrams are often used to show how an organization handles incoming data. Data flow diagrams are like the stepping stones which create the starting step to a system that is under development.

They can also be used for the purpose of visualization. It clearly depicts how the high details of the system input data is transformed into output through a sequence of functional transformations and the flow of data, from where it is going, where it is coming and where it is stored. At the analysis level, they should be used to model the way in which data is processed in the existing system. The use of data-flow models for analysis became widespread after the publication of DeMarco's book on structured systems analysis. They are an intrinsic part of structured methods that have been developed from this work. The data is transformed at each step before moving on to the next stage. These processing steps or transformations represent software processes or functions when data-flow diagrams are used to document a software design.

Data-flow models are valuable because tracking and documenting how the data associated with a particular process moves through the system helps analysts understand what is going on. In principle, the development of models such as data-flow models should be a 'top-down' process. In this example, this would imply that you should start by analyzing the overall procurement process. You then move on to the analysis of sub-processes such as ordering. In practice, analysis is never like that. You learn about several different levels at the same time. Lower-level models may be developed first then abstracted to create a more general model. We have two types of notations for data flow diagrams. One is Yourdon & Coad and the other is Gane & Sarson giving different visual representations for processes, data stores, data flow and external entities. Yourdon and Coad symbols are generally used for system analysis and design where as Gane & Sarson type are used in more common for visualizing information systems. The difference between both the symbols is how the processes look.

1. Process Notation: A process is an activity that changes data flow.

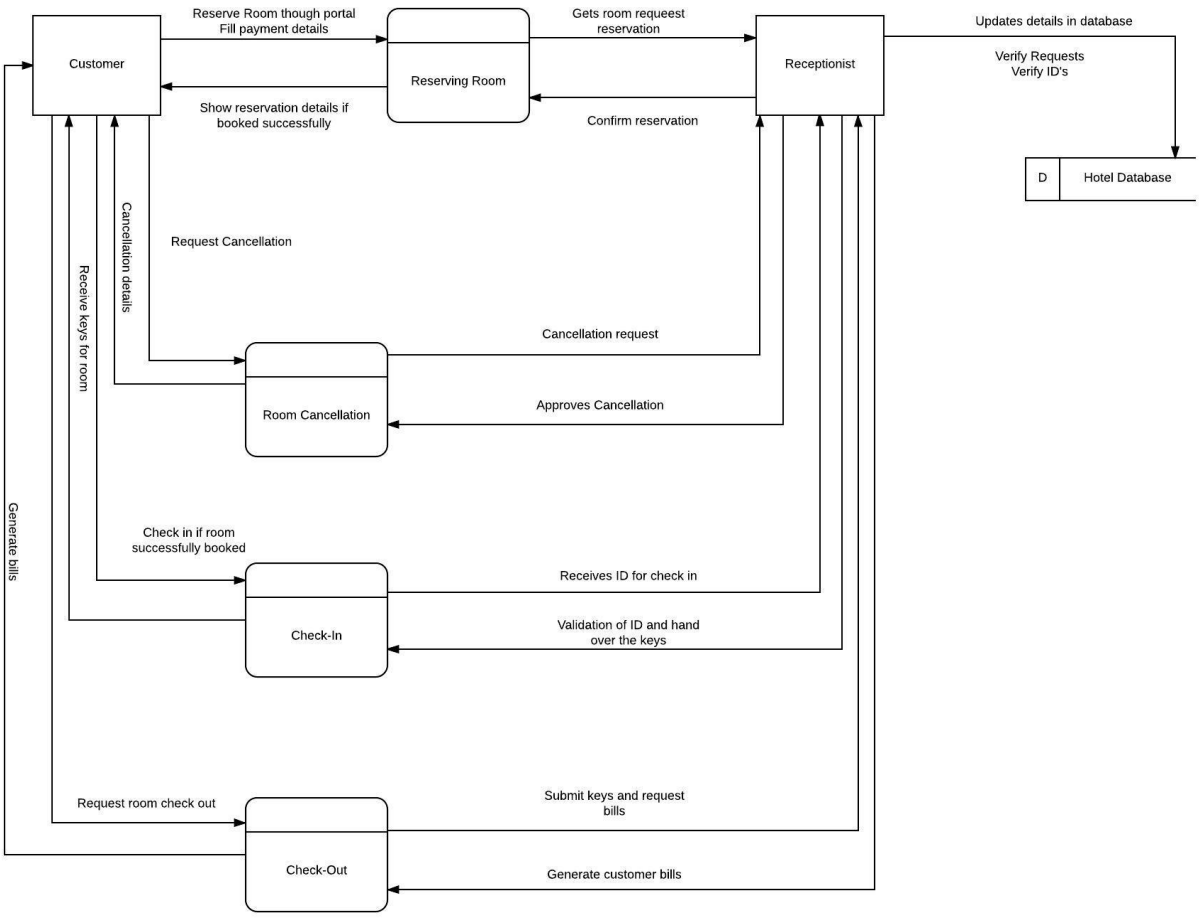
2. Datastore Notation: Datastore holds data for later access in data repositories.

3. Data Flow Notation: This represents the flow between the entities.

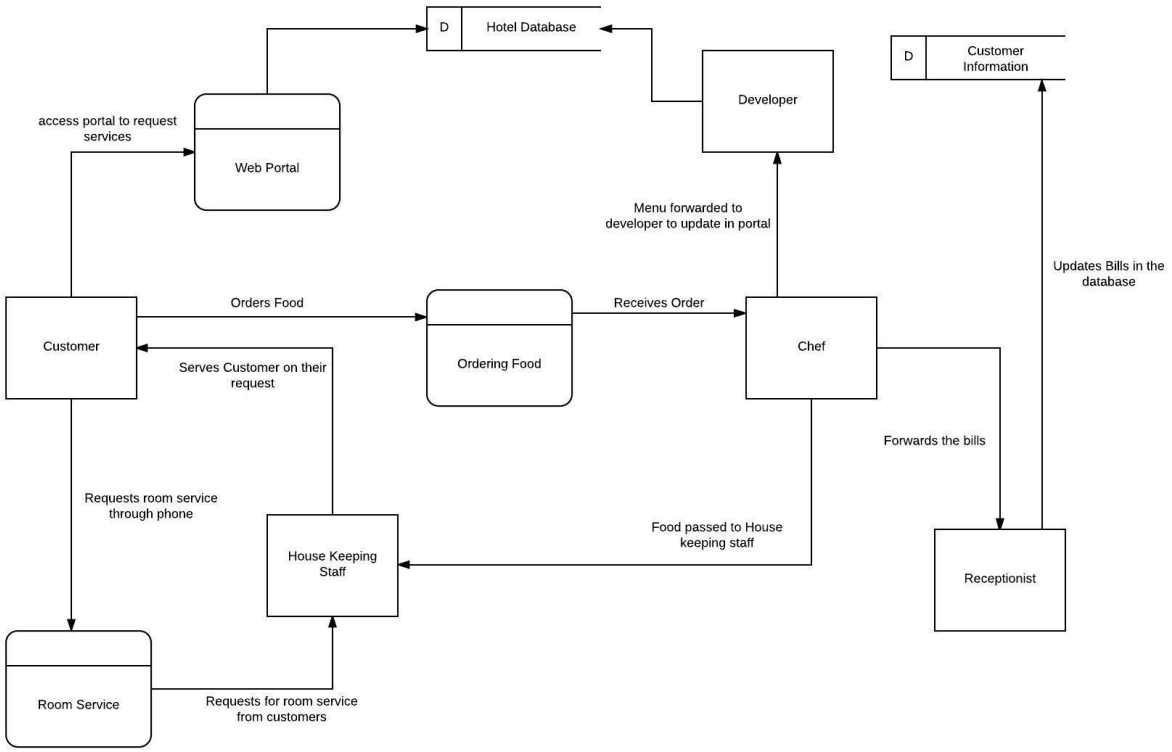
4. External Entity Notation: They are the sources and destination of the system input and output.

We would like to describe our system using four different diagrams. They are:

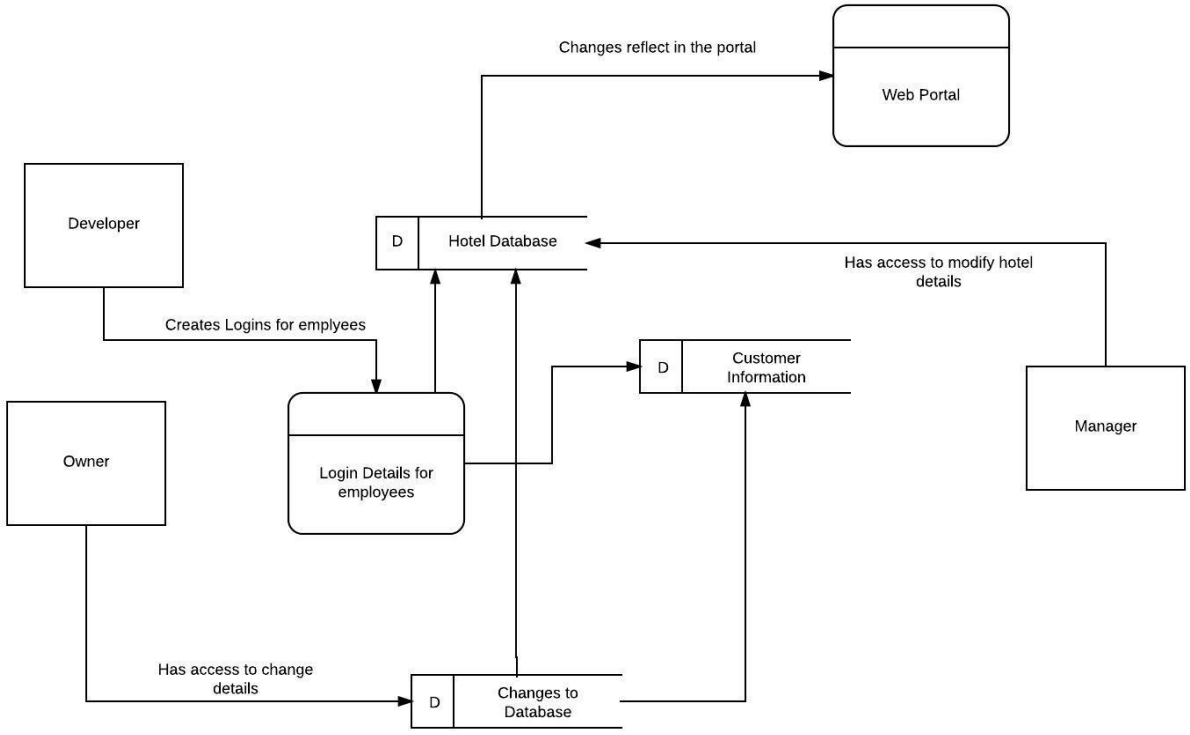
Data Flow Diagram 1:



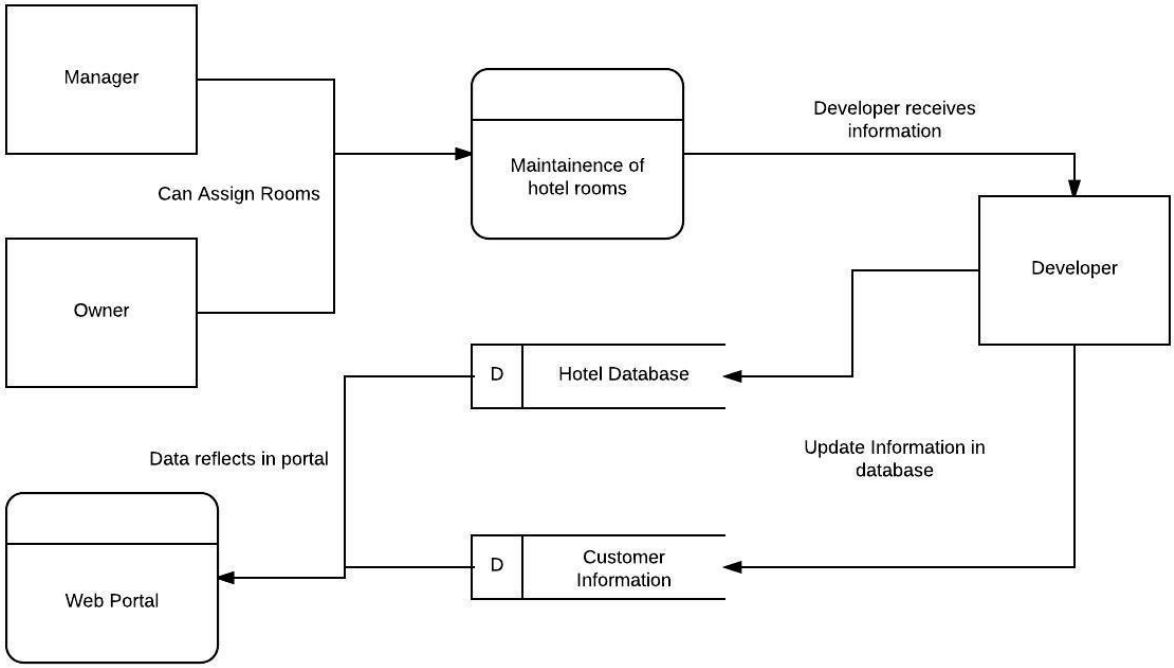
Data Flow Diagram 2:



Data Flow Diagram 3:



Data Flow Diagram 4:



The above data flow diagrams represent the whole proposed online hotel management system.

iv) Summary

The main motto of the project is to develop an adaptable and extensible system for carrying out the hotel operations in a proficient way. We focused on each user's activity and requirements and represented it using use case descriptions and data flow diagrams. The Online Hotel Management System will provide better service to customer, management and staff by eliminating time consuming constraints such as manual recording of customer details, room reservations, etc. In the first milestone, we just focused on the basic requirements of the hotel. As we started doing the second milestone by collecting the requirements and preparing an SRS Document, we analyzed the functional requirements, non-functional requirements and the essential actors interacting with the system. In this third milestone, we have further investigated and made some changes which would advance the hotel operations.

We added three actors - Chef, House Keeper Staff and Developer. These actors didn't seem important during the second milestone because there we concentrated more on the basic actors - Owner, Manager, Receptionist ad Customer who would be most necessary for the hotel operations. In this milestone, we started with the first basic activity and continued with the chain of operations that would run the hotel. In this process, we analyzed the importance of other three actors- Chef, House Keeper Staff and Developer.

The flow of operations of the Online Hotel management System is as follows:

- The Developer creates a Login ID for Owner, Manager and Receptionist with levels of access privileges.
- The Owner and Manager look after the hotel features, organizing rooms, managing employees, prices, etc., and submit the necessary details to the Developer to upload in the Web Portal.
- Once the details are uploaded, the customers can view the profile, gallery, reviews etc. in the web portal and decides to book a room.

- The customer chooses the type of room and book the room by making payment. The receptionist accepts the customer request, notifies the customer with booking confirmation and update the details of customer in the database.
- The customer checks in at the receptionist by showing id proofs and booking confirmation. The receptionist verifies the details and handover room keys to the customer.
- The customer can utilize the room service facility by calling hose keeping staff.
- The Chef prepares the food menu with prices and sends it to the Developer who updates it in the Web portal.
- The customer can order food to the Chef through telephone.
- The Chef sends the food to the customer through staff and updates the food bill to the receptionist who in turn updates it in the customer database.
- The receptionist notifies the customer about the bill for food, damages and utilization of extra facilities.
- The customer pays the bill, handovers the room keys and check out. The manager and owner have the right to view all the employee databases, add or remove them, view all reports related to the hotel.
- The financial reports are restricted only to the owner. The manager assigns the authority levels and duties of each employee.

The Online HMS is a free independent system. It is an absolutely independent software product which will be delivered by the venture group with a specific end goal to beat the issues that have happened because of the present manual system. The online system will provide a simple 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. The other change we might want to make in this venture is to include the similarity with other operating system-Macintosh. Since, Mac is easy to utilize and dependable and have scored the highest in customer satisfaction service for the last decade.