Activity Diagram for Hotel Management System

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Objective

To describe the dynamic aspects of the system with the help of an activity diagram.

Theory

Concept

Activity diagram is basically a flowchart to represent the flow from one activity to another activity. The activity can be described as an operation of the system.
The control flow is drawn from one operation to another. This flow can be sequential, branched, or concurrent. Activity diagrams deal with all type of flow control by using different elements such as fork, join, etc

Activity is a particular operation of the system. Activity diagrams are not only used for visualizing the dynamic nature of a system, but they are also used to construct the executable system by using forward and reverse engineering techniques. The only missing thing in the activity diagram is the message part.

Purpose

The purpose of an activity diagram can be described as −

- Draw the activity flow of a system.
- Describe the sequence from one activity to another.
- Describe the parallel, branched and concurrent flow of the system.

Approach

Before drawing an activity diagram, we should identify the following elements −

- Activities
- Association
- Conditions
- Constraints
- Once the above-mentioned parameters are identified, we need to make a mental layout of the entire flow. This mental layout is then transformed into an activity diagram.

Applications

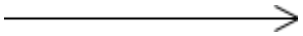
Activity diagram is suitable for modeling the activity flow of the system. An application can have multiple systems. Activity diagram also captures these systems and describes the flow from one system to another. This specific usage is not available in other diagrams. These systems can be databases, external queues, or any other system.

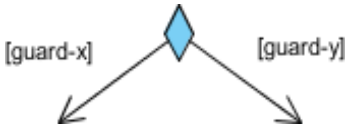
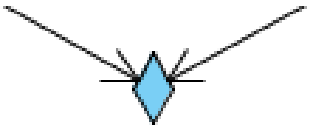
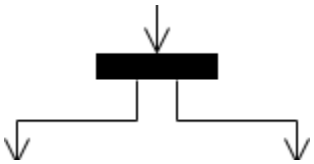
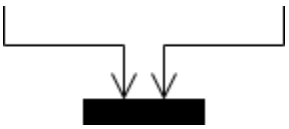
Activity diagram can be used for −

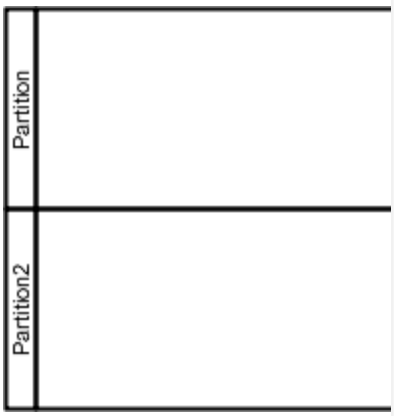
- Modeling workflow by using activities.
- Modeling business requirements.
- High level understanding of the system's functionalities.
- Investigating business requirements at a later stage.

Some Notations

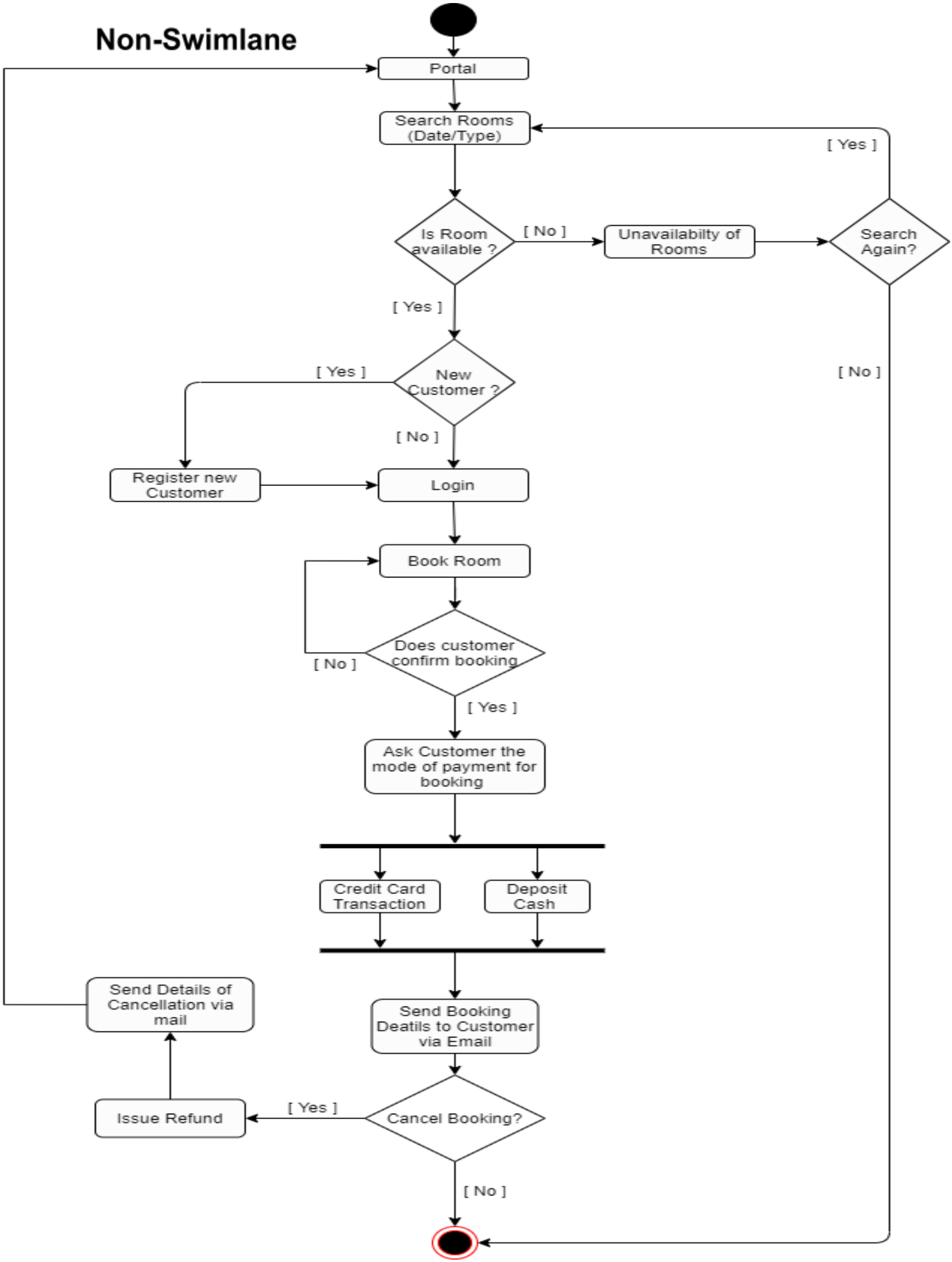
Notation Description	UML Notation
Activity Is used to represent a set of actions	
Action A task to be performed	

Control Flow Shows the sequence of execution	
Object Flow Show the flow of an object from one activity (or action) to another activity (or action).	
Initial Node Portrays the beginning of a set of actions or activities	
Activity Final Node Stop all control flows and object flows in an activity (or action)	
Object Node Represent an object that is connected to a set of Object Flows	

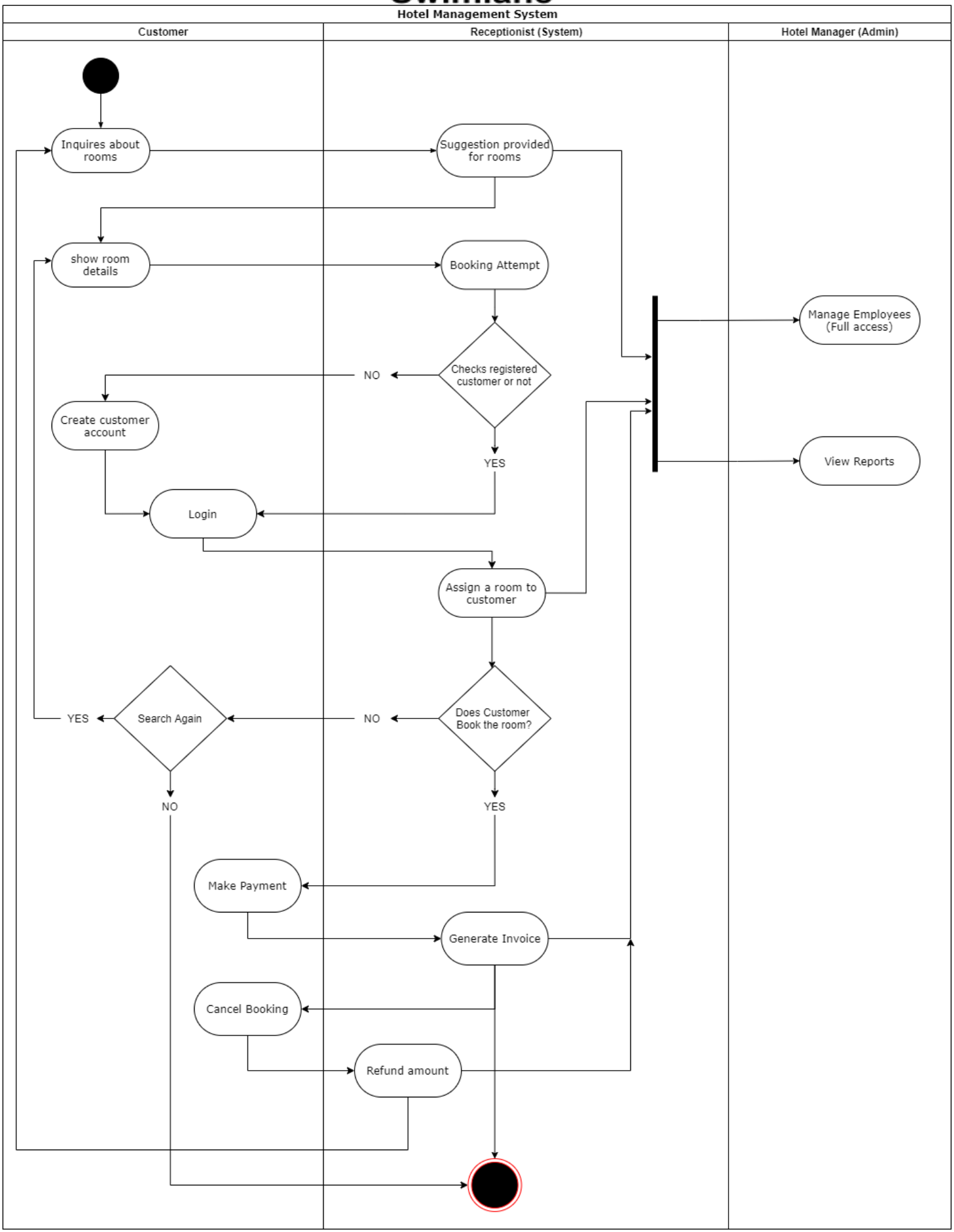
Decision Node Represent a test condition to ensure that the control flow or object flow only goes down one path	
Merge Node Bring back together different decision paths that were created using a decision-node.	
Fork Node Split behavior into a set of parallel or concurrent flows of activities (or actions)	
Join Node Bring back together a set of parallel or concurrent flows of activities (or actions).	

Swimlane and Partition A way to group activities performed by the same actor on an activity diagram or to group activities in a single thread	

Figure


Non-Swimlane
Portal
Search Rooms (Date/Type)
Is Room available ?
[No]
Unavailabilty of Rooms
Search Again?
[Yes]
[No]
[Yes]
New Customer ?
[Yes]
[No]
Register new Customer
Login
Book Room
Does customer confirm booking
[No]
[Yes]
Ask Customer the mode of payment for booking
Credit Card Transaction
Deposit Cash
Send Booking Deatils to Customer via Email
Cancel Booking?
[Yes]
Issue Refund
Send Details of Cancellation via mail
[No]

Swimlane


Hotel Management System
Customer
Receptionist (System)
Hotel Manager (Admin)
Inquires about rooms
Suggestion provided for rooms
show room details
Booking Attempt
Checks registered customer or not
NO
YES
Create customer account
Login
Manage Employees (Full access)
View Reports
Assign a room to customer
Does Customer Book the room?
NO
YES
Search Again
YES
NO
Make Payment
Generate Invoice
Cancel Booking
Refund amount