Hotel Management System

CS262-Final Project Document

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1 Project Description

The Hotel Management System is a desktop application that helps hotels to automate their daily activities. Traditional paper-based management systems are hard to manage and prone to errors. The main purpose of this system is to provide an easy-to-use solution to hotels as a replacement for paperwork. The system provides many facilities for employees and customers. Customers can easily book rooms from their homes instead of physically visiting the hotel. They can also access different services offered by the hotel, such as food and room service, through this application. Additionally, the system generates automated bills and reports, avoiding errors and cheating in traditional billing and reporting.

The system provides many features, including a proper sign-in and sign-up system for customers. A branch manager adds employees in the system, and then employees log in to do their jobs. The hotel owner can add employees and managers to the system and manage their salaries. The owner has supremacy over any other user of the system. There are different types of managers in the system to manage all activities smoothly. A service manager looks after all services provided to the customer and can order products below the threshold. The branch manager manages all the hotel's branches in a specific city or area. The room manager looks after all the products in the rooms. The kitchen manager manages all the kitchen-related activities, including food, chefs, and waiters. He has the authority to accept or decline orders, and once he accepts the order, the customer receives a notification that the order is being processed. The order is then assigned to a chef, and after completion, the kitchen manager asks the service manager to assign a waiter to deliver the order.

The customer can book rooms according to their needs and can book multiple rooms at once, based on their requirements. They can also place food orders from the hotel menu and avail of various services such as room cleaning, fixing damaged items, and massage services. The kitchen manager handles the food orders, assigning them to chefs based on availability and capabilities. Once the orders are completed, the waiters deliver the food to the customers. After their stay, customers can provide feedback about their visit and rate the room, food, and service. They can also pay their bills digitally using any feasible method. The system monitors the check-in and check-out time of the customers.

Other employees manage their activities through the system as well. Waiters and room servants can see their work details, attendance details, and performance details. Waiters can view the orders they have to serve and mark them as 'done' once completed. Similarly, chefs can view their assigned orders and mark them as 'done' after fulfilling them.

The system provides real-time data analytics and reporting features. Occupancy rate reports display the occupancy rates of different room types on different days of the week. Revenue reports show the revenue generated by different services offered by the hotel such as food, rooms, and massage/spa services. Customer feedback reports show customer satisfaction ratings for different services. Employee performance reports help management to identify and deal with underperforming employees.

Overall, the system is secure and only authorized personnel can access specific data. It is designed to handle large amounts of data and is user-friendly for both customers and hotel management.

2 Project Features

Project features are given below.

2.1 User SignUp

Customers are given facility to create new accounts by providing their basic details with a username and password. Each user will have a unique username to ensure smooth and secure system.

2.2 User SignIn

Users will be able to login to the system by providing details like username and password. They will be able to access features of the system according to their role.

2.3 Customer Room Booking

Customers can book as many rooms as they want. Customer will be able to use other services once they check in.

2.4 Customer Food Order

Customer can order different types of food according to the menu of hotel.

2.5 Customer Services

Customer can avail different services while being checked in. They can also order products according to need and use services such as spa service.

2.6 Customer Bill Payment

Customer can use different digital methods, as per his own convenience, to pay bills. For example, he can use local services like EasyPaisa / JazzCash or international services like PayPal to pay his bills.

2.7 Customer Review

Using this feature, customer can give review about his experience at the hotel and about the services he used. He can give rating on the scale of 5.

2.8 Employee Notifications

All employees can get notifications about their related activities. They can manage their activities according to those notifications.

2.9 Reports

Reporting is an important requirement of any system. So, many reports have been provided in this system as well which will help administration in decision making.

3 Technology Stack

Language	C Sharp (.NET Framework)
Platform	Desktop
Front-End Technology	Windows Forms
IDEs	Visual Studio, SQL Server Management Studio

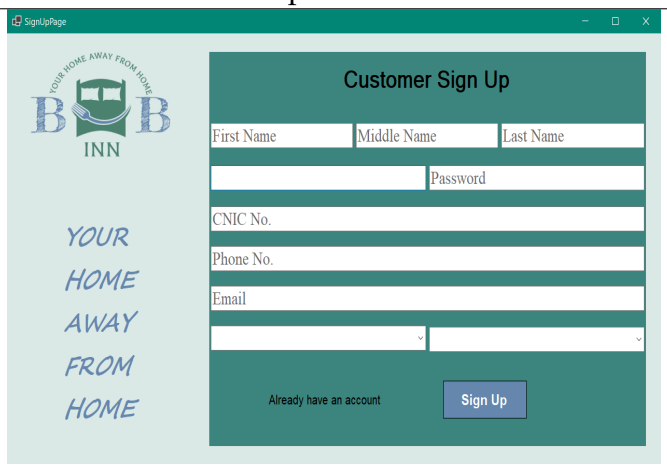
4 Project Actors

There are different actors in our project.

1. **Owner** is the supreme authority of system. He can add managers and other employees in the system and he can supervise all the activities.
2. **Customer** is the main target of system. He can book different rooms and order different items using this system. Moreover, he can rate his experience by using this system.
3. **Employees** are of different types. For example,
   (a) **Service Manager** manages all the services provided to the customers.
   (b) **Branch Mnagaer** manages all the branches of hotel in a specific city.
   (c) **Kitchen Manager** looks after all the kitchen related activities i.e. food, chefs etc.
   (d) **Waiters, Room Servants and Spa Attendants** will provide services to the customers.

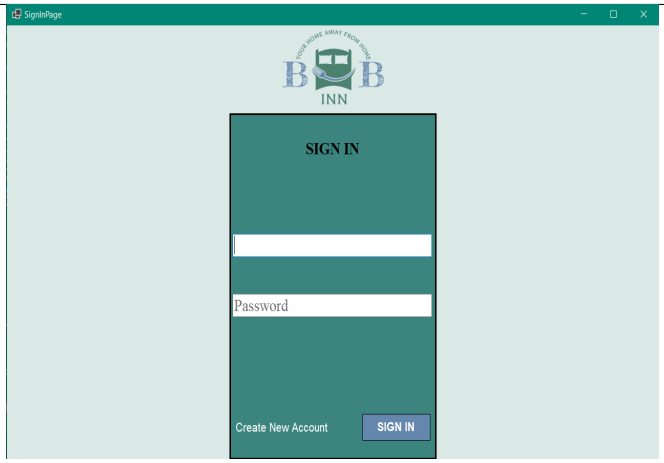
5 Use Cases

5.1 Use Case (Sign Up)

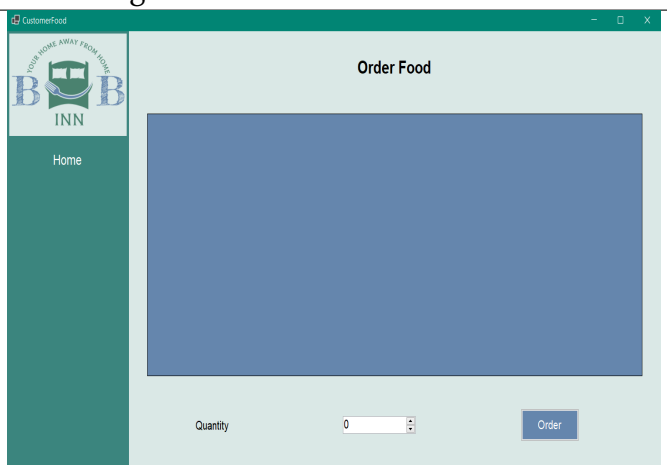
Use Case ID	UC001
Name	Sign Up
Actor	Customer
Description	It allows customers to register in the system. They can sign up by providing basic details about themselves such as CNIC, Name etc. along with username and password.
Layout	
Validators	Uniqueness of CNIC, Input format validation, Length of input text

5.2 Use Case (Sign In)

Use Case ID	UC002
Name	User Sign In
Actor	All Users
Description	The users provide their username and password to login to the system. Users are only allowed to access the system after providing correct credentials. If the credentials are invalid, the system displays an error message and asks the user to correct them.

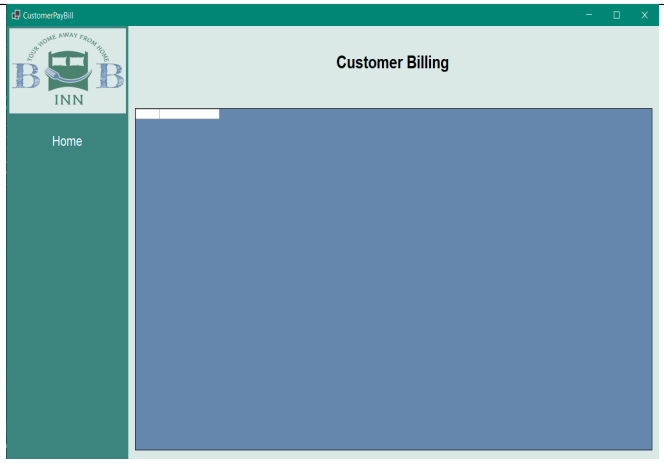
Layout	
Validators	Input text length, Input format validation

5.3 Use Case (Customer Food Order)

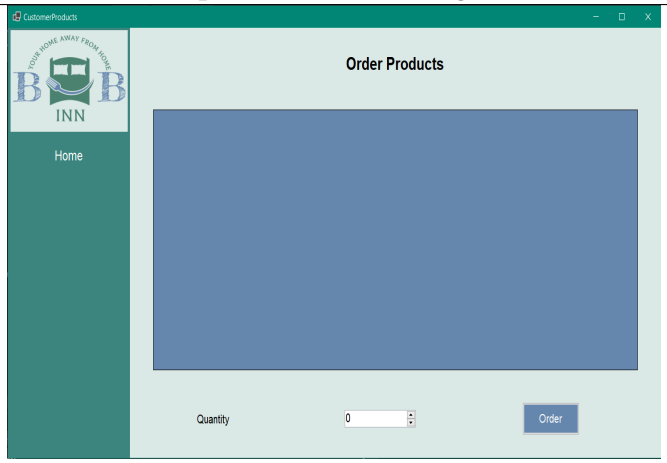
Use Case ID	UC003
Name	Order Food
Actor	Customer
Description	The customer can order food according to his need after checking in. He can choose food according to the menu of hotel.
Layout	
Validators	None

5.4 Use Case (Customer Bill Payment)

Use Case ID	UC004
Name	Bill Payment
Actor	Customer
Description	The customer can pay his bills using the system. He can use any method such as JazzCash, EasyPaisa, PayPal etc. as per his convenience

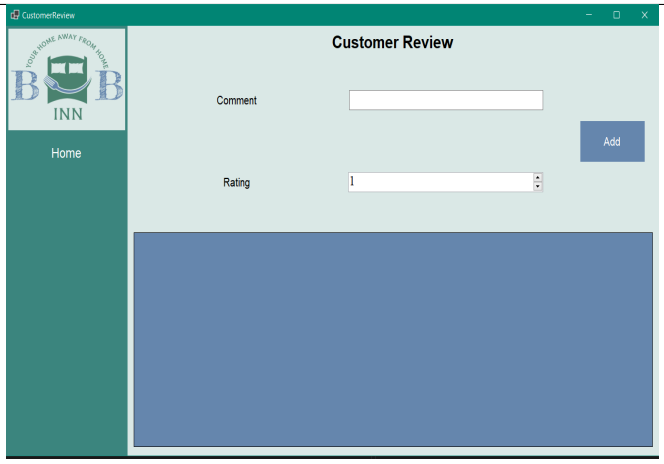
Layout	
Validators	None

5.5 Use Case (Customer Products Order)

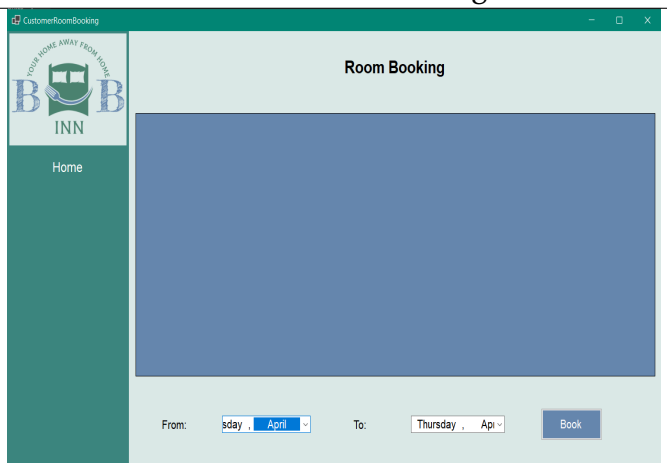
Use Case ID	UC005
Name	Order Products
Actor	Customer
Description	The user can order products using the system. He can order products according to his needs.
Layout	
Validators	None

5.6 Use Case (Customer Review)

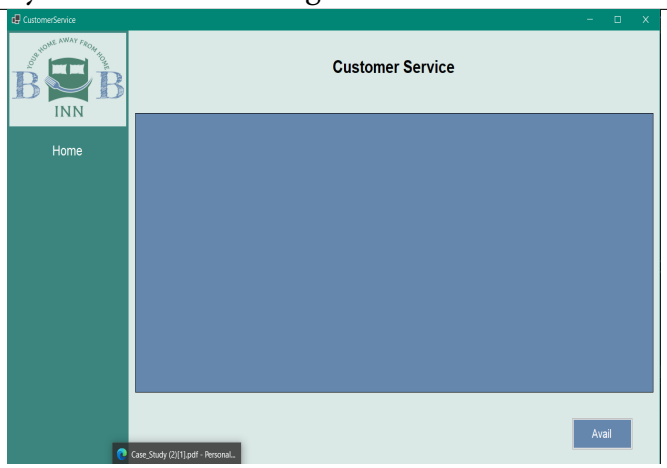
Use Case ID	UC006
Name	Customer Review
Actor	Customer
Description	The customer can give review about his experience at the hotel. He can write the comment and give rating on the scale of 5.

Layout	
Validators	Input Format Validation

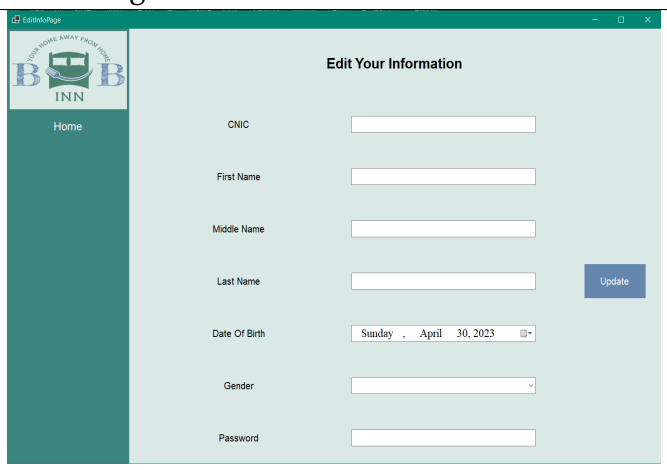
5.7 Use Case (Customer Room Booking)

Use Case ID	UC007
Name	Room Booking
Actor	Customer
Description	The customer can book as many rooms as he wants in the hotel. He will have to provide dates for the duration he wants booking to be made.
Layout	
Validators	Input Format Validation

5.8 Use Case (Customer Service)

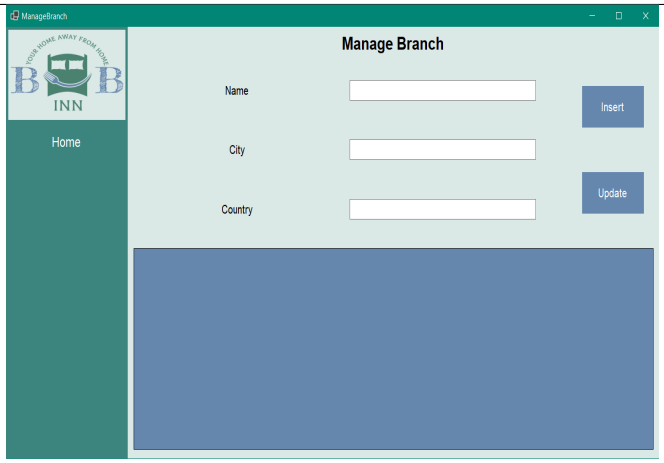
Use Case ID	UC008
Name	Customer Service
Actor	Customer
Description	The customer can avail different services offered by the hotel according to his needs.
Layout	
Validators	None

5.9 Use Case (Edit About Information)

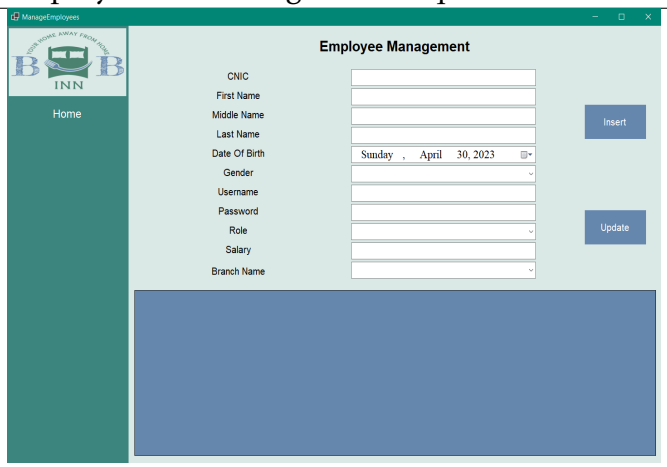
Use Case ID	UC009
Name	Edit Information
Actor	All Users
Description	The user is allowed to enter his/her details such as First Name, Last Name, Password etc. according to the need.
Layout in Pencil Tool	
Validators	Uniqueness of CNIC, Input format validation, Length of input text

5.10 Use Case (Branch Management)

Use Case ID	UC010
Name	Branch Mnagaement
Actor	Owner
Description	The user is allowed to add new branches in the system. Moreover, he is allowed to update existing branches according to the requirements.

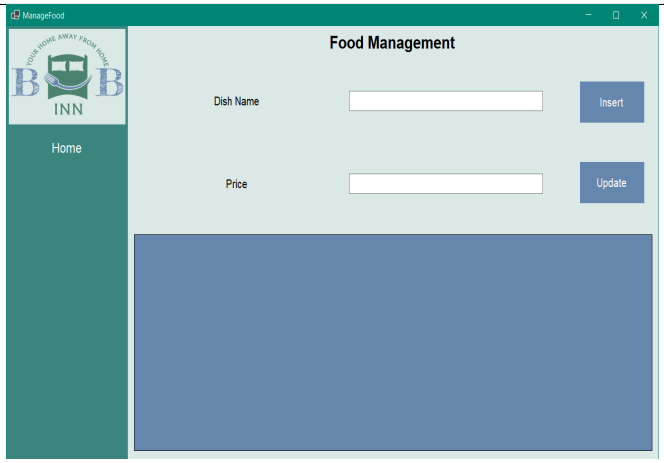
Layout in Pencil Tool	
Validators	Input Format validation

5.11 Use Case (Employee Management)

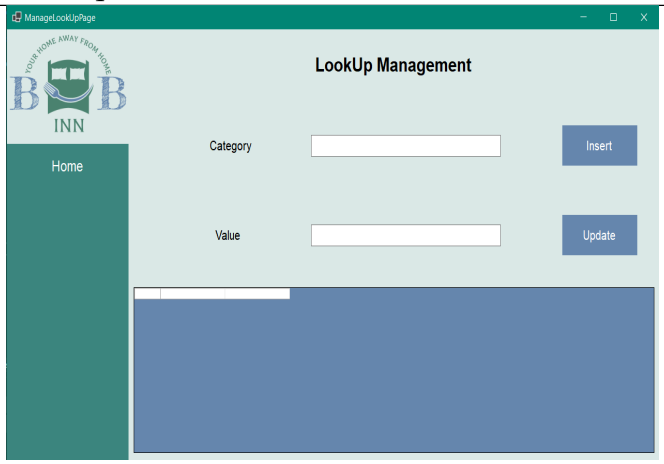
Use Case ID	UC011
Name	Employee Management
Actor	Branch Mnager, Owner
Description	The user can add employees in the system by adding their details such as CNIC, First Name, Last Name, Password etc. He can also update the employees according to the requirement.
Layout in Pencil Tool	
Validators	Input Format Validation

5.12 Use Case (Food Management)

Use Case ID	UC012
Name	Food Management
Actor	Kitchen Manager
Description	The user can add different food items in the system. He can add details like name of food and its price.

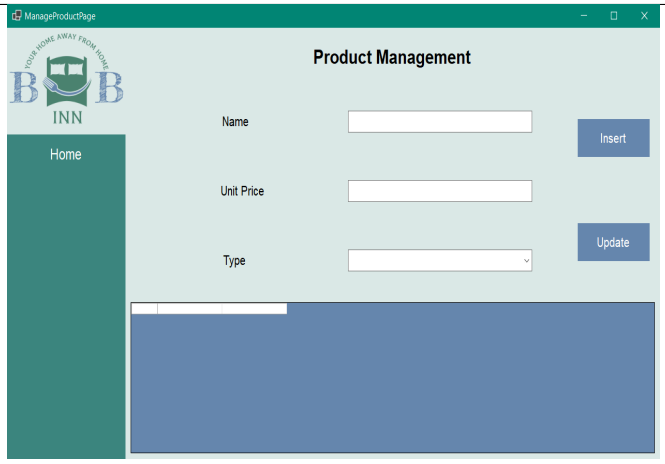
Layout in Pencil Tool	
Validators	Input Format Validation

5.13 Use Case (Lookup Management)

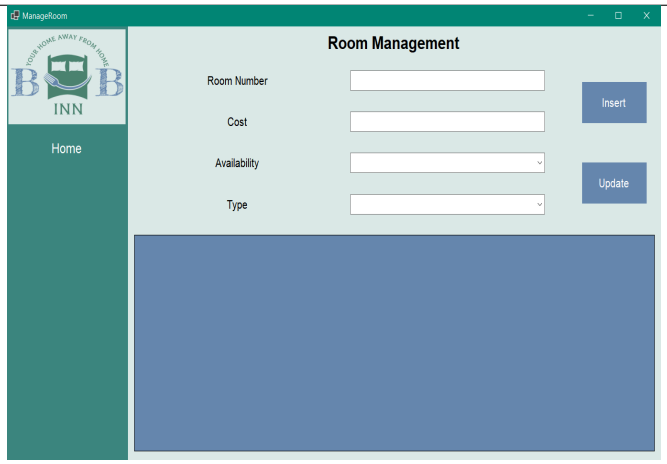
Use Case ID	UC013
Name	Lookup Management
Actor	Owner
Description	The owner can manage lookup table according to the requirements of hotels.
Layout	
Validators	Input Format Validation

5.14 Use Case (Product Management)

Use Case ID	UC014
Name	Product Management
Actor	Branch Manager
Description	The user can add products in the system. Products will be of different types i.e. kitchen, room and spa products.

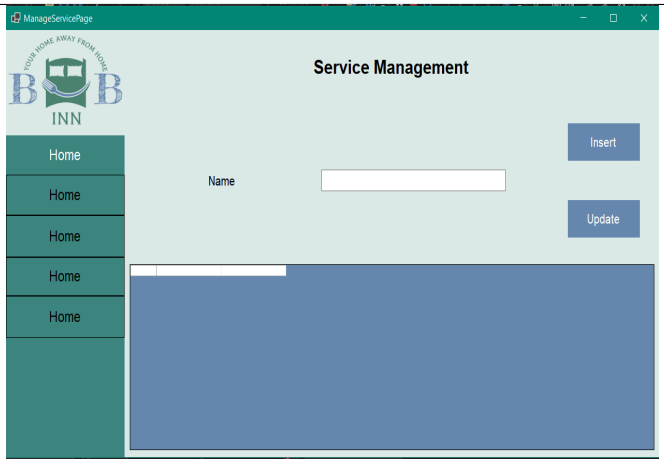
Layout in Pencil Tool	
Validators	Input Format Validation

5.15 Use Case (Room Management)

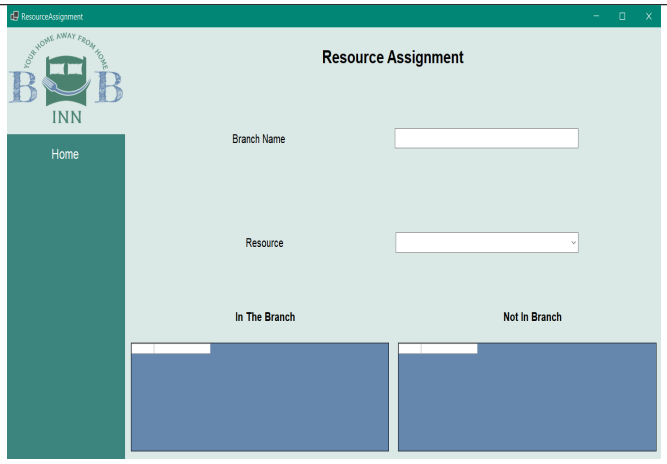
Use Case ID	UC015
Name	Room Management
Actor	Branch Manager
Description	The user can add new rooms in the system and he can update existing ones. Rooms can be of different types i.e. honey moon, single room, double room etc.
Layout	

5.16 Use Case (Service Management)

Use Case ID	UC016
Name	Service Management
Actor	Branch Manager
Description	The user can add and update services in the system. He is only required to add the name of service.

Layout in Pencil Tool	
Validators	Length of input text

5.17 Use Case (Resource Assignment)

Use Case ID	UC017
Name	Resource Assignment
Actor	Branch Manager
Description	The user can allocate different resources in the branch. He can also remove the resource from a branch.
Layout in Pencil Tool	
Validators	Input Format Validation

6 User Interface Details:

Use Case Id	Text Box	Drop Down	Password Box	Table	Date Field	Buttons	Auto Complete	Radio Button	Check Box	Menu	Text Area	Graph/ Chart
UC001	7	2	1	0	0	1	0	0	0	0	0	0
UC002	1	0	1	0	0	1	0	0	0	0	0	0
UC003	0	1	0	1	0	1	0	0	0	0	0	0
UC004	0	0	0	1	0	0	0	0	0	0	0	0
UC005	0	1	0	1	0	1	0	0	0	0	0	0
UC006	0	0	0	1	0	0	0	0	0	0	0	0
UC008	0	1	0	0	0	1	0	0	0	0	0	0
UC009	1	0	0	0	0	1	0	0	0	0	0	0
UC011	2	1	0	0	0	0	0	0	0	0	0	0
UC012	0	1	2	0	0	1	0	0	0	0	0	0
UC013	1	0	0	0	0	1	0	0	0	0	0	0
UC014	0	1	0	0	0	1	0	0	0	0	0	0
UC016	1	1	0	1	0	1	0	0	0	0	0	0
UC017	1	1	0	0	1	1	0	0	0	0	1	0

7 Views

7.1 View 1 - Food View:

The purpose of this view is to show food related details, especially to customers. It will show FoodID, Dish Name, Price, BranchID and Availability Status.

7.2 View 2 - Employee View:

Let us suppose that we want to see complete details of an employee. Then, this view will serve the purpose. It will display all the basic details of an employee such as his CNIC, Date Of Birth, Name etc. along with his professional details such as EmployeeID, Salary, Supervisor etc.

7.3 View 3 - Product View:

The purpose of this view is to show complete details of a product. For example, it will be used to show details like ProductID, Name, Type, Unit Price, Quantity, Threshold, Availability Status etc.

7.4 View 4 - Room View:

This view has been created to show complete details of rooms in an efficient manner. It will show different details of rooms such as RoomNo, Type, Availability Status, Cost Per Hour etc.

7.5 View 5 - Service View:

Let's suppose we want to see details of services. Then, this view will be used to show the details of a service such as ServiceID, Name, Cost, Branch, Availability Status etc.

8 Stored Procedures

8.1 SP 1 - Branch Insertion

One of the main functions of the system is to insert data successfully in the database. This stored procedure has insert query and is used to add a new branch in the system.

8.2 SP 2 - Branch Food Insertion

Similarly, this stored procedure is used when the user wants to insert food for a specific branch. It requires certain parameters such as FoodID, BranchIDand Availability Status.

8.3 SP 3 - Branch Product Insertion

This stored procedure is used when the user wants to insert product for a specific branch. It requires certain parameters such as BranchID, Quantity, Threshold, Availability Status etc. to be passed.

8.4 SP 4 - Branch Room Insertion

The purpose of this stored procedure to insert room for a specific branch. It requires certain parameters such as RoomID, BranchID and Availability Status etc. to be passed.

8.5 SP 5 - Branch Service Insertion

This stored procedure is used to insert services for a specific branch. It requires certain parameters such as ServiceID, BranchID and Availability Status etc. to be passed.

8.6 SP 6 - Customer Insertion

This stored procedure is used to insert custonmer in the system. It requires certain parameters such as PersonID and Account details to be passed.

8.7 SP 7 - Customer Food Insertion

This stored procedure is used to insert food details for a specific custonmer in the system. It requires certain parameters such as BillID, CustomerID, FoodID, Quantity and Total Price to be passed.

8.8 SP 8 - Customer Product Insertion

The purpose of this stored procedure is used to insert product details for a specific custonmer in the system. It requires certain parameters such as BillID, CustomerID, ProductID, Quantity and Total Price to be passed.

8.9 SP 9 - Customer Room Insertion

This stored procedure is used to insert room details for a specific custonmer in the system. It requires certain parameters such as BillID, CustomerID, RoomID and Booking Dates to be passed.

8.10 SP 10 - Customer Service Insertion

This stored procedure is used to insert service details for a specific custonmer in the system. It requires certain parameters such as BillID, CustomerID, ServiceID and Usage Details to be passed.

8.11 SP 11 - Customer Service Insertion

This stored procedure is used to insert service details for a specific custonmer in the system. It requires certain parameters such as BillID, CustomerID, ServiceID and Usage Details to be passed.

8.12 SP 12 - Employee Insertion

The purpose of this stored procedure is to insert employee details in the system. It requires certain parameters such as BranchID, JobRole, Salary, Supervisor etc. to be passed.

8.13 SP 13 - Food Insertion

This stored procedure is used to insert food details in the system. It requires certain parameters such as DishName, Price and Availability Status to be passed.

8.14 SP 14 - LookUp Insertion

This stored procedure is used to insert lookup details in the system. Only owner is authorized to use it. It requires certain parameters such as Category and Value to be passed.

8.15 SP 15 - Order Insertion

This stored procedure is used to insert order for an employee in the system. It requires certain parameters such as EmployeeID and Order Date to be passed.

8.16 SP 16 - Order Detail Insertion

This stored procedure is used to insert order details in the system. It requires certain parameters such as OrderID, ProductID and Quantity to be passed.

8.17 SP 17 - Payment Insertion

This stored procedure is used to insert payment details in the system. It requires certain parameters such as CustomerID, BillID and Method to be passed.

8.18 SP 18 - Person Insertion

The purpose of this stored procedure is to insert person details in the system. It requires certain parameters such as CNIC, First Name, Last Name, Email etc. to be passed.

8.19 SP 18 - Product Insertion

The purpose of this stored procedure is to insert product details in the system. It requires certain parameters such as Unit Price, Name, Type, Availability etc. to be passed.

8.20 SP 19 - Review Insertion

This stored procedure is to insert review details of the customer in the system. It requires certain parameters such as CustomerID, Comment, Date, Rating etc. to be passed.

8.21 SP 20 - Room Insertion

The purpose of this stored procedure is to insert room details in the system. It requires certain parameters such as Room Number, Cost Per Hour, Type and Availability Status etc. to be passed.

8.22 SP 21 - Service Insertion

The purpose of this stored procedure is to insert service details in the system. It requires certain parameters such as Name, Cost and Availability Status etc. to be passed.

8.23 SP 22 - Work Record Insertion

This stored procedure is to insert work record details in the system. It requires certain parameters such as EmployeeID, ServiceID and Date etc. to be passed.

9 Exceptions:

Type of Exception	Why this exception will occur?	How you will handle it
Invalid User Credentials Exception	The user entered incorrect login credentials	The system will return an appropriate error message to the user and ask them to enter correct credentials i.e. username and password.
User Already Exists Exception	The user is trying to create account with username that already exists in the system	The system will return an appropriate error message to the user
Invalid CNIC Format Exception	The user is trying to enter CNIC in an unsupported format	The system will return an appropriate error message to the user and prompt them to enter CNIC in a supported format i.e. a 13 digit integer
Invalid Email Address Exception	The email entered by user is in invalid format.	The system will return an appropriate error message to the user and prompt them to enter valid email according to the standard format.
Invalid Contact Number Exception	The user entered contact number in an invalid format.	The system will return an appropriate error message to the user and prompt them to enter a correct phone number.
Invalid Input Exception	The user has provided invalid input data	The system will return an appropriate error message to the user and prompt them to enter valid input data