1 - Overall Designs:

1. - Hierarchical Diagrams

Hotel Management System

├── Front Desk

│ ├── Check-in

│ ├── Check-out

│ ├── Reservation

│ ├── Room Assignment

│ └── Guest Services

├── Housekeeping

│ ├── Room Cleaning

│ ├── Laundry Services

│ └── Maintenance

├── Food and Beverage

│ ├── Restaurant

│ │ ├── Menu Management

│ │ ├── Table Reservation

│ │ └── Order Processing

│ ├── Bar

│ │ ├── Drink Menu

│ │ └── Order Processing

│ └── Room Service

│ ├── Menu

│ └── Order Processing

├── Accounting

│ ├── Billing

│ ├── Invoicing

│ └── Financial Reporting

├── Human Resources

│ ├── Employee Management

│ ├── Payroll

│ └── Training and Development

└── System Administration

├── User Management

├── Database Management

├── Security and Access Control

└── System Configuration

A hierarchical diagram is a visual representation of a hierarchical structure or organization. It depicts the relationships between different levels of elements or entities in a hierarchical manner. The diagram typically consists of nodes or boxes representing the elements, connected by lines or arrows indicating the parent-child relationships.

Home Page: Serves as the main landing page of the application, providing an overview of the system's functionalities and options.

Authentication: Handles user authentication and access control. It includes a Login Page where users can enter their credentials, a Registration Page for new user sign-ups, and a Forgot Password functionality to help users recover their passwords.

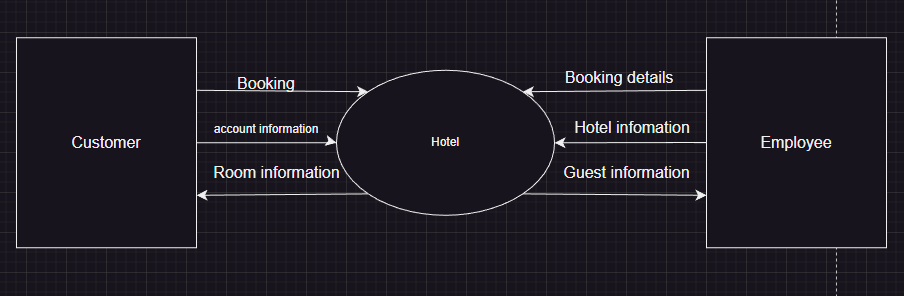
Front Desk: Manages guest-related operations such as Check-in (assigning rooms to guests upon arrival), Check-out (handling the departure of guests), Reservation (managing room reservations), Room Assignment (assigning specific rooms to guests based on their preferences), and Guest Services (providing assistance and addressing guest needs).

Housekeeping: Manages room cleanliness and guest comfort. It includes Room Cleaning (schedules and performs cleaning services), Laundry Services (handles guest laundry requests), and Maintenance (addresses maintenance issues within the hotel premises).

Food: Handles food-related operations. The Restaurant sub-module focuses on activities like Menu Management (creating and updating the restaurant's menu), Table Reservation (managing guest bookings), and Order Processing (handling guest orders). The Room Service sub-module specifically caters to providing food and beverages to hotel rooms, with a Menu for room service and processing guest Orders.

System Administration: Handles administrative tasks. This module covers User Management (managing user accounts and permissions), Database Management (handling database operations such as backups and optimizations), Security and Access Control (ensuring system security and defining access restrictions), and System Configuration (managing system settings and configurations).

1. - Data Flow Diagram



1. - Tables Design
2. Guests Table:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **id** | **first\_name** | **last\_name** | **email** | **phone\_number** | **address** | **nationality** | **check\_in\_date** | **check\_out\_date** |
| 1 | name | name | [name@example.com](mailto:name@example.com) | integers | address | name | 2023-05-20 | 2023-05-25 |
| 2 | name | name | [name@example.com](mailto:name@example.com) | integers | address | name | 2023-05-22 | 2023-05-27 |

1. Rooms Table:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **id** | **room\_number** | **room\_type** | **occupancy\_limit** | **availability\_status** |
| 1 | integers | name | integers | name |
| 2 | integers | name | integers | name |

1. Reservations Table:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **id** | **guest\_id** | **room\_id** | **check\_in\_date** | **check\_out\_date** | **reservation\_date** |
| 1 | integers | integers | 2023-05-20 | 2023-05-25 | 2023-05-18 |
| 2 | integers | integers | 2023-05-22 | 2023-05-27 | 2023-05-19 |

1. Services Table:

|  |  |  |  |
| --- | --- | --- | --- |
| **id** | **service\_name** | **description** | **price** |
| 1 | name | description | integers |
| 2 | name | description | integers |

1. Orders Table:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **id** | **guest\_id** | **service\_id** | **order\_date** | **quantity** | **total\_amount** |
| 1 | integers | integers | 2023-05-20 | integers | integers |
| 2 | integers | integers | 2023-05-22 | integers | integers |

1. Employees Table:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **id** | **first\_name** | **last\_name** | **email** | **phone\_number** | **position** | **salary** |
| 1 | name | name | [name@example.com](mailto:name@example.com) | integers | name | integers |
| 2 | name | name | [name@example.com](mailto:name@example.com) | integers | name | integers |

1.4 - Entity Relationship Diagram

Guests

+----------+------------+-----------+------------------+----------------+-----------------+-------------+

| guest\_id | first\_name | last\_name | email | phone\_number | address | nationality |

+----------+------------+-----------+------------------+----------------+-----------------+-------------+

| 1 | [First Name] | [Last Name] | [Email] | [Phone Number] | [Address] | [Nationality] |

| 2 | [First Name] | [Last Name] | [Email] | [Phone Number] | [Address] | [Nationality] |

+----------+------------+-----------+------------------+----------------+-----------------+-------------+

Rooms

+---------+-------------+-----------+-----------------+---------------------+

| room\_id | room\_number | room\_type | occupancy\_limit | availability\_status |

+---------+-------------+-----------+-----------------+---------------------+

| 1 | [Room Number] | [Room Type] | [Occupancy Limit] | [Availability Status] |

| 2 | [Room Number] | [Room Type] | [Occupancy Limit] | [Availability Status] |

+---------+-------------+-----------+-----------------+---------------------+

Reservations

+----------------+----------+---------+---------------+----------------+------------------+

| reservation\_id | guest\_id | room\_id | check\_in\_date | check\_out\_date | reservation\_date |

+----------------+----------+---------+---------------+----------------+------------------+

| 1 | [Guest ID] | [Room ID] | [Check-in Date] | [Check-out Date] | [Reservation Date] |

| 2 | [Guest ID] | [Room ID] | [Check-in Date] | [Check-out Date] | [Reservation Date] |

+----------------+----------+---------+---------------+----------------+------------------+

Services

+------------+--------------+--------------------------+-------+

| service\_id | service\_name | description | price |

+------------+--------------+--------------------------+-------+

| 1 | [Service Name] | [Description] | [Price] |

| 2 | [Service Name] | [Description] | [Price] |

+------------+--------------+--------------------------+-------+

Orders

+----------+----------+------------+------------+----------+--------------+

| order\_id | guest\_id | service\_id | order\_date | quantity | total\_amount |

+----------+----------+------------+------------+----------+--------------+

| 1 | [Guest ID] | [Service ID] | [Order Date] | [Quantity] | [Total Amount] |

| 2 | [Guest ID] | [Service ID] | [Order Date] | [Quantity] | [Total Amount] |

+----------+----------+------------+------------+----------+--------------+

Employees

+-------------+------------+-----------+--------------------+----------------+----------+--------+

| employee\_id | first\_name | last\_name | email | phone\_number | position | salary |

+-------------+------------+-----------+--------------------+----------------+----------+--------+

| 1 | [First Name] | [Last Name] | [Email] | [Phone Number] | [Position] | [Salary] |

| 2 | [First Name] | [Last Name] | [Email] | [Phone Number] | [Position] | [Salary] |

+-------------+------------+-----------+--------------------+----------------+----------+--------+

Departments

+---------------+-----------------+

| department\_id | department\_name |

+---------------+-----------------+

| 1 | [Department Name] |

| 2 | [Department Name] |

+---------------+-----------------+

Guests <――――――――――> Reservations

Rooms <―――――――――> Reservations

Services <―――――――> Orders

Guests <――――――――――> Orders

Employees ―――――――――> Departments

The ERD represents different entities (tables) in a hotel management system and how they relate to each other. Let's go through each entity and their relationships:

Guests: Represents the hotel guests. Each guest has a unique guest ID and attributes such as their first name, last name, email, phone number, address, and nationality.

Rooms: Represents the hotel rooms. Each room has a unique room ID and attributes including the room number, room type, occupancy limit, and availability status.

Reservations: Represents the reservations made by guests for specific rooms. Each reservation has a unique reservation ID and is associated with a guest and a room. It also includes attributes such as the check-in date, check-out date, and reservation date.

Services: Represents the services offered by the hotel, such as room service or spa treatments. Each service has a unique service ID and attributes like the service name, description, and price.

Orders: Represents the orders placed by guests for services. Each order has a unique order ID and is associated with a guest and a service. It includes attributes like the order date, quantity, and total amount.

Employees: Represents the hotel employees. Each employee has a unique employee ID and attributes including their first name, last name, email, phone number, position, and salary.

Departments: Represents the departments within the hotel, such as housekeeping or front desk. Each department has a unique department ID and a department name.

The relationships between these entities are represented by arrows:

Guests and Reservations: Each guest can have multiple reservations, but each reservation is associated with only one guest. This is a one-to-many relationship.

Rooms and Reservations: Each room can have multiple reservations, but each reservation is associated with only one room. This is also a one-to-many relationship.

Services and Orders: Each service can be included in multiple orders, but each order is associated with only one service. This is a one-to-many relationship.

Guests and Orders: Each guest can place multiple orders, but each order is associated with only one guest. This is a one-to-many relationship.

Employees and Departments: Each employee can be assigned to multiple departments, and each department can have multiple employees. This is a many-to-many relationship.

These relationships help to establish connections and dependencies between the different entities in the hotel management system, enabling efficient data management and retrieval.

1.5 - UML Case Diagram

