*1.INTRODUCTION

Introduction to Hotel Management System

A Hotel Management System is a comprehensive software solution designed to streamline and automate the operations of a hotel. This system helps manage various aspects such as room booking, check-in/check-out, billing, inventory, and guest services efficiently. The goal of the system is to improve the guest experience, optimize hotel operations, and reduce manual efforts.

In a competitive hospitality industry, maintaining high standards of service, efficient room management, and effective communication between departments are essential. The Hotel Management System achieves this by providing real-time data to hotel staff, allowing them to make informed decisions, thus improving overall productivity.

The system typically includes modules like:

- **Reservation Management**: Handles online and offline bookings.
- **Room Management**: Manages room availability, housekeeping, and maintenance.
- **Billing and Payment**: Facilitates accurate billing and different payment methods.
- **Guest Management**: Stores guest details, preferences, and history for personalized service.
- **Inventory Control**: Keeps track of the inventory of hotel supplies and services.

By implementing this system, hotels can ensure better organization, faster guest service, and a smoother operational flow, leading to improved customer satisfaction and profitability.

*2.KEY FEATURES OF HOTEL MANAGEMENT SYSTEM:-

^Here are the **key features** of a Hotel Management System:

1. Reservation and Booking Management

- **Online & Offline Booking**: Accepts bookings from both online portals and walk-in guests.
- **Real-Time Room Availability**: Displays available rooms, ensuring up-to-date information.
- **Booking Modifications**: Allows guests or staff to change or cancel bookings easily.
- **Automated Confirmation**: Sends booking confirmations via email or SMS.

2. Check-In / Check-Out Management

- **Quick Check-In and Check-Out**: Streamlines the process to ensure quick and efficient guest handling.
- **Digital Records**: Stores check-in/check-out history, reducing paperwork.
- **Room Assignment**: Automatically allocates rooms based on availability and guest preferences.

3. Billing and Payment Processing

- **Automated Billing**: Generates detailed bills for room stays, food, and other services.
- **Multiple Payment Options**: Accepts various payment methods, including credit/debit cards, digital wallets, and cash.
- **Tax Calculation**: Automatically applies the correct taxes based on location.

4. Room and Housekeeping Management

- **Room Status Updates**: Monitors and updates room status (occupied, vacant, under maintenance).
- **Housekeeping Scheduling**: Assigns housekeeping tasks, ensuring cleanliness and maintenance schedules are followed.
- **Maintenance Alerts**: Sends alerts for rooms that need repairs or special attention.

5. Guest Management

- **Guest Profiles**: Stores guest information, including preferences and previous stays, to offer personalized services.
- **Loyalty Programs**: Manages reward points and special discounts for frequent guests.
- **Special Requests Handling**: Records and manages guest requests, like additional room amenities.

6. Inventory Management

- **Stock Management**: Tracks and monitors the availability of hotel supplies (e.g., toiletries, food items).
- **Reorder Notifications**: Alerts staff when stock levels are low and need replenishment.
- **Vendor Management**: Maintains records of suppliers and purchase orders.

7. Reporting and Analytics

- **Sales Reports**: Provides daily, weekly, or monthly sales data for rooms, services, and products.
- **Occupancy Reports**: Tracks room occupancy rates, helping management optimize pricing strategies.
- **Financial Reports**: Offers a summary of revenue, expenses, and profit margins.

8. Multi-Property Management

- For hotel chains, this feature allows centralized management of multiple properties from a single interface.

9. User Access Control

- **Role-Based Access**: Different access levels for managers, staff, and housekeeping to ensure data security.
- **Audit Logs**: Tracks user activity, improving accountability and security.

10. Customer Feedback and Complaint Management

- Collects guest feedback after their stay to improve services.
- Logs and tracks complaints to ensure quick resolution.

These features together enhance the efficiency of hotel operations, leading to better guest experiences and increased profitability.

*3.HARDWARE REQUIREMENTS :-

- **Workstations/PCs**:
  - **Processor**: Intel Core i5 or i7, 2.0 GHz or higher.
  - **RAM**: 8 GB minimum (16 GB for smoother performance).
  - **Storage**: 250 GB SSD.
  - **Display**: 19-inch or larger LCD/LED screen.
  - **Operating System**: Windows 10 or 11, Linux (Ubuntu or Fedora), or macOS.
  - **Network Connectivity**: Wired (Ethernet) or Wireless (Wi-Fi) capable.
- **Laptops/Tablets** (for mobile staff):
  - **Processor**: Intel Core i5 or i7, 1.6 GHz or higher.
  - **RAM**: 8 GB minimum.
  - **Storage**: 128 GB SSD.
  - **Display**: 13-inch or larger.
  - **Operating System**: Windows, Linux, or Android/iOS (if using tablets).

*4.SOFTWARE REQUIREMENTS :-

- **Operating System**:
  - Server: **Windows Server 2016+**, **Linux** (Ubuntu/CentOS).
  - Client: **Windows 10/11**, **Linux**, or **macOS**.
- **Database**:
  - **MySQL**, **PostgreSQL**, **SQL Server**, or **Oracle**.
- **Web Server**:
  - **Apache**, **Nginx**, or **IIS**.
- **Programming Languages**:
  - Backend: **PHP**, **Node.js**, **Python**, **Java , c**.
  - Frontend: **HTML5**, **CSS3**, **JavaScript** (**React.js**, **Angular.js**, or **Vue.js**).
- **Middleware** (optional):
  - **REST API** or **GraphQL** for system integrations

*5.ALGORITHM FOR HOTEL MANAGEMENT SYSTEM :-

Algorithm:

1. Start the program.

2. Initialize rooms:

   - Set each room as available.

   - Assign room type (AC or Non-AC).

   - Save room data to a file.

3. Display menu with options:

   1. Display Room Status.

   2. Book a Room.

   3. Checkout and Generate Bill.

   4. Unbook a Room.

   5. Exit.

4. Process user input:

   - If `1`: Show room status (available/occupied).

   - If `2`: Book a room (ask for name, days, and assign room).

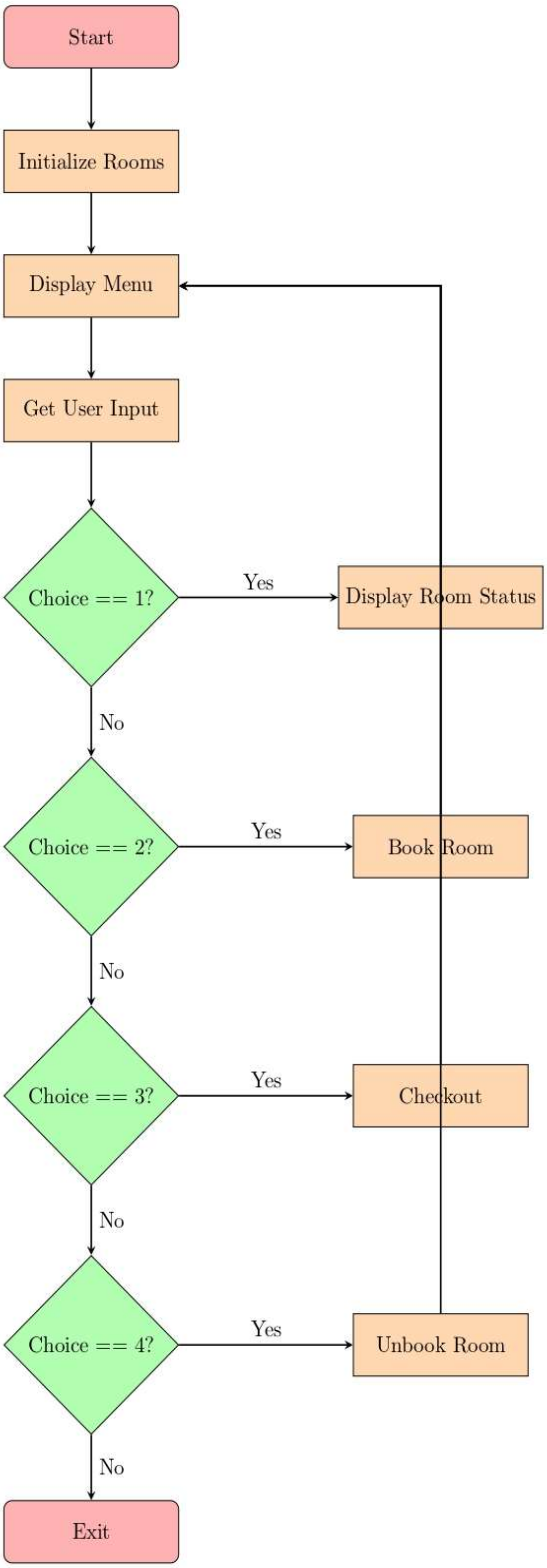
   - If `3`: Checkout (calculate bill based on room type, free room).

   - If `4`: Unbook a room (free the room).

   - If `5`: Exit the program.

5. Repeat until user chooses to exit.

*6.FLOWCHART :-


Start
Initialize Rooms
Display Menu
Get User Input
Choice == 1?
Yes
Display Room Status
No
Choice == 2?
Yes
Book Room
No
Choice == 3?
Yes
Checkout
No
Choice == 4?
Yes
Unbook Room
No
Exit

*7.MAIN CODE /PROGRAM :-

```
#include <stdio.h>
#include <string.h>

#define MAX_ROOMS 5         // Total number of rooms available
#define MAX_NAME_LENGTH 50
#define AC_ROOM_RENT 1500    // Rent for AC room
#define NON_AC_ROOM_RENT 1000 // Rent for Non-AC room

// Structure to store customer information
struct Customer {
   char name[MAX_NAME_LENGTH];
   int roomNumber;
   int daysStayed;
   int isOccupied;        // 1 if room is occupied, 0 if not
   char roomType[10];     // Type of room: AC or Non-AC
};

// Function to save room data to a file
```

```
void saveToFile(struct Customer hotel[]) {
    FILE *file = fopen("hotel_data.txt", "w");
    if (file == NULL) {
        printf("Error opening file!\n");
        return;
    }

    for (int i = 0; i < MAX_ROOMS; i++) {
        fprintf(file, "Room %d (%s): ", hotel[i].roomNumber,
hotel[i].roomType);
        if (hotel[i].isOccupied) {
            fprintf(file, "Occupied by %s for %d days\n", hotel[i].name,
hotel[i].daysStayed);
        } else {
            fprintf(file, "Available\n");
        }
    }

    fclose(file);
}
```

```
// Initialize hotel with empty rooms
void initializeRooms(struct Customer hotel[]) {
    for (int i = 0; i < MAX_ROOMS; i++) {
        hotel[i].roomNumber = i + 1;
        hotel[i].isOccupied = 0;  // All rooms are initially available
        // Set room type based on room number
        if (i < MAX_ROOMS / 2) {
            strcpy(hotel[i].roomType, "AC Room"); // First half are AC Rooms
        } else {
            strcpy(hotel[i].roomType, "Non-AC Room"); // Second half are
Non-AC Rooms
        }
    }

    // Save initial room data to file
    saveToFile(hotel);
}

// Function to display all rooms and their status
```

```
void displayRooms(struct Customer hotel[]) {
   printf("\n--- Room Status ---\n");
   for (int i = 0; i < MAX_ROOMS; i++) {
      if (hotel[i].isOccupied) {
         printf("Room %d (%s): Occupied by %s\n", hotel[i].roomNumber,
hotel[i].roomType, hotel[i].name);
      } else {
         printf("Room %d (%s): Available\n", hotel[i].roomNumber,
hotel[i].roomType);
      }
   }
}

// Function to book a room
void bookRoom(struct Customer hotel[]) {
   int roomNumber, days;
   char name[MAX_NAME_LENGTH];

   printf("\nEnter Room Number to Book (1-%d): ", MAX_ROOMS);
   scanf("%d", &roomNumber);
```

```
// Check if room is available
if (roomNumber < 1 || roomNumber > MAX_ROOMS) {
    printf("Invalid room number!\n");
    return;
}

if (hotel[roomNumber - 1].isOccupied) {
    printf("Sorry, Room %d is already occupied.\n", roomNumber);
    return;
}

// Booking process
printf("Enter Your Name: ");
scanf("%s", name);
printf("Enter Number of Days of Stay: ");
scanf("%d", &days);

// Assign room to the customer
strcpy(hotel[roomNumber - 1].name, name);
```

```
    hotel[roomNumber - 1].daysStayed = days;
    hotel[roomNumber - 1].isOccupied = 1;

    printf("Room %d (%s) booked successfully for %s for %d days!\n",
roomNumber, hotel[roomNumber - 1].roomType, name, days);

    // Save updated room data to file
    saveToFile(hotel);
}

// Function to checkout and calculate bill
void checkout(struct Customer hotel[]) {
    int roomNumber;
    int totalBill;

    printf("\nEnter Room Number to Checkout: ");
    scanf("%d", &roomNumber);

    // Check if the room is valid and occupied
```

```
    if (roomNumber < 1 || roomNumber > MAX_ROOMS ||
!hotel[roomNumber - 1].isOccupied) {
        printf("Invalid room number or the room is not occupied.\n");
        return;
    }

    // Calculate total bill based on room type
    if (strcmp(hotel[roomNumber - 1].roomType, "AC Room") == 0) {
        totalBill = hotel[roomNumber - 1].daysStayed * AC_ROOM_RENT;
    } else {
        totalBill = hotel[roomNumber - 1].daysStayed *
NON_AC_ROOM_RENT;
    }

    printf("Checkout successful for %s. Total Bill: INR %d\n",
hotel[roomNumber - 1].name, totalBill);

    // Free up the room
    hotel[roomNumber - 1].isOccupied = 0;

    // Save updated room data to file
```

```
    saveToFile(hotel);
}

// Function to unbook a room
void unbookRoom(struct Customer hotel[]) {
    int roomNumber;

    printf("\nEnter Room Number to Unbook: ");
    scanf("%d", &roomNumber);

    // Check if the room is valid and occupied
    if (roomNumber < 1 || roomNumber > MAX_ROOMS ||
!hotel[roomNumber - 1].isOccupied) {
        printf("Invalid room number or the room is not occupied.\n");
        return;
    }

    // Free up the room
    hotel[roomNumber - 1].isOccupied = 0;
```

```
    printf("Room %d (%s) unbooked successfully!\n", roomNumber,
hotel[roomNumber - 1].roomType);

    // Save updated room data to file
    saveToFile(hotel);
}

int main() {
    struct Customer hotel[MAX_ROOMS];
    int choice;

    // Initialize rooms
    initializeRooms(hotel);

    while (1) {
        printf("\n--- Hotel Management System ---\n");
        printf("1. Display Room Status\n");
        printf("2. Book a Room\n");
        printf("3. Checkout and Generate Bill\n");
        printf("4. Unbook a Room\n");
```

```
printf("5. Exit\n");
printf("Enter your choice: ");
scanf("%d", &choice);

switch (choice) {
    case 1:
        displayRooms(hotel);
        break;
    case 2:
        bookRoom(hotel);
        break;
    case 3:
        checkout(hotel);
        break;
    case 4:
        unbookRoom(hotel);
        break;
    case 5:
        printf("Exiting Hotel Management System...\n");
        return 0;
```

```
            default:
                printf("Invalid choice! Please try again.\n");
        }
    }

    return 0;
}
```

*8.OUTPUT :-

1. Start the system

--- Hotel Management System ---

1. Display Room Status

2. Book a Room

3. Checkout and Generate Bill

4. Unbook a Room

5. Exit

Enter your choice: 1

2. Display room status (initially all rooms are available)

--- Room Status ---

Room 1 (AC Room): Available

Room 2 (AC Room): Available

Room 3 (Non-AC Room): Available

Room 4 (Non-AC Room): Available

Room 5 (Non-AC Room): Available

3. Book a room

--- Hotel Management System ---

Enter your choice: 2

Enter Room Number to Book (1-5): 2

Enter Your Name: Karan Aher

Enter Number of Days of Stay: 3

Room 2 (AC Room) booked successfully for John for 3 days!

4. Display room status (after booking Room 2)

--- Hotel Management System ---

Enter your choice: 1

--- Room Status ---

Room 1 (AC Room): Available

Room 2 (AC Room): Occupied by Karan Aher

Room 3 (Non-AC Room): Available

Room 4 (Non-AC Room): Available

Room 5 (Non-AC Room): Available

5. Checkout and generate bill for Room 2

--- Hotel Management System ---

Enter your choice: 3

Enter Room Number to Checkout: 2

Checkout successful for Karan Aher. Total Bill: INR 4500

6. Display room status (after checkout)

--- Hotel Management System ---

Enter your choice: 1

--- Room Status ---

Room 1 (AC Room): Available

Room 2 (AC Room): Available

Room 3 (Non-AC Room): Available

Room 4 (Non-AC Room): Available

Room 5 (Non-AC Room): Available

7. Exit the system

--- Hotel Management System ---

Enter your choice: 5

Exiting Hotel Management System...

*9.CONCLUSION :-

The provided **Hotel Management System** code offers a simple yet effective way to manage hotel room bookings, customer check-ins, and checkouts. It demonstrates key functionalities such as:

1. **Room Initialization**: All rooms are initialized with information on whether they are AC or Non-AC rooms, and they start as available.
2. **Booking Functionality**: Users can book a room by entering their name and the number of days they will stay. The system assigns the room and updates its status.
3. **Checkout and Billing**: When checking out, the system calculates the total bill based on the number of days stayed and the type of room (AC or Non-AC).
4. **Room Management**: The system allows users to view room availability, book, unbook, or checkout from rooms efficiently.
5. **File Handling**: The room status is saved to a file, ensuring that room data can be persisted and reviewed later, simulating a real-world hotel system where records are kept for auditing or management purposes.