



Project Report

Title: Hotel Management System.

Course Name: Data Structure Lab.

Course Code: CSE-134.

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Hotel Management System

Introduction to the Project:

The Hotel Management System is a software application designed to streamline the operations of a hotel, making it easier for staff to manage reservations, check room availability, and handle customer records. The idea for this project stems from the growing need for efficient management systems in the hospitality industry, where manual processes can lead to errors and inefficiencies. By automating these processes, the system enhances customer satisfaction and optimizes hotel operations.

Project Inspiration & Background Study

Various hotel reservation systems exist today, each with different levels of functionality, from complex software like **Opera PMS** and **Cloudbeds** to simpler command-line tools. Such systems often include options for booking, customer management, billing, and additional services. However, these systems are generally large and complex, targeting medium to large hotels with high-end requirements. In developing the **Hotel Management System**, We took inspiration from an open-source project available on [SourceCodester](https://www.sourcecodester.com/cc/14819/hotel-management-system-using-c-source-code.html). The link of that source code is attached here: <https://www.sourcecodester.com/cc/14819/hotel-management-system-using-c-source-code.html>. This project provided a foundational structure and essential features, including room booking, customer record management, and editing & deleting those records, which helped me understand the core functionalities required for a hotel management application. Building on this foundation, I enhanced the system by adding new features, such as including checkout option, generating total revenues & also managing the parking slot facilities for the customers making it more comprehensive and user-friendly. These modifications tailored the application to meet a wider

range of operational requirements, expanding its potential usability for small to medium-sized hotels. For smaller hotels and budget accommodations, managing bookings manually or through simpler software solutions is more practical. This project takes inspiration from such software and aims to deliver a straightforward, less complex solution suitable for small and medium-sized hotels that need a more accessible system.

Functionalities:

The key features of the Hotel Management System include: **Room Booking, Room Availability Check, View Reservations, Cancel Reservations, Search Customer Records, Edit Records, Checkout, Revenue Report, Parking Management.** A brief description of these functionalities are mentioned below:

The Hotel Reservation System offers the following functionalities:

User Authentication: The system requires a login with credentials to ensure that only authorized personnel such as the receptionist or the hotel manager can access the system.

Room Booking: Initially, Users could enter customer details like the name, phone number and specify the number of nights for the stay. But here we added the features like taking more information from the customer like we can record the customer's date of arrival also. Again, we added a feature where the customer can choose which type of room he wants to book and we divided this into three categories. The system can also calculate the total cost based on the selected room type.

Room Availability Check: Staff can check if specific rooms are available for booking, helping to avoid double bookings.

View All Reservations: Displays a list of all current reservations, making it easy for staff to manage bookings.

Cancel Reservation: Allows users to cancel reservations by entering the customer ID, which updates the system accordingly.

Search Customer Record: Staff can search for customer records by ID, making it easy to retrieve information.

Edit Record: Enables modification of existing reservations, such as changing the customer's name, room type, or number of nights they will be staying.

Checkout Process: This is a new feature that we have added to enhance this system. Here, we have created a function which calculates the total bill for a customer upon checkout, including room charges and any parking fees, and generates an invoice.

Revenue Report Generation: It is also a newly added functionality that we have created which calculates the total revenue generated from bookings and providing an overall insights into hotel performance.

Parking Management: The **Parking Management** function is a newly added feature in our Hotel Management System, designed to organize parking space allocation and tracking for hotel guests. This feature allows hotel staff to record and manage parking availability, assign parking spaces to guests upon check-in, and update the status upon check-out.

CODE IMPLEMENTATION:

Welcome Page:

```
*****
*                                          *
*          -----                      *
*          HOTEL MANAGEMENT SYSTEM      *
*          -----                      *
*                                          *
*                                          *
*                                          *
*                                          *
*****

-----
Current date and time : Tue Nov 12 00:11:47 2024
-----
Press any key to continue:|
```

Login Menu:

```
C:\Users\UseR\Documents\pr  X  +  v
*****
*          LOGIN TO HOTEL SYSTEM          *
*****
Username: admin
Password: password

          WELCOME !!!! LOGIN IS SUCCESSFUL

Loading..|
```

Main Menu:

```
*****
*           HOTEL RESERVATION SYSTEM           *
*****

1. Book a Room
2. Check Room Availability
3. View All Reservations
4. Cancel Reservation
5. Search Customer Record
6. Edit Record
7. Checkout
8. Revenue Report
9. Parking Management
10. Exit
*****

-----
Current date and time : Tue Nov 12 00:13:46 2024
-----
Enter your choice: |
```

Book Room Function:

```
*****
*           ROOM BOOKING                       *
*****
Enter Customer ID: 001
Enter Customer Name: Tarek Shuvo
Enter Customer Phone No: 017XXXXXXX
Enter Arrival Date (DD-MM-YYYY): 15-11-2024
Select room type:
1. Standard ($50/night)
2. Deluxe ($100/night)
3. Suite ($150/night)
Enter choice: 2
Enter Number of Nights: 3
Do you require parking? (1 for Yes, 0 for No): 1
Enter Car Number: 666
Room 201 booked successfully!
Press any key to continue . . . |
```

Checking Room Availability Function:

```
*****
*           CHECK ROOM AVAILABILITY           *
*****

1. Display all available rooms by type
2. Check availability of a specific room number
Enter your choice: |
```

Option-1:

```
Available Standard Rooms:
-----
| Room 101 | Room 102 | Room 103 | Room 104 | Room 105 | Room 106 | Room 107 | Room 108 | Room 109 |
| Room 110 | Room 111 | Room 112 | Room 113 | Room 114 | Room 115 | Room 116 | Room 117 | Room 118 |
| Room 119 | Room 120 | Room 121 | Room 122 | Room 123 | Room 124 | Room 125 | Room 126 | Room 127 |
| Room 128 | Room 129 | Room 130 |
-----

Available Deluxe Rooms:
-----
| Room 202 | Room 203 | Room 204 | Room 205 | Room 206 | Room 207 | Room 208 | Room 209 | Room 210 |
| Room 211 | Room 212 | Room 213 | Room 214 | Room 215 |
-----

Available Suite Rooms:
-----
| Room 301 | Room 302 | Room 303 | Room 304 | Room 305 |
-----

Press any key to continue . . . |
```

Option-2:

```
Enter Room Number to Check Availability: 201
Room 201 is already booked by Tarek Shuvo.
-----
Press any key to continue . . . |
```

View All Reservations Function:

```
*****
*           ALL RESERVATIONS           *
*****
=====
ID: 1||Name: Tarek Shuvo||Room: 201||Nights: 3||Rate: $100.00/Night
=====
Press any key to continue . . . |
```

Cancel Reservation Function:

```
*****
*          CANCEL RESERVATION          *
*****
Enter Customer ID to Cancel Reservation: 002
Reservation cancelled successfully!
Press any key to continue . . . |
```

Search Customer Function:

```
*****
*          SEARCH CUSTOMER RECORD      *
*****
Enter Customer ID to Search: 001
ID: 1, Name: Tarek Shuvo, Room: 201, Nights: 3, Rate: 100.00
Press any key to continue . . . |
```


Edit Record Function:

```
*****
*           EDIT RECORD           *
*****
Enter Customer ID to Edit Record: 001
Enter new customer name: Shuvo Jyoti Das
Select new room type:
1. Standard ($50/night)
2. Deluxe ($100/night)
3. Suite ($150/night)
Enter choice: 3
Enter New Room Number: 103
Enter New Number of Nights: 5
Record updated successfully!
Press any key to continue . . . |
```

Checkout Function:

```
*****
*                      CHECK OUT                      *
*****
Enter customer ID for checkout: 001
----- Invoice -----
Customer Name: Tarek Shuvo
Room Number: 201
Room Type: Deluxe
Days Stayed: 3
Room Charge: $300.00
Parking Charge: $30.00
Total Bill: $330.00
-----

      THANK YOU FOR STAYING WITH US

Press any key to continue . . . |
```

Revenue Generating Function:

```
*****
*                      REVENUE REPORT                  *
*****
Total Revenue Generated: $330.00
Press any key to continue . . . |
```

Parking Management Function:

```
*****
*          PARKING MANAGEMENT          *
*****
Total Parking Slots: 20
Slot Number: 1 | Customer Name: Tarek Shuvo | Room: 201 | Car Number: 666
Occupied Slots: 1
Available Slots: 19
Parking rate: $10/night
Press any key to continue . . . |
```

Exit Menu:

```
*****
*          THANK YOU FOR USING          *
*          HOTEL RESERVATION SYSTEM     *
*          HAVE A NICE DAY!             *
*****

Process returned 0 (0x0)   execution time : 738.091 s
Press any key to continue.
|
```

Future Scope:

The Hotel Management System can be significantly enhanced and expanded in several ways:

Database Integration: Implementing a database (e.g., MySQL, SQLite) would allow for persistent storage of reservations and customer data, making it more suitable for real-world applications.

Graphical User Interface (GUI): Developing a GUI using various frameworks would improve user experience and accessibility.

Multi-User Support: Enhancing the system to support multiple users with role-based access would allow different staff members to perform specific tasks concurrently.

Advanced Reporting Features: Adding more detailed reporting capabilities, such as occupancy rates, seasonal trends, and customer demographics, would provide valuable insights for hotel management.

Mobile Application: Developing a mobile application for customers to book rooms, check availability, and manage their reservations on-the-go would enhance customer engagement.

Integration with Payment Gateways: Implementing online payment options would streamline the booking process and improve customer convenience.

Customer Feedback System: Adding a feature for customers to provide feedback and reviews would help improve services and customer satisfaction.

In conclusion, the Hotel Management System is a valuable tool for managing hotel operations, with significant room for improvement and expansion to meet the needs of modern hospitality businesses.

Limitations:

While the Hotel Management System provides various functionalities, it does have some limitations:

Scalability: The current implementation supports a limited number of reservations (up to 100). For larger hotels, this may not be sufficient.

User Interface: The system operates in a console-based environment, which may not be user-friendly for all staff members. A graphical user interface (GUI) would enhance usability.

Data Persistence: The system does not currently implement a database for storing reservations. All data is lost when the program is closed, which limits its practicality for real-world usage.

Limited Reporting: The revenue report is basic and does not provide detailed insights or analytics that could be beneficial for management.

No Multi-User Support: The system is designed for single-user access, which may hinder operations in a busy hotel environment where multiple staff members need to access the system simultaneously.

Conclusion: The Hotel Management System is an efficient tool designed to do efficient operations for small to medium-sized hotels by automating tasks like reservations, billing, and parking management. This project, inspired by existing systems, focuses on simplicity and accessibility, making it ideal for smaller establishments. While current limitations include a lack of database integration and a basic user interface, the system has a strong foundation for future improvements, such as multi-user support and advanced reporting. Overall, it addresses key needs in hotel management and provides a base for continued development.