**HOTEL MANAGEMENT SYSTEM**

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**Github link:**

**Mission:**

Hotel Management System is to design and implement a centralized, consistent and scalable solution that helps day – to – day operations of a hotel. The system will support the efficient management of reservations, staff duties, payments and bills, hotel availability, guest bookings, check-in and check-out procedures. It reduces manual labor, minimize errors, provides real – time information access, enhance customer satisfaction, provides prompt and precise service.

**Objectives:**

1. Reservation and Booking Management

* Make new reservations and cancellations in real time.
* Keep track of room availability.
* Prevents double bookings by updating room availability.

1. Guest information management

* Maintain guest profiles like first name, last name, age, address, nationality etc.
* Ensure secure storage of personal data.

1. Room and facilities management

* Manage room assignments and status of the room (booked, available, under maintenance).
* Issue alerts for out – of – service rooms.

1. Check – in and Check – out process

* Log guest arrivals and departures efficiently.
* Create invoices at checkout that include information about room fees and services.

1. Billing and payment management

* Manage several payments options (online, card and cash)
* Maintain detailed billing history.

1. Analytics and reporting

* Generate reports

1. Staff scheduling and allocation

* Assign housekeeping tasks based on guest check-ins and check-outs.
* Track employee shifts and availability.
* Ensure fair and efficient workload distribution.

1. Data security and integrity

* Implement user authentication and role – based access control.
* Protect sensitive information from unauthorized access or manipulation.
* Maintain data accuracy and consistency.

1. Data backup and recovery

* Automated backup schedules to ensure data safety.
* Recovery procedures for system failures.

1. Scalability and maintainability

* Support future enhancements such as mobile integration, loyalty programs and third-party APIs.

**ERD:**

**A diagram of a room assignment

AI-generated content may be incorrect.**

**Updated ERD**

**A black background with white rectangles

AI-generated content may be incorrect.**

**List of entities and their relationships:**

* Guest represents hotel customers. A guest can make multiple bookings but each booking is associated with only one guest.
* Booking represents a guest commitment to stay.
* Rooms are physical units in the hotel. Rooms can be assigned to different staff for cleaning or maintenance.
* Payment captures details for booking. One payment can be linked to only one booking and one invoice.
* Invoice is generated from a payment transaction.
* Staffs are assigned to room duties. Staff can be assigned with multiple tasks and rooms.
* Tasks such as cleaning or maintenance are performed by staff and scheduled by the system.
* Room\_Assignment tracks which staff are responsible for which rooms including date of assignment.
* Task\_Assignment tracks which staff is responsible for which tasks.

**Key database design decisions:**

* Booking is flexible in tracking guest’s intent versus actual room allocation.
* Payment and Invoice are distinct to ensure financial integrity and traceability of transactions.
* Payment Type is modeled as a categorical field to enable filtering.
* Room\_Assignment and Task\_Assignement are associative entities to handle many-to-many relationships.
* Composite attributes such as Address are considered for modular data representation.
* Tasks and staff shifts can be expanded to include time tracking, feedback collection or automation.
* Role based access for control for data security.