

# Hotel Reservation System

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**MILESTONE 1**

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## Product Description

I created this database system in order to facilitate hotel bookings and reservations. Traditional booking systems have bad booking processes, lack of real time room availability updates and the lack of flexibility in managing reservations. My goal is to streamline the booking experience for guests while providing efficiency in managing reservations. My database HotelRez will help hotels streamline the reservation process for both guests and hotel management. It manages guest information, cancellations, lets the users search for available rooms, in real time to prevent double booking. It has a user-friendly interface that will offer a seamless experience for clients while providing powerful tools for hotel administrators to manage reservations efficiently.

Some of our unique features in our database is the ability to update rooms in real time, this ensures the most up to date information on room availability and therefore this will reduce the risk of double booking. Secondly, we also will focus on Dynamic pricing, this will adjust rates based on demand, seasons (holidays), and other factors, which will maximize revenue for hotels. Lastly, we also have a unique guest managing system, that will track guest preferences, booking history, special requests, which will allow personalized guest experiences and will bring the client back.

While there are similar products out there that might offer some of these features HotelRez aims to enhance the user experience by providing an intuitive interface, as well as more accurate up to date availability. Some software tools that may benefit with my product are,

Booking.com; my product will provide real time availability updates, as well as dynamic pricing.

Expedia PartnerCentral, which hostess sites like Expedia.com and Hotels.com they will also benefit from real time updates as well as ensuring accurate inventory across EPC platforms.

## Functional database requirements.

### **1. Guest**

- 1.1. A guest shall create only one account.
- 1.2. A guest shall be able to make multiple reservations at a time.
- 1.3. Each guest shall have a unique GuestID
- 1.4. A guest shall have at least one role  
(ex., Guest, Loyalty Member (loyalty status)).

### **2. Account**

- 2.1 An account shall be created by only one guest.
- 2.2 An account shall be linked to multiple reservations.
- 2.3 An account shall store guest preferences and booking history.
- 2.4 each account shall have a unique Account ID

### **3. Hotel**

- 3.1 A hotel shall be part of multiple hotel chains.
- 3.2 Each hotel shall have a unique ID and amenity information.
- 3.3 A hotel shall be managed by at least one hotel admin.

### **4. Room**

- 4.1 Each room shall have a unique Room ID (ex, room number).
- 4.2 Each room shall have a set room capacity.
- 4.3 Room availability shall be updated in real-time.
- 4.4 Each room type shall have a base price (PriceID).

4.5 Prices shall be adjusted based on demand, seasonality, holidays, and hotel occupancy.

4.6 Special rates and deals shall be available to loyalty program members.

## **5. Reservation**

5.1 A reservation can be made for one or more rooms.

5.2 A reservation shall be changed or cancelled only by the guest who made it, or by a previously noted name.

5.3 Each reservation shall have a unique ID (dates, loyalty status, room ID).

## **6. Role**

6.1 A role ID shall be linked to all guests.

6.2 A role shall define levels within the HotelRez system (e.g., access to loyalty perks/statuses reached).

6.3 A role ID shall be linked to all staff.

## **7. Payment Information**

7.1 Payment information for guests shall be securely stored in the guest account, identifiable by a payment ID.

7.2 A payment method shall be required for all guests during their stay.

7.3 Guests shall put a deposit for all reservations.

7.4 Guests shall receive automatic payment confirmations and receipts via email.

7.5. Each payment method shall have a unique Payment ID.

## **8. Loyalty Program**

8.1 A loyalty program shall be linked to a single guest ID account.

8.2 Points shall be earned based on reservation price and guest stays.

8.3 Points shall be redeemed for free stays, upgrades, and guest experiences.

8.4. Each loyalty program shall have a unique Loyalty Program ID.

## **9. Feedback**

9.1 Guests shall leave feedback for each stay.

9.2 Guests shall leave feedback for employees and experiences (housekeeping, services, etc.).

9.3 Feedback shall be linked to the specific reservation, guest, and room.

9.4 Hotel admins shall respond to feedback.

9.5 All feedback shall have a Feedback ID that records all feedback from guests.

9.6. Each feedback entry shall have a unique Feedback ID.

## **10. Hotel Administrator**

10.1 A hotel admin shall be the only one with access to the reservation management system.

10.2 A hotel admin shall generate reports on occupancy, revenue, and guest feedback.

10.3. Each hotel administrator shall have a unique Admin ID.

## **11. Maintenance and Housekeeping**

11.1 HotelRez shall track the maintenance status of rooms and facilities in the hotel.

11.2 Housekeeping schedules shall be managed and updated in real-time.

11.3 Guests shall request housekeeping services through HotelRez.

11.4 Maintenance requests shall be logged by guests and hotel staff, with priority types assigned.

11.5 HotelRez shall provide reports on housekeeping efficiency and maintenance issues on a bi-weekly, monthly, or quarterly basis.

11.6. Each maintenance request shall have a unique Maintenance Request ID.

## **12. Integration**

12.1 HotelRez shall integrate with external booking platforms (e.g., Booking.com, Expedia).

12.2 Data shall be synchronized between HotelRez and other sites in real-time.

## **13. Reports**

13.1 HotelRez shall generate reports on hotel performance.

13.2 Reports on guest satisfaction and feedback shall be available.

13.3 Revenue reports shall be made monthly and annually.

13.4. Each report shall have a unique Report ID.

## **15. Communication**

15.1 Guests shall receive notifications regarding reservation confirmations, changes, and cancellations.

15.2 Hotel staff shall receive notifications about new reservations, cancellations, and feedback.

15.3 Notifications shall be received via email, phone, or through the HotelRez app.

## **16. Guest Experience**

16.1 HotelRez shall collect and use guest feedback on rooms for improvement in services.

16.2 Room preferences from previous stays shall be stored in guest profiles and used for future bookings.

16.3 Guests shall be notified of any unique experiences or services based on their profile.

## **17. Inventory**

17.1 All items in the hotel shall be itemized and stored with an item ID.

17.2 HotelRez shall track inventory for hotel amenities.

17.3 Inventory levels shall be updated in real-time for housekeeping.

17.4 Reports on inventory usage and costs shall be generated monthly.

## **18. User Interface**

18.1 The user interface shall be user-friendly for both guests and hotel staff.

18.2 Accessibility features shall be included to support guests with disabilities and shall be saved with their user ID.

18.3 HotelRez shall support multiple languages.

## **19. Staff Management**

19.1 Hotel staff profiles shall be created with specific roles and permissions and shall be managed with their staff ID.

19.2 Staff schedules shall be managed with IDs in the HotelRez app, including shifts and off days.

19.3 HotelRez shall allow staff to assign tasks to other staff members.

19.4 Performance reviews and ratings for staff shall be recorded and accessed by admin.

19.5 Staff shall access training materials and manuals directly through the system.

19.6 HotelRez shall allow staff to pass on tasks to each other.

19.7. Each staff member shall have a unique Staff ID.

## **20. Transportation Services**

19.1. Transportation services shall be managed with a unique Transportation ID.

19.2. The type of transportation service shall be recorded (e.g., shuttle, car rental).

19.3. The schedule for transportation services shall be managed and updated in real-time.

19.4. Guests shall be able to book transportation services through HotelRez.

19.5. Reports on transportation service usage shall be generated monthly.

## **21. Supplier**

19.1. Each supplier shall have a unique Supplier ID.

19.2. Suppliers shall provide items categorized by type (e.g., linens, toiletries).

19.3. Supplier information shall include company name and contact details.

19.4. The system shall track inventory supplied by each supplier.

19.5. Hotel admins shall be able to view and manage supplier details and item types.

## **22. Offers**

20.1. Each offer shall have a unique Offer ID.

20.2. Offers shall include a description of the offer.

20.3. Offers shall have a start date and end date (timestamp).

20.4. Offers shall be linked to specific rooms or services.

20.5. Guests shall be able to view and apply available offers during the reservation process.



## Non-functional Database Requirements

### 1. Performance

- 1.1. HotelRez can support at least 15,000 users without lag
- 1.2. Searched pages within HotelRez will be displayed to the user within seconds.
- 1.3. The system shall process bookings and cancellations in less than 3 seconds 95% of the time.
- 1.4 HotelRez should be available and working 99.9% of the time.
- 1.4. The system can support real-time updates to availability and pricing information with no lag.
- 1.5. The system shall handle peak loads during holiday seasons without performance degradation.

### 2. Security/privacy

- 2.1 Guest will be able to access, correct, and delete their personal information upon request.
- 2.2 Sensitive data like payment information will be encrypted.
- 2.3 Access to certain admin functions shall be role-based. (Employees will need certain clearances to access sensitive information).
- 2.4 Guest will have personal key cards that will only work for their reservation (limit to one key card per room).

### 3. Scalability

- 3.1 HotelRez is designed to easily scale up to handle increases in user traffic.
- 3.2 The database will handle more data and work better with heavy loads.
- 3.3 HotelRez will automatically adjust cloud resources when needed.
- 3.4 HotelRez will maintain the same performance

#### **4. Capability**

- 4.1 HotelRez will support multiple languages and currencies for international guests.
- 4.2 The system shall integrate with major payment gateways and support various payment methods.
- 4.3 HotelRez will provide an API to link with third-party services like travel agencies and event planners.
- 4.4 HotelRez will provide detailed reports and tools for hotel administrators.
- 4.5 HotelRez will include customizable templates for hotels to create their booking page.

#### **5. Environmental**

- 5.1 HotelRez will optimize servers for energy efficiency.
- 5.2 HotelRez will use green hosting providers that use renewable energy sources.
- 5.3 HotelRez database will be designed to optimize storage, minimizing waste.
- 5.4 the development, deployment, and maintenance of the database will follow sustainable practices.
- 5.5 Data will be securely erased from devices before disposal to protect user data.

#### **6. Coding Standards**

- 6.1. The system shall follow industry-standard coding practices and guidelines.
- 6.2. All code shall be thoroughly documented and include comments for maintainability.
- 6.3. The codebase will be regularly reviewed to ensure adherence to coding standards.
- 6.4. Automated testing will be implemented to ensure code quality and reliability.
- 6.5. Version control systems will be used to manage code changes and updates.

#### **7. Media Storage and Privacy**

- 7.1. Media files (images, videos) shall be stored in a scalable, secure cloud storage service.
- 7.2. The system shall support various media file formats and ensure fast retrieval.
- 7.3. Media storage shall be optimized to reduce redundancy and save space.
- 7.4. Media files shall be backed up regularly to prevent data loss.
- 7.5. Users will be informed about data collection practices and consent obtained where necessary.
- 7.6. Personal data will be anonymized where possible to protect user identities.
- 7.7. Data retention policies will ensure that personal data is not kept longer than necessary.
- 7.8. Users will be notified in the event of a data breach involving their personal information.