

Temporary Tables:

1. **Booking** – booking_id (PK), checkin_date, checkout_date, number_of_guests, room_price, coupon_percent, total_price, payment_status, booking_date, type_of_booking, service_asked, **room_num (FK)**, **user_id (FK)**, **coupon_id (FK)**, **employee_id (FK)**.
2. **Accounts** – payment_id (PK), total_price, paid, due, payment_type, transaction_id, payment_date, **booking_id (FK)**.
3. **Coupon** – coupon_id (PK), coupon_code, coupon_percent, is_active, created_at, **employee_id (FK)**.
4. **Coupon_Usage** – usage_id (PK), used_at, **coupon_id (FK)**, **booking_id (FK)**, **employee_id (FK)**.
5. **Feedback** – feedback_id (PK), feedback, date, **user_id (FK)**.
6. **Housekeeping_History** – housekeeping_id (PK), date, type_of_service, issue_report, cleaner_feedback, **room_num (FK)**, **employee_id (FK)**, **supervisor_employee_id (FK)**, **booking_id (FK)**.
7. **Inventory** – serial_id (PK), item_name, quantity, issued, returned, used, date, ordered, order_price, **employee_id (FK)**.
8. **Employee** – employee_id (PK), name, role, phone, nid, hire_date, status.
9. **Management** – management_id (PK), email, password, last_login, **employee_id (FK)**.
10. **Reservation** – reservation_id (PK), checkin_date, checkout_date, number_of_guests, room_price, booking_date, type_of_booking, **used_id (FK)**, **room_num (FK)**.
11. **Restaurant_History** – order_id (PK), quantity, food_price, order_date, **booking_id (FK)**, **food_id (FK)**, **employee_id (FK)**.
12. **Restaurant** – food_id (PK), item_name, item_price, food_type, description, availability.
13. **Room_Item** – item_id (PK), item_name, status, last_checked, issue_report, **room_num (FK)**, **employee_id (FK)**.
14. **Room** – room_num (PK), floor, capacity, type, description, room_price, discount, room_status, housekeeping_status.
15. **Salary** – salary_id (PK), amount, payment_date, status, **employee_id (FK)**, **paid_by_employee_id (FK)**.
16. **Salary_History** – history_id (PK), action_type, details, bonus, total_Salary, timestamp, **employee_id (FK)**, **recorded_by_employee_id (FK)**, **salary_id (FK)**.
17. **User** – user_id (PK), name, email, password, phone, address, nid.

List of Modules

1. Admin Module:

2. Auth Module:

3. Billing Module:

4. Booking Module:

- i. *Booking* – booking_id (PK), checkin_date, checkout_date, number_of_guests, room_price, coupon_percent, total_price, payment_status, booking_date, type_of_booking, service_asked, room_num (FK), user_id (FK), coupon_id (FK), employee_id (FK).
- ii. *Accounts* – payment_id (PK), total_price, paid, due, payment_type, transaction_id, payment_date, booking_id (FK).

5. Confirmation Module:

6. Coupon Module:

- i. *Coupon* – coupon_id (PK), coupon_code, coupon_percent, is_active, created_at, employee_id (FK).
- ii. *Coupon_Usage* – usage_id (PK), used_at, coupon_id (FK), booking_id (FK), employee_id (FK).

7. Feedback Module:

- i. *Feedback* – feedback_id (PK), feedback, date, user_id (FK).

8. Housekeeping Module:

- i. *Housekeeping_History* – housekeeping_id (PK), date, type_of_service, issue_report, cleaner_feedback, room_num (FK), employee_id (FK), supervisor_employee_id (FK), booking_id (FK).

9. Inventory Module:

- i. *Inventory* – serial_id (PK), item_name, quantity, issued, returned, used, date, ordered, order_price, employee_id (FK).

10. Management Module:

- i. *Employee* – employee_id (PK), name, role, phone, nid, hire_date, status.
- ii. *Management* – management_id (PK), email, password, last_login, employee_id (FK).

11. Reservation Module:

- i. *Reservation* – reservation_id (PK), checkin_date, checkout_date, number_of_guests, room_price, booking_date, type_of_booking, used_id (FK), room_num (FK).

12. Restaurant Module:

- i. *Restaurant_History* – order_id (PK), quantity, food_price, order_date, booking_id (FK), food_id (FK), employee_id (FK).
- ii. *Restaurant* – food_id (PK), item_name, item_price, food_type, description, availability.

13. Room Module:

- i. *Room_Item* – item_id (PK), item_name, status, last_checked, issue_report, room_num (FK), employee_id (FK).

- ii. **Room** – room_num (PK), floor, capacity, type, description, room_price, discount, room_status, housekeeping_status.

14.Salary Module:

- i. **Salary** – salary_id (PK), amount, payment_date, status, **employee_id (FK)**, **paid_by_employee_id (FK)**.
- ii. **Salary_History** – history_id (PK), action_type, details, bonus, total_Salary, timestamp, **employee_id (FK)**, **recorded_by_employee_id (FK)**, **salary_id (FK)**.

15.User Module:

- i. **User** – user_id (PK), name, email, password, phone, address, nid.

List of Module-wise Functional Requirements

Auth Module

The Auth Module handles authentication and authorization for staff and customers, supporting role-based access control (RBAC) as required for the admin to grant page access.

- **Staff Authentication:** Staff log in using email and password from the Management table. The system uses secure password hashing (e.g., bcrypt) and provides password reset via email. Example: A manager logs in to access the admin dashboard.
- **Customer Authentication:** Customers log in using email and password from the User table, with similar security measures. Example: A guest logs in to view bookings.
- **Session Management:** The system maintains user sessions using JWT tokens, allowing logout to end sessions. Example: A staff member logs out after their shift.
- **Role-Based Access Control (RBAC):** Access is restricted based on roles in the Employee table (e.g., manager, receptionist). Example: Only managers access the Admin Module.
- **Permission Management:** The admin assigns permissions to roles for accessing modules or pages, such as the restaurant page. Example: The admin grants 'view_restaurant' permission to staff.

Admin Module

The Admin Module provides the admin with master control over the system, including user management and reporting.

- **Dashboard:** Displays real-time metrics like occupancy rates, daily check-ins/check-outs, and revenue summaries, aggregated from Booking and Accounts tables. Example: Shows 80% occupancy today.
- **User Management:** Allows CRUD operations on staff (Employee, Management tables) and customer (User table) accounts. Example: The admin adds a new receptionist.
- **Role and Permission Management:** Defines roles and assigns permissions, possibly through a dynamic interface. Example: Grants 'manage_bookings' to managers.
- **Reporting:** Generates reports on bookings, revenue, and staff performance using queries across multiple tables. Example: A monthly revenue report from Accounts.
- **System Settings:** Configures settings like tax rates or hotel policies, if stored in the database. Example: Sets a 5% service tax.

Billing Module

The Billing Module manages payments for bookings, integrating with the Accounts table.

- **Record Payment:** Logs payments with details like amount, payment type (cash, card), and transaction ID. Example: Records a \$100 card payment.
- **View Payment History:** Displays all payments for a booking, showing total paid and due amounts. Example: Shows \$200 paid of \$300 total.
- **Calculate Due Amount:** Computes dues as total_price minus paid amounts. Example: \$100 due after \$200 payment.

- **Support Multiple Payment Types:** Handles various payment methods. Example: Accepts online payments with transaction IDs.
- **Generate Invoices/Receipts:** Creates printable invoices or receipts. Example: Generates a receipt for a \$200 payment.
- **Update Booking Payment Status:** Updates payment_status in the Booking table (e.g., 'paid' if fully paid). Example: Sets status to 'paid' after final payment.

Booking Module

The Booking Module handles room bookings, central to guest management, using the Booking table.

- **Create Booking:** Allows customers or staff to create bookings by selecting rooms, dates, guests, and services, checking availability. Example: Books room 101 for 3 nights.
- **Check Room Availability:** Queries the Booking table to find unbooked rooms for specified dates. Example: Shows room 101 available for May 10-12.
- **Apply Coupons:** Validates coupons from the Coupon table and applies discounts. Example: Applies a 10% discount coupon.
- **Calculate Total Price:** Computes cost as $\text{room_price} * \text{nights} * (1 - \text{coupon_percent}/100)$. Example: \$300 for 3 nights at \$100/night with 10% discount.
- **Record Booking Details:** Stores booking data, including user_id, room_num, and service_asked. Example: Records breakfast service request.
- **Update Booking:** Modifies bookings, rechecking availability. Example: Changes check-in date to May 11.
- **Cancel Booking:** Cancels bookings, possibly with fees. Example: Cancels a booking with a \$50 fee.
- **View Booking History:** Displays past and upcoming bookings. Example: Shows a guest's bookings for 2025.
- **Manage Booking Status:** Handles statuses via type_of_booking (e.g., confirmed, pending). Example: Sets booking to 'confirmed' after payment.
- **Request Additional Services:** Records extra services in service_asked. Example: Adds airport pickup request.

Confirmation Module

The Confirmation Module ensures guests receive booking confirmations.

- **Generate Confirmation:** Creates unique confirmation codes for bookings or reservations. Example: Generates code HM12345.
- **Send Confirmation:** Sends emails or SMS with booking details. Example: Emails confirmation for a May 10 booking.
- **View Confirmation:** Allows customers to view confirmation details. Example: Displays code and dates on the website.

Coupon Module

The Coupon Module manages discount coupons, supporting the Coupon and Coupon_Usage tables.

- **Create Coupon:** Staff create coupons with codes, percentages, and status. Example: Creates a 20% off coupon.
- **Update Coupon:** Modifies or deactivates coupons. Example: Deactivates an expired coupon.
- **Delete Coupon:** Removes coupons. Example: Deletes an unused coupon.

- **List Coupons:** Displays all coupons. Example: Shows active and inactive coupons.

- **Apply Coupon to Booking:** Validates and applies coupons. Example: Applies a 15% discount during booking.
- **Record Coupon Usage:** Logs usage in Coupon_Usage. Example: Records coupon use for booking ID 100.
- **View Coupon Usage:** Reports coupon usage. Example: Shows 50 uses of a coupon.

Feedback Module

The Feedback Module collects customer feedback using the Feedback table.

- **Submit Feedback:** Customers submit text feedback. Example: A guest submits a review of their stay.
- **View Feedback:** Staff view feedback, filtered by date or user. Example: Shows all feedback from May 2025.

Housekeeping Module

The Housekeeping Module tracks room cleaning and maintenance, using the Housekeeping_History table.

- **Record Housekeeping Service:** Logs service details like type (cleaning, maintenance) and issues. Example: Records room 101 cleaned on May 10.
- **View Housekeeping History:** Displays service history. Example: Shows cleaning records for room 101.
- **Report Issues:** Records issues found. Example: Notes a broken lamp in room 101.
- **Update Room Housekeeping Status:** Updates housekeeping_status in the Room table. Example: Sets room 101 to 'clean'.

Inventory Module

The Inventory Module manages hotel supplies, using the Inventory table.

- **Add Inventory Item:** Adds items with quantities. Example: Adds 100 towels.
- **Update Inventory:** Modifies quantities or details. Example: Updates towel quantity to 80.
- **Issue Items:** Records issuance to departments. Example: Issues 20 towels to housekeeping.
- **Return Items:** Logs returned items. Example: Records 10 towels returned.
- **Track Usage:** Calculates used items (issued - returned). Example: Shows 10 towels used.
- **Order Items:** Records new orders. Example: Orders 50 towels at \$5 each.
- **View Inventory Status:** Displays current levels. Example: Shows 80 towels in stock.

Management Module

The Management Module handles staff management, using the Employee and Management tables.

- **Manage Employees:** Performs CRUD operations on employee records. Example: Adds a new housekeeper.
- **Assign Login Credentials:** Creates login accounts in the Management table. Example: Sets up a login for a manager.
- **View Employee List:** Displays employee details. Example: Shows all active staff.

Reservation Module

The Reservation Module manages preliminary room reservations, using the Reservation table. Reservations likely differ from bookings by not requiring immediate payment.

- **Create Reservation:** Allows reservations with room and date selection. Example: Reserves room 102 for May 15-17.
- **Check Availability:** Verifies room availability. Example: Confirms room 102 is free.
- **Confirm Reservation:** Sends confirmation. Example: Emails reservation details.
- **Convert to Booking:** Converts reservations to bookings upon check-in or payment. Example: Converts reservation to booking ID 101.
- **Cancel Reservation:** Cancels reservations. Example: Cancels a May 15 reservation.
- **View Reservations:** Displays upcoming reservations. Example: Shows all May reservations.

Restaurant Module

The Restaurant Module manages the new restaurant, using the Restaurant and Restaurant_History tables.

- **Manage Menu:** Performs CRUD operations on menu items. Example: Adds a new pasta dish.
- **Place Order:** Allows orders linked to bookings. Example: Orders 2 pizzas for booking ID 100.
- **Record Order History:** Stores order details. Example: Records pizza order on May 10.
- **Calculate Order Total:** Computes order costs. Example: Calculates \$20 for 2 pizzas.
- **View Order History:** Displays past orders. Example: Shows all orders for booking ID 100.
- **Integrate with Billing:** Optionally adds charges to guest bills. Example: Adds \$20 to booking ID 100's bill.

Room Module

The Room Module manages rooms and their items, using the Room and Room_Item tables.

- **Manage Rooms:** Maintains room records with type, price, and status. Example: Adds a new deluxe room.
- **Manage Room Items:** Tracks items like TVs, with status and checks. Example: Records TV in room 101.
- **Report Issues:** Logs item issues. Example: Notes a faulty TV.
- **Update Room Status:** Sets status (e.g., available). Example: Sets room 101 to 'occupied'.
- **Update Housekeeping Status:** Sets housekeeping status. Example: Sets room 101 to 'clean'.
- **View Room List:** Displays room statuses. Example: Shows all available rooms.

Salary Module

The Salary Module manages staff salaries, using the Salary and Salary_History tables.

- **Record Salary Payments:** Logs payments. Example: Records \$1000 payment to employee ID 1.
- **View Salary History:** Displays payment history. Example: Shows all payments to employee ID 1.
- **Manage Bonuses and Adjustments:** Records bonuses. Example: Adds a \$200 bonus.
- **Audit Trail:** Maintains action records. Example: Logs a salary adjustment.

User Module

The User Module manages customer accounts, using the User table.

- **Register User:** Allows account creation. Example: A guest creates an account.
- **Login:** Authenticates customers. Example: Guest logs in to book a room.
- **Update Profile:** Enables profile updates. Example: Updates guest's phone number.

- **View Booking History:** Displays bookings. Example: Shows the guest's May booking.
- **Manage Preferences:** Sets preferences, if applicable. Example: Opts into newsletters.
- **Delete Account:** Allows account deletion. Example: Guest deletes their account.