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University College of Science and Humanities-Jubail
Department of Computer Science

CSC236 Project Milestone 3 Report

Hotel Management System

Imam Abdulrahman bin Faisal University

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1. Introduction

The Hotel Management System (HMS) is a Java-based desktop application designed to simplify and automate daily operations of a hotel. Built with Java Swing for the user interface and MySQL for data storage, the system supports multiple roles (Admin, Receptionist, and Accountant) and offers a user-friendly interface for managing guests, reservations, rooms, billing, and services.

The project is developed following the Model-View-Controller (MVC) and Data Access Object (DAO) architectural patterns, ensuring separation of concerns and maintainability.

2. Objectives

- To streamline hotel operations through automation
- To provide role-based access and management functionalities
- To allow seamless management of reservations, rooms, services, and invoices
- To enhance user experience with a modern, themed graphical user interface

3. Tools and Technologies

Technology	Description
Java	Core programming language (JDK 17+)
Swing	GUI components and layout
MySQL	Relational database system
JDBC	Java Database Connectivity API
NetBeans	IDE used for development

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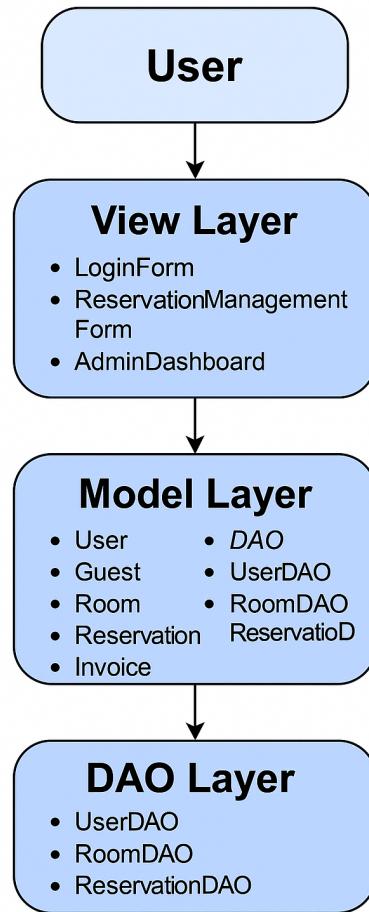
Ant	Build system for managing the project
Git	(Optional if used) Version control

4. System Architecture

The system follows a modular design using the **Model-View-Controller (MVC)** and **DAO (Data Access Object)** patterns.

- **Model Layer:** Contains core Java classes (e.g., User, Guest, Room, Reservation, Invoice, Service, Feedback) representing real-world entities.
- **View Layer:** Swing-based UI components like LoginForm, ReservationManagementForm, and AdminDashboard that interact with users.
- **Controller Layer (DAO):** Classes such as UserDAO, RoomDAO, ReservationDAO that handle business logic and database operations.

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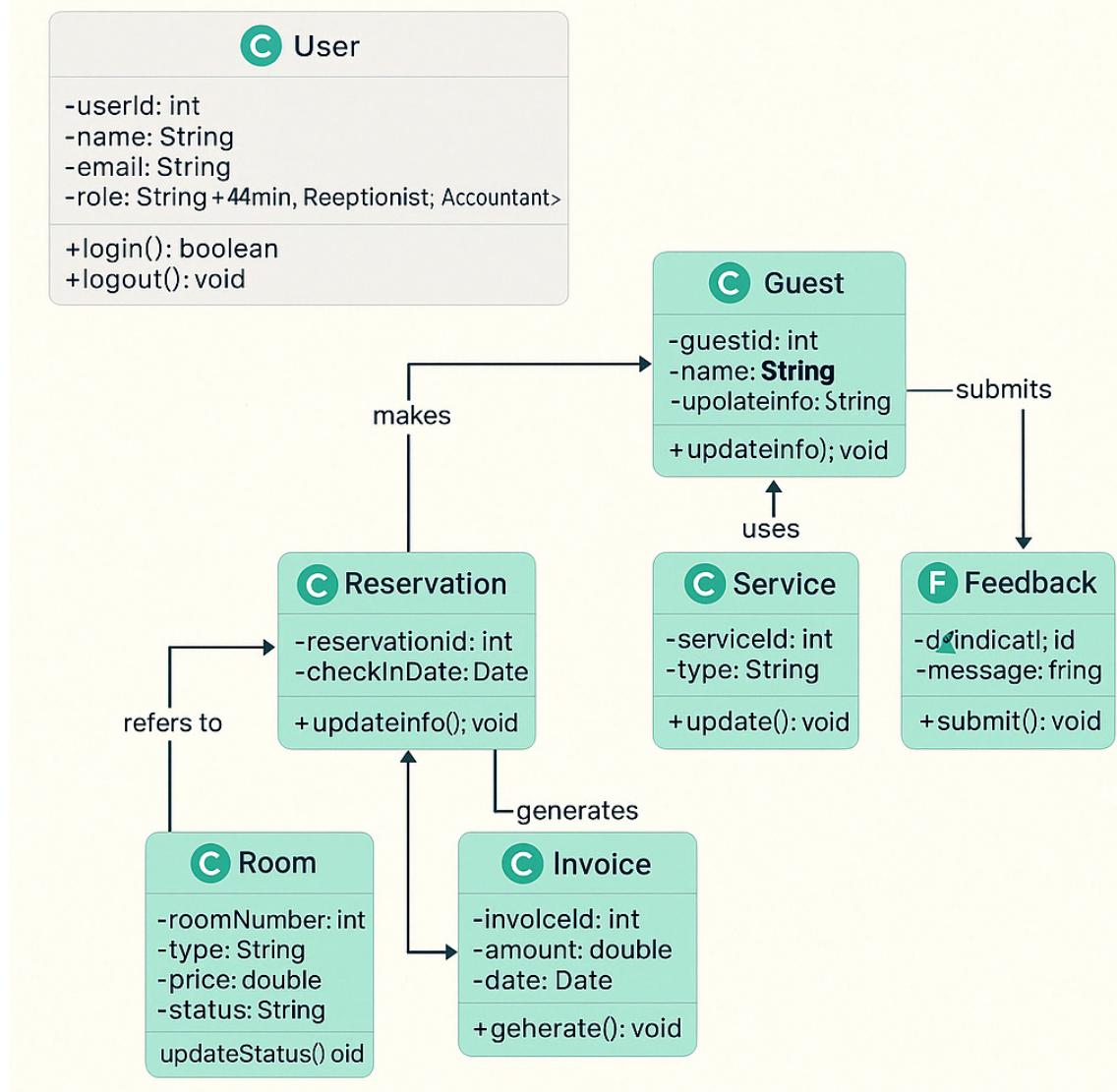
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5. Class Hierarchy (UML)

UML Class Diagram:

This diagram outlines the main classes of the Hotel Management System and their relationships. It highlights how users, guests, reservations, rooms, invoices, services, and feedback interact using object-oriented principles like inheritance and encapsulation.

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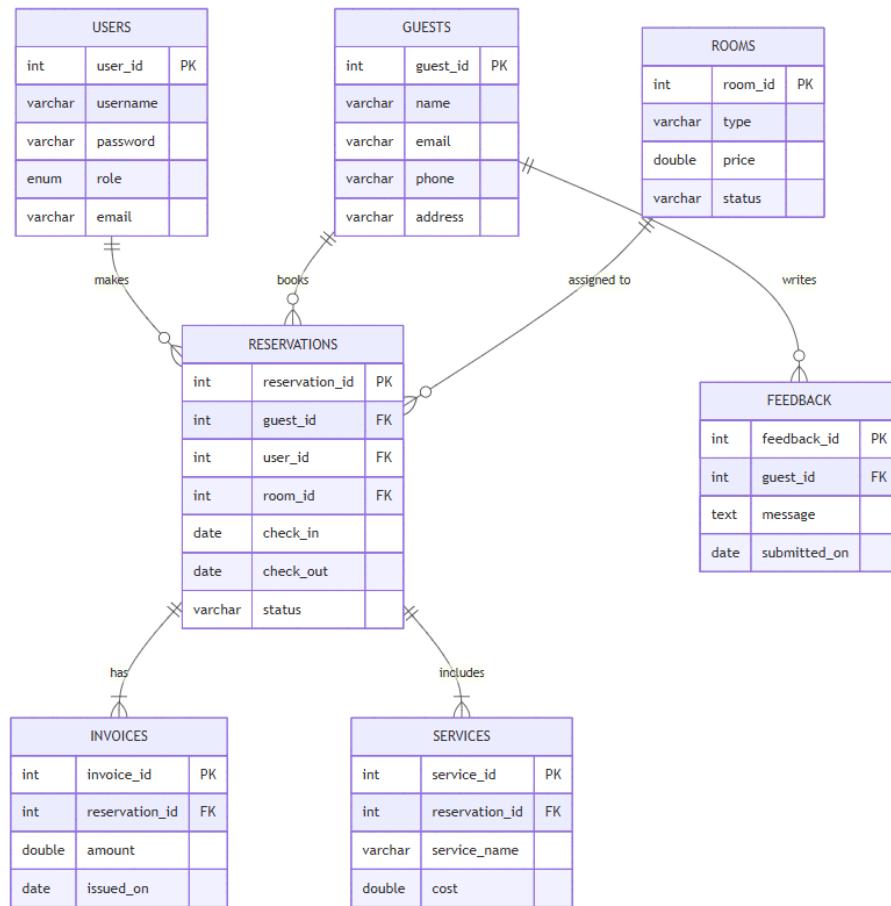


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6. Database Design

Table Name	Description
users	Stores system users (admin, receptionist, accountant)
guests	Guest information (name, contact, etc.)
rooms	Room details (number, type, status)
reservations	Stores reservation info (guest, room, dates)
services	Additional services used by guests
invoices	Invoice and billing data
feedback	Guest feedback and ratings

Entity Relationship Diagram



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Database Tables Description

Users Table

Attribute	Description	Data Type	Allows Null
user_id	Unique identifier for the user	INT	NO
username	Name of the entity	VARCHAR(50)	NO
password	User's password (hashed)	VARCHAR(255)	NO
role	Role assigned to the user	ENUM	YES
email	Email address	VARCHAR(100)	YES
PRIMARY	General purpose column	KEY	YES
UNIQUE	General purpose column	KEY	YES

Guests Table

Attribute	Description	Data Type	Allows Null
guest_id	Unique identifier for the guest	INT	NO
name	Name of the entity	VARCHAR(100)	YES
contact_number	Contact number	VARCHAR(20)	YES
checkin_date	Date value	DATE	YES
checkout_date	Date value	DATE	YES
PRIMARY	General purpose column	KEY	YES

Invoices Table

Attribute	Description	Data Type	Allows Null

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invoice_id	Unique identifier for the invoice	INT	NO
reservation_id	Unique identifier for the reservation	INT	NO
total_amount	Monetary value	DECIMAL(10,2)	NO
payment_status	Current status	ENUM	YES
payment_date	Date value	DATE	YES
PRIMARY	General purpose column	KEY	YES

Reservations Table

Attribute	Description	Data Type	Allows Null
reservation_id	Unique identifier for the reservation	INT	NO
guest_id	Unique identifier for the guest	INT	NO
user_id	Unique identifier for the user	INT	YES
room_id	Unique identifier for the room	INT	YES
checkin_date	Date value	DATE	NO
checkout_date	Date value	DATE	NO
status	Current status	ENUM	YES
PRIMARY	General purpose column	KEY	YES

Rooms Table

Attribute	Description	Data Type	Allows Null
room_id	Unique identifier for the room	INT	NO
type	Type or category	VARCHAR(50)	NO

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price	Monetary value	DECIMAL(10,2)	NO
availability	General purpose column	VARCHAR(10)	YES
view	General purpose column	VARCHAR(100)	YES
PRIMARY	General purpose column	KEY	YES

Services Table

Attribute	Description	Data Type	Allows Null
service_id	Unique identifier for the service	INT	NO
name	Name of the entity	VARCHAR(100)	NO
description	Textual description or feedback	VARCHAR(255)	YES
price	Monetary value	DECIMAL(10,2)	NO
available_hours	General purpose column	VARCHAR(50)	YES
PRIMARY	General purpose column	KEY	YES

Feedback Table

Attribute	Description	Data Type	Allows Null
feedback_id	Unique identifier	INT	NO
guest_id	Unique identifier for the guest	INT	YES
category	General purpose column	VARCHAR(255)	YES
date	Date value	DATE	YES
message	General purpose column	TEXT	YES

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PRIMARY	General purpose column	KEY	YES
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7. Module Descriptions

Login & Signup Module:

- Authenticates users based on roles.
- Redirects to dashboards based on role.

Room Management Module:

- Add, update, or delete room data.

Guest Management Module:

- Create and manage guest profiles.

Reservation Module:

- Book rooms using room and guest combo boxes.

Invoice & Billing Module:

- Automatically generates invoices.

Service Management Module:

- Tracks hotel services used by guests.

Feedback Module:

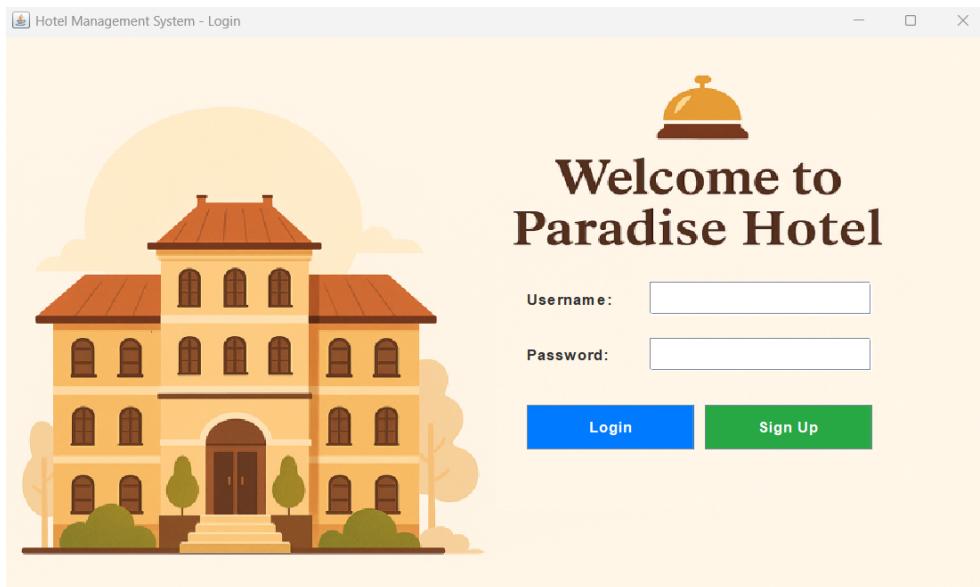
- Allows feedback collection from guests.

8. Screenshots

Login Form

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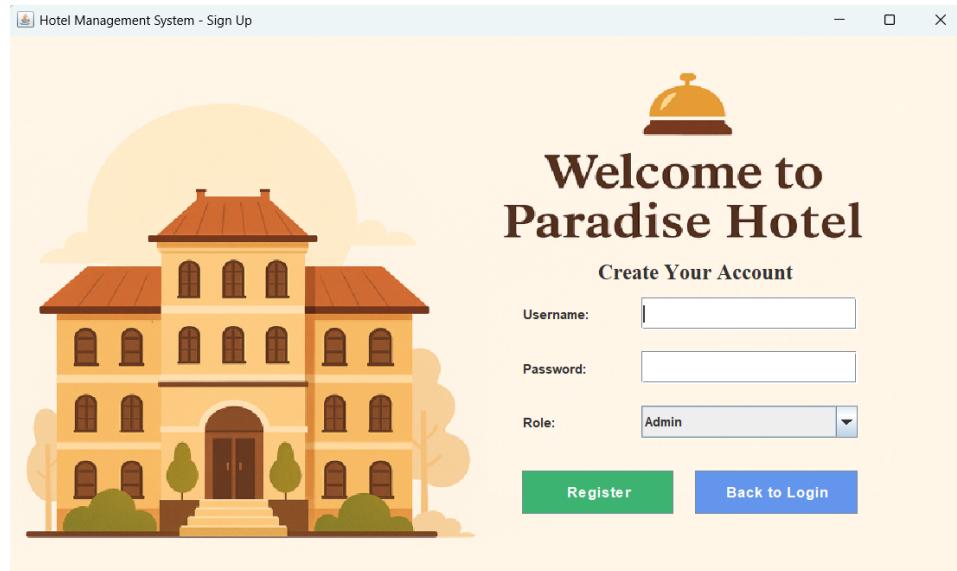
This is the initial login screen where users (Admin, Receptionist, Accountant) enter their credentials. Role-based redirection is implemented after successful login.



Signup Form

The Signup form enables new users to register into the system. It captures username, password, and assigns a role.

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Admin Dashboard

The Admin Dashboard provides access to manage users, rooms, reservations, and view reports. It serves as the central control panel for administrative tasks.



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Room Management Form

This form allows the admin or receptionist to add, update, or delete room details including room type, price, and availability status.



Room ID	Type	Price	Availability	View
101	Deluxe	199.99	Yes	Sea View
102	Standard	149.50	Yes	City View
103	Suite	249.99	No	Garden View
104	Private	179.00	Yes	Mountain View
105	Economy	99.99	No	Street View

Service Management Form

This module allows the hotel staff to track services availed by guests (e.g., laundry, meals) and their respective charges.

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Hotel Management System - Manage Services

Service Management

Service ID	Name	Description	Price	Available Hours
401	Room Service	In-room dinin...	15.99	24/7
402	Laundry	Clothes wash...	10.50	09:00 - 18:00
403	Spa	Relaxation an...	50.00	10:00 - 20:00
404	Gym Access	Full access t...	20.00	06:00 - 22:00
405	Airport Shuttle	Transport to/...	30.00	05:00 - 23:00

Service ID:
 Name:
 Description:
 Price:
 Available Hours:

Add Service Update Service Delete Service

Refresh Back

Hotel Management System - Receptionist Dashboard

Receptionist Dashboard

Welcome, receptionist

Manage Guests RECEPTION

Manage Reservations RECEPTION

Logout RECEPTION

Reservation Form

Reservations can be created by selecting a guest, available room, and desired dates.
 Includes validation and auto-filling features.

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Hotel Management System - Manage Reservations

Reservation Management

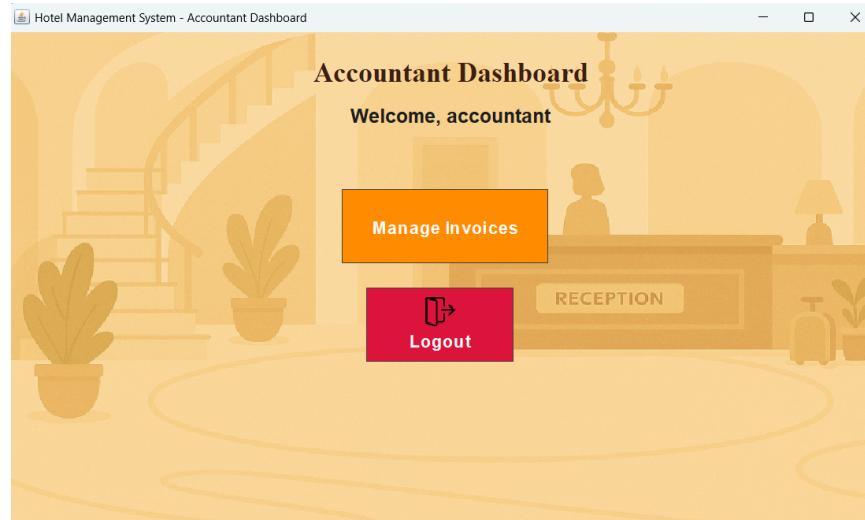
Reservatio...	Guest ID	User ID	Room ID	Check-In	Check-Out	Status
201	1	1	101	2025-05-15	2025-05-16	Confirmed
202	2	2	102	2025-05-15	2025-05-16	Confirmed
203	3	1	103	2025-05-15	2025-05-16	Cancelled
204	4	2	104	2025-05-15	2025-05-16	Cancelled
205	5	1	105	2025-05-15	2025-05-16	Confirmed

Reservation ID:
 Guest ID:
 Reserved By: Receptionist
 Room ID:
 Check-In Date: YYYY-MM-DD
 Check-Out Date: YYYY-MM-DD
 Status: Confirmed

Receptionist Dashboard

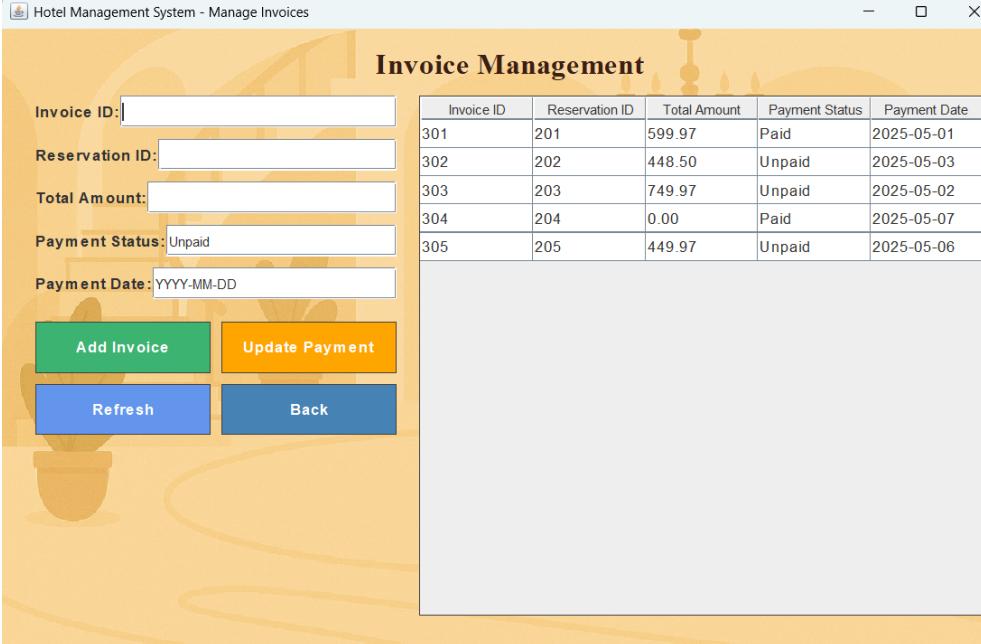
This dashboard is tailored for receptionists to handle guest check-ins/check-outs, create new reservations, view room status, and manage bookings efficiently.

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Invoice Generation Form

Automatically generates an invoice after successful booking. Displays reservation details, amount, and payment status for final billing


 A screenshot of the Invoice Management form. On the left, there are five input fields: "Invoice ID:", "Reservation ID:", "Total Amount:", "Payment Status:" (set to "Unpaid"), and "Payment Date:" (set to "YYYY-MM-DD"). Below these are four buttons: "Add Invoice" (green), "Update Payment" (orange), "Refresh" (blue), and "Back" (blue). On the right is a table titled "Invoice Management" showing five rows of data:

Invoice ID	Reservation ID	Total Amount	Payment Status	Payment Date
301	201	599.97	Paid	2025-05-01
302	202	448.50	Unpaid	2025-05-03
303	203	749.97	Unpaid	2025-05-02
304	204	0.00	Paid	2025-05-07
305	205	449.97	Unpaid	2025-05-06

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Feedback Form

Guests can submit feedback including rating and comments. This helps the hotel administration improve service quality.

Hotel Management System - Manage Feedback

Feedback ID	Guest ID	Category	Date	Message
101	5	Room Service	2025-04-01	The room service ...
102	1	Cleanliness	2025-04-03	Bathroom was not ...
103	3	Food Quality	2025-04-05	Loved the breakfast.
104	1	Reception	2025-04-07	Receptionist was n...
105	4	Facilities	2025-04-10	Gym and pool were...

Feedback ID:

Guest ID:

Category:

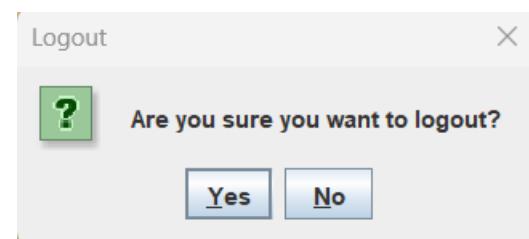
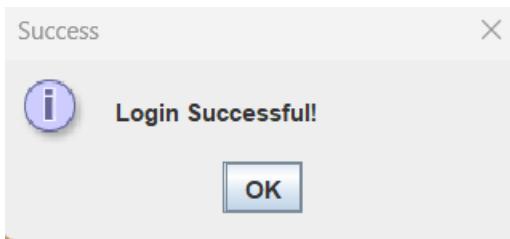
Date:

Message:

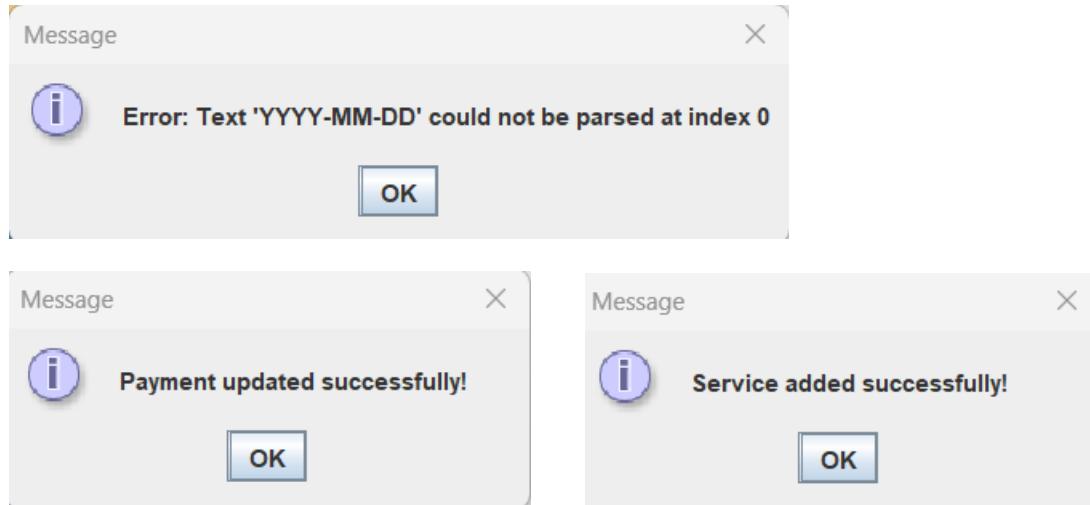
Update Feedback Delete Feedback

Refresh Back

Validation Messages



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9. Testing & Validation

Testing was conducted for all modules with the following focus:

- Unit Testing:** DAO methods were tested for CRUD operations.
- GUI Testing:** Each form was tested for input validation, flow, and layout.
- Integration Testing:** Complete workflows like reservation-to-invoice generation were tested.

Test Cases:

Test Case	Description	Expected Result	Status
TC01	Login with valid credentials	Redirect to dashboard	Pass
TC02	Book a room with valid guest and room	Reservation added to database	Pass
TC03	Try booking with empty fields	Show error message	Pass

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10. Conclusion

The Hotel Management System (HMS) has been successfully developed to automate and streamline key hotel operations such as guest management, room reservations, billing, and service tracking. By leveraging Java for the user interface and MySQL for the backend, and following the MVC and DAO design patterns, the system ensures clarity, modularity, and maintainability.

The application provides role-based dashboards for Admin, Receptionist, and Accountant, each tailored to their specific responsibilities. All core functionalities were implemented with user-friendly interfaces, and testing confirmed that the system performs as expected under various conditions.