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Project Report on “HOTEL MANAGEMENT SYSTEM”

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2025-2026

BMS COLLEGE OF ENGINEERING
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING



CERTIFICATE

This is to certify that the OOPS with JAVA project titled "**Hotel Management System**" has been carried out by Nikhil M(1BM24CS186), Nikhil N (1BM24CS187), Nikhil N Raikar(1BM24CS188), Pavan G(1BM24CS200), Mahesh T R (1BM24CS158) during the academic year 2025-2026.

Signature of the guide

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BMS COLLEGE OF ENGINEERING
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DECLARATION

We, Nikhil M(1BM24CS186), Nikhil N (1BM24CS187), Nikhil N Raikar(1BM24CS188), Pavan G(1BM24CS200), Mahesh T R (1BM24CS158) ,students of 3rd Semester, B.E, Department of Computer Science and Engineering, BMS College of Engineering, Bangalore, hereby declare that, this project work entitled "Hotel Management System" has been carried out by us under the guidance of Monisha H M, Assistant Professor, Department of CSE, BMS College of Engineering, Bangalore during the academic semester Sep-Dec 2025. We also declare that to the best of our knowledge and belief, the project reported here is not from part of any other report by any other students.

Signature of the Candidates

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PROJECT TITLE

Hotel Management System using Java (Swing GUI)

INTRODUCTION

Hotel management involves handling multiple activities such as room allocation, customer registration, reservation management, billing, food services, and report generation. When these tasks are carried out manually, they often result in errors, delays, data inconsistency, and increased workload for hotel staff. Managing customer records, tracking room availability, and calculating bills manually is time-consuming and inefficient, especially as the number of customers increases.

To overcome these limitations, a computerized **Hotel Management System** is essential. This project is a **Java Swing-based desktop application** designed to automate and streamline hotel operations. The system provides a user-friendly graphical interface that allows hotel administrators to manage rooms, customers, food orders, and billing in an organized and efficient manner.

The application maintains detailed information about rooms, including room number, type, price per day, and availability status. It allows customers to reserve rooms, check in, and check out while automatically updating room status. The system also supports food ordering for checked-in customers and calculates food bills dynamically.

In addition to operational management, the system generates accurate bills by calculating room charges based on the stay duration, adding food expenses, applying tax, and considering discounts. It also provides invoice generation and report generation features, helping management analyze hotel performance such as total bookings, revenue, and occupancy rate.

Overall, this project demonstrates the practical use of **Object-Oriented Programming concepts in Java**, including classes, objects, encapsulation, enums, collections, exception handling, and GUI programming using Swing. The system improves efficiency, reduces manual errors, and provides a reliable solution for modern hotel management.

OBJECTIVE OF THE PROJECT

The objective of this project is to design and develop a Hotel Management System using Java that automates hotel operations such as room reservation, customer check-in and check-out, food ordering, billing, and report generation. The system aims to reduce manual effort, improve accuracy in billing, and provide a user-friendly graphical interface for hotel administrators.

This project demonstrates the practical application of Object-Oriented Programming System (OOPS) concepts and Java Swing for GUI development.

Modules of the Project:

1. Login & Authentication Module
2. Room Management Module
3. Customer Management Module
4. Food Ordering Module
5. Billing & Invoice Module
6. Report Generation Module
7. GUI & Notification Module

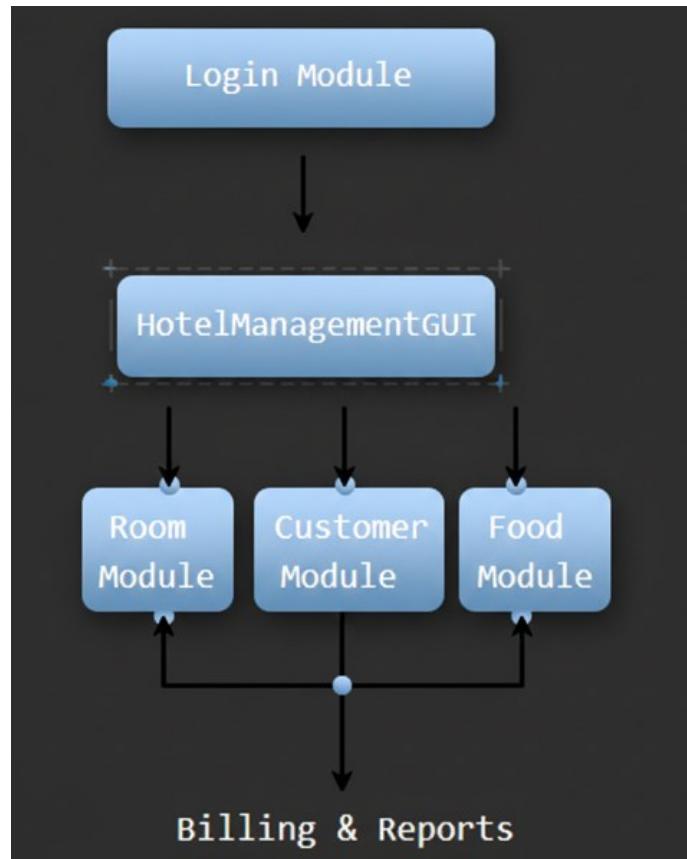
DESIGN MODULES

The application is designed using a modular and object-oriented approach, where each class represents a real-world entity.

Design Modules:

- Hotel Management GUI – Main GUI and controller
- Customer – Customer details and billing logic
- Room – Room details and room status management
- Food – Food menu and pricing (used in food ordering)

Block Diagram:



DETAILED DESCRIPTION OF MODULES

1. Login & Authentication Module

This module ensures that only authorized users can access the system. A login dialog validates username and password before allowing access to the main application.

Java Techniques Used:

- Swing components (JPanel, JTextField, JPasswordField, JOptionPane)
- Conditional statement

2. Room Management Module

This module manages hotel rooms, their types, prices, and availability status. It supports operations such as reserving rooms, checking in, checking out, setting rooms for maintenance, and marking rooms as available or dirty.

Key Features:

- Room number, type, and price per day
- Room status management (AVAILABLE, RESERVED, OCCUPIED, DIRTY, MAINTENANCE)

Java Techniques Used:

- Classes and Objects
- Enum (Status)
- Encapsulation

3. Customer Management Module

This module handles customer details such as name, phone number, email, room number, check-in and check-out dates. It also calculates stay duration and manages customer status.

Key Features:

- Reservation, check-in, and check-out tracking
- Stay duration calculation using dates
- Food order tracking

Java Techniques Used:

- Enum (Status)
- Date and Time API (LocalDate, ChronoUnit)
- Collections (ArrayList)
- Method overriding (toString())

4. Food Ordering Module

This module manages food items available in the hotel along with their categories and prices. Customers can order multiple food items with quantity, and the total food bill is calculated automatically.

Java Techniques Used:

- Classes and Objects
- Enum for food categories
- Collections (ArrayList)

5. Billing & Invoice Module

This module calculates room charges, food charges, tax, discount, and grand total. It also generates a detailed invoice and saves it to a file.

Key Calculations:

- Room Bill = Stay Days \times Price per Day
- Food Bill = Sum of food prices
- Tax calculation
- Discount handling

Java Techniques Used:

- File handling (FileWriter)
- Exception handling (try-catch)
- Arithmetic operations

6. Report Generation Module

This module generates hotel reports such as total bookings, room revenue, food revenue, total revenue, and occupancy rate.

Java Techniques Used:

- Java Streams API
- Collections
- Dialog boxes (JOptionPane)

7. GUI & Notification Module

This is the main module that integrates all components and provides a graphical user interface. It displays customer bookings in a table and shows notifications for upcoming check-outs.

Java Techniques Used:

- Java Swing (JFrame, JTable, JButton, JTextField)
- Event handling (ActionListeners)
- MVC-style separation

SCREENSHOTS (RESULT)



A screenshot of the Hotel Management System interface. At the top, there is a header bar with input fields for Name, Phone, Email, Room Number, Check-in (yyyy-MM-dd), Pick, Check-out (yyyy-MM-dd), Pick, Discount (\$), and Search Customer. Below the header is a menu bar with links: Reserve Room, Cancel Reservation, Check-in, Check-out, Order Food, View Rooms, Available Rooms, Booking History, Generate Bill, Reports, Search, Set Maintenance, Mark Available, Mark Clean, Customer, Phone, Email, Room, Status, Check-in, Check-out, Room Bill, Food Bill, Tax, Discount, and Grand Total. The main area is a large, empty white space. At the bottom, there is a notifications section.

Hotel Management System

| Name: suresh | Phone: 9110258842 | Email: nik@gmail.com | Room Number: 202 | Check-in (yyyy-MM-dd): 2025-12-28 | Pick | Check-out (yyyy-MM-dd): 2025-12-29 | Pick | Discount (\$): | Search Customer: | | | | |
|-----------------|-------------------|----------------------|------------------|-----------------------------------|------------|------------------------------------|------|-----------------|------------------|----------------|-----------------|-------------|--|
| RESERVE ROOM | | CANCEL RESERVATION | | CHECK-IN | | CHECK-OUT | | ORDER FOOD | | VIEW ROOMS | AVAILABLE ROOMS | | |
| BOOKING HISTORY | | GENERATE BILL | | REPORTS | | SEARCH | | SET MAINTENANCE | | MARK AVAILABLE | | MARK CLEAN | |
| Customer | Phone | Email | Room | Status | Check-in | Check-out | | Room Bill | Food Bill | Tax | Discount | Grand Total | |
| nik | 9110258843 | nikhi@gmail.com | 201 | RESERVED | 2025-12-28 | 2025-12-29 | 80.0 | 0.0 | 0.0 | 0.0 | 80.0 | | |
| suresh | 9110258842 | nik@gmail.com | 202 | CHECKED IN | 2025-12-28 | 2025-12-28 | 80.0 | 0.0 | 0.0 | 0.0 | 80.0 | | |

Message

All Rooms:
 Room 101 (Single) - \$50.0/day | AVAILABLE
 Room 102 (Single) - \$50.0/day | AVAILABLE
 Room 201 (Double) - \$80.0/day | RESERVED
 Room 202 (Double) - \$80.0/day | OCCUPIED
 Room 301 (Suite) - \$150.0/day | AVAILABLE

OK

Notifications:
 Check-out tomorrow: nik (Room 201)
 Check-out tomorrow: suresh (Room 202)

Hotel Management System

| Name: suresh | Phone: 9110258842 | Email: nik@gmail.com | Room Number: 202 | Check-in (yyyy-MM-dd): 2025-12-28 | Pick | Check-out (yyyy-MM-dd): 2025-12-29 | Pick | Discount (\$): | Search Customer: | | | | |
|-----------------|-------------------|----------------------|------------------|-----------------------------------|------------|------------------------------------|------|-----------------|------------------|----------------|-----------------|-------------|--|
| RESERVE ROOM | | CANCEL RESERVATION | | CHECK-IN | | CHECK-OUT | | ORDER FOOD | | VIEW ROOMS | AVAILABLE ROOMS | | |
| BOOKING HISTORY | | GENERATE BILL | | REPORTS | | SEARCH | | SET MAINTENANCE | | MARK AVAILABLE | | MARK CLEAN | |
| Customer | Phone | Email | Room | Status | Check-in | Check-out | | Room Bill | Food Bill | Tax | Discount | Grand Total | |
| nik | 9110258843 | nikhi@gmail.com | 201 | RESERVED | 2025-12-28 | 2025-12-29 | 80.0 | 0.0 | 0.0 | 0.0 | 80.0 | | |
| suresh | 9110258842 | nik@gmail.com | 202 | CHECKED IN | 2025-12-28 | 2025-12-29 | 80.0 | 0.0 | 0.0 | 0.0 | 80.0 | | |

Select Food Items

| ? | Item Description | Qty: | |
|--------------------------|-------------------------------------|--------|---|
| <input type="checkbox"/> | Paneer Butter Masala (\$7.0) [MAIN] | Qty: 1 | + |
| <input type="checkbox"/> | Butter Chicken (\$8.5) [MAIN] | Qty: 1 | + |
| <input type="checkbox"/> | Dal Makhani (\$8.0) [MAIN] | Qty: 1 | + |
| <input type="checkbox"/> | Veg Biryani (\$7.0) [MAIN] | Qty: 1 | + |
| <input type="checkbox"/> | Chicken Biryani (\$8.0) [MAIN] | Qty: 1 | + |
| <input type="checkbox"/> | Naan (\$1.5) [STARTER] | Qty: 1 | + |
| <input type="checkbox"/> | Roti (\$1.0) [STARTER] | Qty: 1 | + |
| <input type="checkbox"/> | Samosa (\$2.0) [STARTER] | Qty: 1 | + |
| <input type="checkbox"/> | Gulab Jamun (\$3.0) [DESSERT] | Qty: 1 | + |
| <input type="checkbox"/> | Masala Chai (\$1.5) [BEVERAGE] | Qty: 1 | + |

OK Cancel

Notifications:
 Check-out tomorrow: nik (Room 201)
 Check-out tomorrow: suresh (Room 202)

Hotel Management System

| Name: suresh | Phone: 9110258842 | Email: nk@gmail.com | Room Number: 202 | Check-in (yyyy-MM-dd): 2025-12-28 | Pick | Check-out (yyyy-MM-dd): 2026-12-29 | Pick | Discount (\$): | Search Customer: | | | | |
|-----------------|-------------------|---------------------|------------------|-----------------------------------|------------|------------------------------------|------|-----------------|------------------|----------------|----------|-----------------|--|
| Reserve Room | | Cancel Reservation | | Check-in | | Check-out | | Order Food | | View Rooms | | Available Rooms | |
| Booking History | | Generate Bill | | Reports | | Search | | Set Maintenance | | Mark Available | | Mark Clean | |
| Customer | Phone | Email | Room | Status | Check-in | Check-out | | Room Bill | Food Bill | Tax | Discount | Grand Total | |
| nik | 9110258843 | nikhi@gmail.com | 201 | RESERVED | 2025-12-28 | 2025-12-29 | 80.0 | 0.0 | 0.0 | 0.0 | 80.0 | | |
| suresh | 9110258842 | nk@gmail.com | 202 | CHECKED_IN | 2025-12-28 | 2025-12-29 | 80.0 | 0.0 | 0.0 | 0.0 | 80.0 | | |

Message

Invoice for suresh (9110258842)
 Email: nk@gmail.com
 Room: 202
 Status: CHECKED_IN
 Check-in: 2025-12-28
 Check-out: 2025-12-29
 Days: 1
 Room Bill: \$80.0
 Food Bill: \$0.0
 Subtotal: \$80.0
 Tax (10.0%): \$0.0
 Discount: \$0.0
 Grand Total: \$80.0

OK

Notifications:
 Check-out tomorrow: nik (Room 201)
 Check-out tomorrow: suresh (Room 202)

NEW LEARNINGS FROM THE PROJECT

- Gained hands-on experience in applying Object-Oriented Programming (OOPS) concepts such as abstraction, encapsulation, inheritance, and polymorphism.
- Learned how to model real-world entities like rooms, customers, and food items using Java classes and objects.
- Understood the use of enums to represent fixed states such as room status and customer status.
- Developed a complete GUI-based desktop application using Java Swing components like JFrame, JTable, JButton, JTextField, and JOptionPane.
- Learned event-driven programming using ActionListeners and DocumentListeners.
- Gained experience in handling date and time operations using Java's LocalDate and ChronoUnit APIs.
- Understood how to use Java Collections (ArrayList) to store and manage dynamic data.
- Implemented file handling using FileWriter to generate and save invoices.
- Learned the importance of exception handling using try-catch blocks to handle invalid inputs and runtime errors.
- Used Java Streams API to filter, search, and process customer and room data efficiently.
- Learned how to design applications using a modular approach for better readability and maintainability.
- Improved debugging and testing skills by identifying and fixing logical and runtime errors.
- Gained experience in table-based data representation using JTable and DefaultTableModel.
- Learned how to implement search and filter functionality in real-time.
- Understood the basics of software design and documentation for academic projects.

FUTURE ENHANCEMENTS

- Database integration using JDBC
- Role-based login (Admin, Receptionist)
- Online booking system
- Payment gateway integration
- Migration to JavaFX or web-based application