



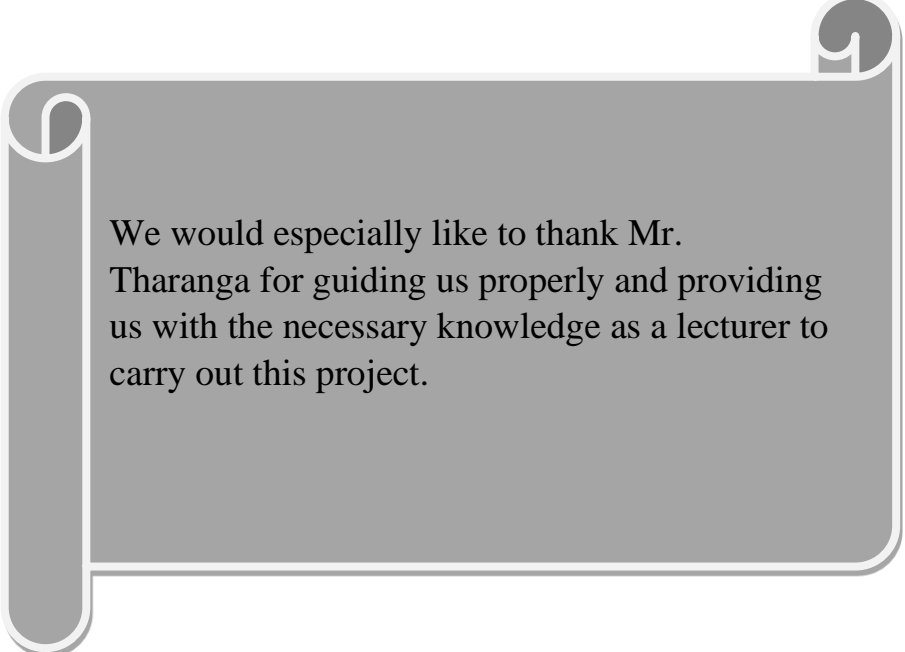
DIPLOMA IN SOFTWARE ENGINEERING

GUI Coursework Report

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INTRODUCTION

Hotel Management System is designed to automate day-to-day hotel operations and make them more precise to administer. From room booking to checkout and billing, the software provides an integrated customer, staff, and operations management system in real time. Based on Windows Presentation Foundation (WPF) as front end and C# as back-end logic, it also includes email communication and invoice printing to create a new-generation hospitality experience.

The system was designed with technical feasibility as well as user-friendliness, such that even less-technical hotel staff can operate it with a minimum of training.

OBJECTIVES

The principal objectives of the Hotel Management System are.

1. Automate operations of the hotel like bookings, room management, and billing.
2. Provide instantaneous information to staff about room occupation and availability.
3. Safe storage of employee and customer data with access control.
4. Enhance customers' experience through quick check-in and check-out.
5. Reduce paperwork through automatic invoices and confirmation emails.
6. Provide scalability so that the system can grow with hotel size or increased branches.

SYSTEM FEATURES

1. Customer Registration

Staff fills in the customer information in a well-padded form. Availability of the room is validated by the system and an automatically allocated room is given to the customer. Customers become quicker to register, especially during peak season.

2. Real-Time Room Availability

The system checks the Booking table prior to allocating the room so that the room allocated is not already booked. It avoids double booking and customer trust.

3. Booking Management

After the customer has logged in, the booking is performed with details like check-in/check-out date, room allocated, and the employee handling it.

4. Check-Out Process

At check-out time, the system saves the changes made in the database and also prints the bill. It is fast and minimizes waiting time for the guests.

5. Invoice Generation

A new Windows Form is opened to print and generate invoices. The staff members are able to select a customer and save or print their invoice by themselves.

6. Employee Management

Administrators can create new staff members, assign them a login ID, and manage their access. Deleting records and generating invoices are for authorized staff personnel only.

7. Email Notifications

A check-in confirmation email is sent to the customer. An email with the total charge and thank-you message is sent at checkout. This provides a personal and professional touch.

FEATURES FOR THE ADMINISTRATOR

- Create, edit, and delete staff accounts.
- Manage room inventory.
- Show all customer details including past bookings.
- Checkout customers.
- Show business details using dashboard.
- Manage login credentials and reset staff passwords.

FEATURES FOR THE CASHIER

- Add new customers and check room availability.
- Perform check-in and checkout tasks.
- Print and generate invoices using Invoice form.
- Show the "Current Customers" and "Checked Out" list of customers.
- Send confirmation emails of customer actions.

TECHNOLOGY USED

Area	Description
Frontend ui	WPF (Windows Presentation Foundation) with XAML for UI
Backend	C# for business and data processing
Invoice UI	Windows Forms within WPF
Database	Microsoft SQL Server using T-SQL
Email System	SMTP client in C# to send emails automatically
Package Management	NuGet (e.g., packages like System.Net.Mail and PrintDocument)

DATABASE DESIGN

Customer Table

Saves personal and booking details. Keys:

- CustomerID (Primary)
- customerName
- email, phoneNumber
- nationality
- gender
- dob
- id
- check in date
- check out date
- room id (Foreign key)

Employee Table

Saves login and personal details:

- EmpID (Primary)
- Name
- userName
- password
- email
- gender
- mobile

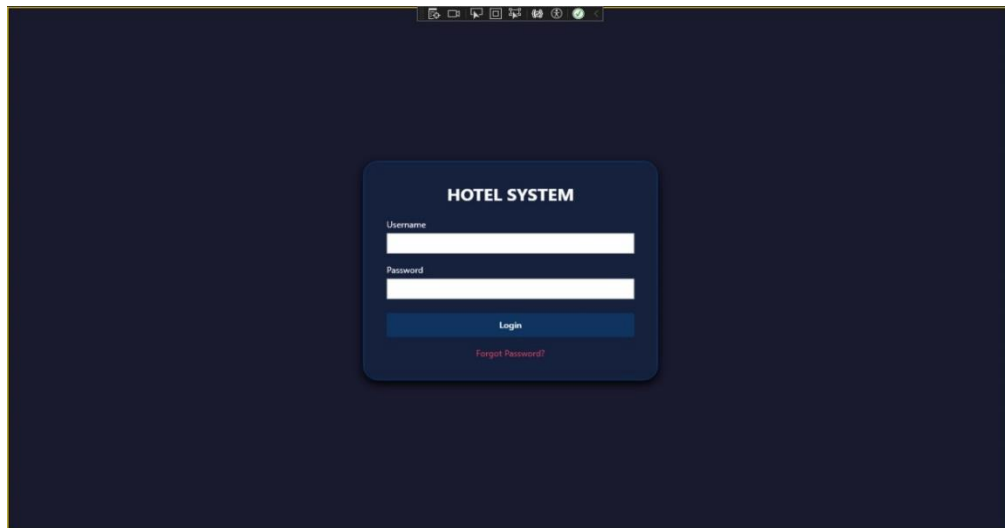
Room Table

Stores room type and amenities:

- RoomID (Primary)
- Roomno
- RoomType (e.g., AC/Non-AC)
- bed
- price
- booked

CRUCIAL SCREENSHOTS

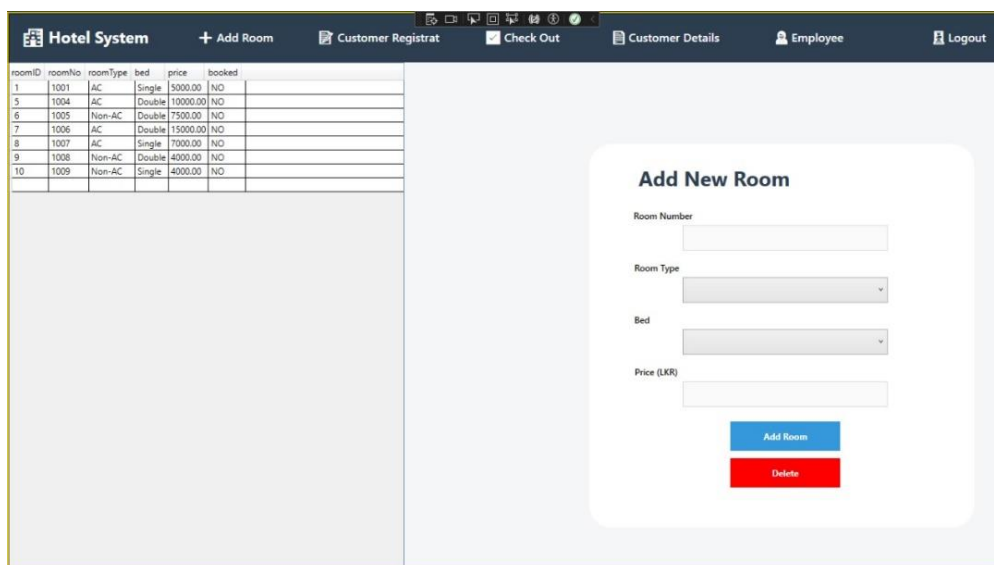
Login Form



The screenshot shows a dark-themed login interface for a 'HOTEL SYSTEM'. It features a central dark blue box with the title 'HOTEL SYSTEM' in white. Below the title are two white input fields labeled 'Username' and 'Password'. A blue 'Login' button is positioned below the password field, and a red link labeled 'Forgot Password?' is at the bottom of the box. The background is a dark navy blue with a subtle grid pattern.

- Employee can login to the system.
- If employee forgot password , employee can change password using email code.

Add Room Form



The screenshot displays the 'Add New Room' form within the 'Hotel System' application. The interface has a dark blue header with navigation links: '+ Add Room', 'Customer Registrat', 'Check Out', 'Customer Details', 'Employee', and 'Logout'. On the left, there is a table showing room inventory:

roomID	roomNo	roomType	bed	price	booked
1	1001	AC	Single	5000.00	NO
5	1004	AC	Double	10000.00	NO
6	1005	Non-AC	Double	7500.00	NO
7	1006	AC	Double	15000.00	NO
8	1007	AC	Single	7000.00	NO
9	1008	Non-AC	Double	4000.00	NO
10	1009	Non-AC	Single	4000.00	NO

The main area contains the 'Add New Room' form with the following fields:

- Room Number:
- Room Type:
- Bed:
- Price (LKR):

At the bottom of the form are two buttons: a blue 'Add Room' button and a red 'Delete' button.

- Employee can add new rooms .
- Employee can delete rooms.
- Employee can also view unbooked rooms.

Customer Registration Form

The screenshot shows a web application titled "Hotel System" with a dark blue header. The header contains navigation links: "+ Add Room", "Customer Registrat", "Check Out", "Customer Details", "Employee", and "Logout". The main content area is titled "Customer Registration" and contains two columns of form fields. The left column includes "Full Name" (with a placeholder "Enter Full Name"), "Mobile No" (with a placeholder "Enter contact no"), "Nationality" (with a placeholder "Nationality"), "Gender" (a dropdown menu), and "Date of Birth" (a date picker). The right column includes "ID Proof" (with a placeholder "Enter ID"), "Email" (with a placeholder "Enter Email"), "Check In" (a date picker), "Bed" (a dropdown menu), "Room Type" (a dropdown menu), "Room No" (a dropdown menu), and "Price" (with a placeholder "Enter Price"). There are two search buttons: "Search Room" and "Search Price". A green "Allote Room" button is located at the bottom right of the form.

- Customer can view rooms that have not been booked.
- Customer can view room prices.
- Customer can registration.

Customer Detail Form

customerID	customerName	mobile	nationality	gender	dob	idProof	checkin	roomNo	roomType	bed	price
8	vishwa roshel	762755941	Sri Lankan	Male	3/8/1995	200502301	com Apr 29 2025 12:00AM	1001	AC	Single	5000.00
9	Charuka Wimala	765433656	Sri Lankan	Male	3/4/2004	20043434542	charukawimalaratne@gmail.com May 1 2025 12:00AM	1004	AC	Double	10000.00
10	Jeram perera	76543542	Sri Lankan	Male	7/6/2000	2000546542	jeramperera@gmail.com Apr 24 2025 12:00AM	1001	AC	Single	5000.00

- You can see all the customer details ,including the details of the customers inside the hotel and the details of the customers who have checked out.

Employee Details

Employee Registration Employee Details

Full Name

Mobile Number

Gender

Email Address

Username

Password

Register

Hotel System + Add Room Customer Registrat Check Out Customer Details Employee Logout

Employee Registration Employee Details

Employee Details

Search by Employee Name

Delete

employeeID	employeeName	mobile	gender	email	username
4	vishwa	762755941	Male	vishwa@gmail.com	vishwa

- You can add employee
- You can view employee details.
- You can remove employee.

Check Out Form

Hotel System + Add Room Customer Registrat Check Out Customer Details Employee Logout

Customer Check Out

customerID	customerName	mobile	nationality	gender	dob	idProof	email	checkin	roomNo	roomType	bed	price
10	Jeram perera	76543542	Sri Lankan	Male	17/6/2000	2000546542	jeramperera@gmail.com	Apr 24 2025 12:00AM	1001	AC	Single	5000.00

Full Name Room No Check Out Date

Check Out Invoice

- Employee can select check out customer.
- Employee puts check out date.

Invoice Form

The screenshot shows a web application titled 'Hotel System' with a navigation bar containing links for '+ Add Room', 'Customer Registrat', 'Check Out', 'Customer Details', 'Employee', and 'Logout'. The main content area displays an 'Invoice' form. The form includes a table with the following data:

customerName	mobile	nationality	idProof	email	checkIn	checkOut	roomNo	roomType	bed	price	checkOut
vishwa roshel	762755941	Sri Lankan	200502301378	vishwaroshel18...	Apr 29 2025 1...	5/3/2025 12:0...	1001	AC	Single	5000.00	YES
Charuka Wimala	765433656	Sri Lankan	20043434542	charukawimala...	May 1 2025 1...	5/3/2025 12:0...	1004	AC	Double	10000.00	YES
Jeran perera	76543542	Sri Lankan	2000546542	jeranperera@p...	Apr 24 2025 1...		1001	AC	Single	5000.00	NO

Below the table, there is a 'PRINT' button and a 'Search Name' input field. At the bottom, there are input fields for 'Full Name', 'Room No', and 'Check Out Date' (with a date picker), and buttons for 'Check Out' and 'Invoice'.

- Employee selects who needs to be invoiced.
- Employee gives invoice.

NEW TECHNOLOGIES

- WPF with MVVM architecture (if used): Supports easier separation of UI and logic.
- SMTP Automation: Provides real-time email validation.
- WPF integration of Windows Forms: A good approach to reuse existing invoice controls in a new UI.
- Password management securely (can be further improved by hashing and salting if not already done).
- Database join on foreign key for correct real-time booking data.

TESTING

1. Unit Testing

- Validity logic for customer data tested.
- Employee login and password recovery feature tested.

2. Integration Testing

- End-to-end testing of customer booking to invoice generation.
- Foreign key relationships Booking, Customer, and Room integration tested against all relations.

3. User Acceptance Testing (UAT)

- Performed by non-technical hotel staff.
- Button position and form responsiveness issues were fixed.

CHALLENGES AND SOLUTIONS

Challenge	Solution
Making invoice prints professional-looking	Used Windows Forms and PrintDocument for simpler formatting
Room clashes during high demand	Applied real-time room availability logic using DB queries
Secure forgot password retrieval	Applied reset on employee ID
Employee training for a new system	Streamlined form design and added tooltips to fields
Secure emailing Sending	Added SMTP with exception handling and retry logic

CONCLUSION

Hotel Management System is a very good platform for modern hotel management. It keeps day-to-day activities like room booking, guest arrival, staff management, and billing in a responsive clean desktop application. Using advanced technology in the form of WPF, SQL Server, and email automation brings a touch of professionalism to the hotel as well as the guest.

Some of the potential future areas for development include online reservation of rooms, mobile phone integration, and branches.