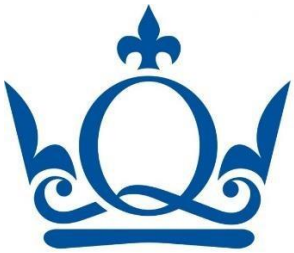

Queen Mary
University of London

MTH785: PROGRAMMING FOR BUSINESS ANALYTICS

PROJECT 2

AKANKSHA KIRAN BENDALE

Student ID : 240503862

Submission : 24 January 2025

HOTEL MANAGEMENT SYSTEM

INTRODUCTION

Running a hotel business can be challenging. Managing customer bookings, tracking room availability, and maintaining reservations often take a lot of time and effort. Many small and medium-sized hotels still rely on manual methods, which can lead to errors and inefficiencies.

To address these challenges, we developed a simple Hotel Management System. This system is designed to make booking management and customer tracking easier using familiar tools like Microsoft Access, Excel, and VBA (Visual Basic for Applications). The main goal of this project is to provide hotel owners and staff with an easy-to-use solution that doesn't require technical expertise. It uses an Access database to store customer, room, and booking details, an Excel front-end for user-friendly interaction, and VBA to automate tasks. Together, these tools streamline daily operations and make the process more efficient and hassle-free.

Key Features and Benefits

- **Booking Management**: Record and track customer bookings easily using a structured database.
- **Revenue Analysis**: Generate revenue reports and analyze data with Excel pivot tables.
- **Automation**: Save time and reduce errors with automated processes powered by VBA macros.
- **Scalability**: Expand functionality later such as adding mobile integration, history tracking or advanced reporting as the business grows.

This project shows how small and medium-sized hotels may use simple programs like Excel and Access to improve their operations. It's an inexpensive and effective way to streamline procedures, minimize errors and improve decision-making without investing in expensive software.

DATABASE DESCRIPTION

The Hotel Management System database is built in Microsoft Access to help hotels manage their operations more effectively. It has three main tables: Customers, Rooms, and Bookings all organized to keep the data accurate and easy to use. These tables are interrelated through primary and foreign key relationships to maintain data integrity and provide for easy data retrieval.

1. **Customers**: Stores customer information including CustomerID(Primary Key), CustomerName, Email, and Phone.
2. **Rooms**: Maintains room details such as RoomID(Primary Key), RoomType, PricePerNight, and availability status.
3. **Bookings**: Tracks reservations with fields like BookingID, RoomID, CustomerID, BookingDate, StayDuration, and TotalCost.

To ensure everything works correctly, referential integrity is used, meaning the data between the tables stays connected and accurate. The system also uses SQL queries to perform tasks like:

- **Available Rooms**: Identifies rooms available for booking.
- **Booking Summary**: Provides a report summarizing bookings by date, customer, or room type.
- **Total revenue**: Calculates the total revenue from all bookings.
- **Room Utilization**: Helps the business assess which rooms are most frequently used and optimize room availability.

This database design makes it easy for hotel staff to retrieve important information, monitor bookings, and make informed business decisions. It's a flexible and efficient solution that can grow with the business, helping to streamline daily operations and improve overall management.

FRONT-END: DESIGN AND BUSINESS USE OF THE EXCEL SHEETS

The front-end is an Excel workbook designed to provide hotel staff with a user-friendly interface for managing reservations and analyzing data effectively. The key components include:

1. **Bookings Sheet:** Displays bookings information from the Access database, with columns like BookingID, RoomID, CustomerID, BookingDate, StayDuration, TotalCost, CustomerName, RoomType. VBA automation keeps the data updated in real-time, and conditional formatting highlights room type for easy tracking.
2. **RevenueSummary Sheet:** Shows a pivot table that summarizes sales by room type and total cost. Staff can filter and analyze sales performance, with the table dynamically updated through VBA macros.

3. **BookingForm Sheet**: A dedicated sheet titled “BookingForm” where users input details such as RoomID, CustomerID, BookingDate, StayDuration, TotalCost, CustomerName, Email, and Phone. Users manually enter values into the form fields.

   RoomID: A dropdown with valid Room IDs (1, 2, 3, 4, 5) ensures only available Room IDs can be selected.

   A “Submit Booking” button runs a VBA macro to check the input and add the data to the Access database.

The design ensures that staff without technical expertise can efficiently handle bookings while maintaining data accuracy.

VBA MIDDLEWARE: DESCRIPTION OF SUBROUTINES

The VBA code acts as middleware between Excel and Access, automating data processing and ensuring integrity. Below are summaries of key subroutines:

1. **ImportBookingsWithDetails**:
   - Connects to the Access database and retrieves booking details, including customer names and room types.
   - Copies the data into the "Bookings" worksheet and applies conditional formatting to highlight room types (e.g., Single = Yellow, Double = Light Blue, Suite = Light Green).
   - Dynamically determines the last row and clears the worksheet before importing new data.
2. **AddNewBookingWithCustomer**:
   - Checks if the CustomerID exists in the Access database. If not, adds the customer to the Customers table.
   - Inserts a new booking into the Bookings table using data from the "BookingForm" worksheet.
   - Ensures proper formatting of dates and clears the input form after successful submission.
3. **CustomerExists**:
   - Executes an SQL query to check if a specific CustomerID exists in the Customers table.
   - Returns a Boolean value indicating the presence of the CustomerID.

The VBA code is optimized for scalability, with dynamic SQL construction and error handling to ensure smooth operation.

CONCLUSION

The Hotel Management System streamlines hotel operations by merging Microsoft Access, Excel, and VBA into a single effective system. It helps manage bookings, track customer information and automate data processing with minimal manual effort. This method improves data accuracy, increases operational efficiency and offers a low-cost alternative to pricey software systems. Key features include automatic data import, booking processing and revenue analysis to ensure seamless and dependable operations. The system is also expandable enabling for future features like mobile integration, enhanced reporting with Power BI and multi-user access. This project establishes a solid framework for future upgrades which can be accessible via the given GitHub repository.

GitHub Link: AkankshaB414/Hotel-Management-App