

MTH785 : Programming for Business Analytics

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SambhavTrip Application Project

Introduction

Sambhav Trip is a tourism business that specializes in organizing and managing travel packages for customers. The primary goal of this application is to streamline the management of customer bookings, analyse revenue insights, and simplify the process of adding new bookings. By combining **Access**, **Excel**, and **VBA**, we have created a solution that integrates a backend database with a user-friendly Excel front-end interface for data visualization and input.

The application consists of three main tools:

1. **Access Database:** Stores all data related to customers, tour packages, and bookings.
2. **Excel Front-End:** Displays booking details, revenue insights, and a booking input form.
3. **VBA Middleware:** Connects the database with the front-end, automating data retrieval and insertion.

Database Design

The Access database consists of three primary tables:

1. Customers Table

Fields:

- CustomerID (Primary Key)
- CustomerName
- Email
- PhoneNumber
- Address

2. TourPackages Table

Fields:

- PackageID (Primary Key)
- PackageName
- Destination
- Duration
- Price

3. Bookings Table

Fields:

- BookingID (Primary Key)
- CustomerID
- PackageID
- BookingDate
- TravelDate
- PaymentStatus
- BookingStatus

Relationships

1. CustomerID in the Customers table is linked to the Bookings table.
2. PackageID in the TourPackages table is linked to the Bookings table.

Queries

1. **ListofActiveBookings:** Displays confirmed and pending bookings.
2. **RevenueByTourPackage:** Summarizes revenue and booking counts by package.
3. **BookingsByCustomer:** Lists all bookings for a specific customer.

MS Excel Front-End Design

The Excel workbook has three sheets:

1. Sheet 1: BookingDetails

- **Purpose:** Displays all confirmed and pending bookings.
- **Data Loaded From:** The ListofActiveBookings query in the Access database.
- **Functionality:**

The LoadBookingDetails VBA macro retrieves booking data and displays it in this sheet.

- **Headers include:**

BookingID, CustomerName, PackageName, TravelDate, PaymentStatus, BookingStatus.

Use of Conditional Formatting to format the Confirmed Booking (In Green Coloured Tab Cell) & Pending Booking (In Yellow Coloured Tab Cell)

Sheet 2: RevenueInsights

- **Purpose:** Summarizes total bookings by tour package.
- **Data Visualization Tool:** Pivot Table.

- **Creating the Pivot Table:**

1. Loaded the data related to bookings into Excel from the Bookings table or query.
2. Highlighted the data range.

3. **Insert > Pivot Table.**

Selected **New Worksheet** in the RevenueInsights sheet.

4. Dragged **PackageName** to the **Rows** section.
5. Drag **BookingID** to the **Values** section and set it to **Count**.
6. Formatted and renamed the table for clarity (added borders, sort by count, renamed headers to **Package Name, Total Bookings**).

- **Outcome:**

Displays a summary with:

1. PackageName
2. BookingCount

3. Sheet 3: BookingInputForm

- **Purpose:** Allows users to add new bookings to the database.
- **Functionality:**

Users enter details into the form:

- CustomerName (Text input)
- PackageName (Dropdown or text input)
- TravelDate (Date input)
- PaymentStatus (Dropdown: Paid/Pending)
- BookingStatus (Dropdown: Confirmed/Pending/Cancelled)

The SubmitBooking VBA macro validates the input and adds the data to the Bookings table in the database.

VBA Middleware

Three VBA macros handle the interaction between the Access database and Excel:

1. LoadBookingDetails

- **Purpose:** Retrieves data from the ListofActiveBookings query and displays it in the BookingDetails sheet.
- **Key Features:**
 1. Clears existing data before loading new data.
 2. Ensures only confirmed and pending bookings are displayed.

2. LoadRevenueInsights

- **Purpose:** Retrieves data from the RevenueByTourPackage query and displays it in the RevenueInsights sheet.
- **Key Features:**
 - Summarizes booking counts and revenue for each package.

3. SubmitBooking

- **Purpose:** Inserts a new booking into the Bookings table in the Access database.
- **Key Features:**
 - Validates input fields to ensure no empty or invalid data.
 - Escapes single quotes to prevent SQL errors.
 - Displays a success message and clears the form after successful submission.

Conclusion

This application uses the power of Microsoft Access, Microsoft Excel, and Visual Basics for Application (VBA) to provide a strong and user-friendly solution for managing tourism-related bookings. It streamlines data management, ensures accurate reporting, and simplifies the booking process.

GitHub Repository

To access the project files and documentation, visit:

<https://github.com/Shreyy1411/SambhavTrip-VBA-Project>

References

- Data Sources: Sample data was self-created.
- Lecture Slides: concepts and technical details were supported by lecture materials provided during the course.
- Tools Used: Microsoft Access and Microsoft Excel.

Explanation of the use of AI tools :

While working on this project, I utilized AI tools for structuring while fully retaining idea generation, arguments, and structure. In particular, I utilized AI in:

to support brainstorming and structuring ideas. All the database design, VBA coding, and Excel implementation were completed by me, and the AI assistance was used as a learning and enhancement tool. I take full responsibility for the content of this project and have ensured that the final work meets the requirements and reflects my understanding. While the AI assisted in examples, all ideas, analysis, and personal reflection are my own. I have refrained from allowing this to be anything other than an authentic project that reflects my understanding and how such applies to my professional development.