

Laundry Shop Management System

Integrating Microsoft Access, Excel and VBA for Effective Order & Customer Management

Introduction

This project showcases a custom-built management system tailored for a laundry shop. The system integrates Microsoft Access, Excel, and VBA (Visual Basic for Applications) to simplify operations such as managing customer data and tracking orders. The solution emphasizes automation, data validation, and scalability, making it suitable for small businesses aiming to streamline their workflows.

Database System

The system's backend is powered by Microsoft Access. It uses a structured relational database with the following tables:

1. Customer table

Field Name	Data Type
CustomerID	AutoNumber
CustomerName	Short Text
Phone	Short Text
Email	Short Text

2. Orders Table

Field Name	Data Type
OrderID	Short Text
CustomerID	Number
ServiceType	Short Text
Weight	Short Text
DateReceived	Date/Time
Status	Short Text

3. Payments

Field Name	Data Type
OrderID	Short Text
CustomerID	Number
ServiceType	Short Text
Weight	Short Text
DateReceived	Date/Time
Status	Short Text

SQL

Query 1(Orders by date)

```
SELECT DateReceived, COUNT(OrderID) AS TotalOrders
FROM Orders
GROUP BY DateReceived;
```

Query 2(Top spending Customers)

```
SELECT Customers.CustomerName, SUM(Payments.Amount) AS TotalSpending,
COUNT(Orders.OrderID) AS CompletedOrders
FROM (Customers INNER JOIN Orders ON Customers.CustomerID = Orders.CustomerID) INNER
JOIN Payments ON Orders.OrderID = Payments.OrderID
WHERE Orders.Status = 'Completed'
GROUP BY Customers.CustomerName
ORDER BY SUM(Payments.Amount) DESC;
```

Query 3(Total revenue by service type)

```
SELECT Orders.ServiceType, SUM(Payments.Amount) AS TotalRevenue
FROM Orders INNER JOIN Payments ON Orders.OrderID = Payments.OrderID
GROUP BY ServiceType;
```

Query 4(Total Payments)

```
SELECT SUM(Amount) AS TotalPayments
FROM Payments;
```

Excel Front end

The Excel Frontend is an intuitive interface that allows user to manage customer and order data conveniently. The frontend has been custom built with the aim of making it as simple to use as possible so that the Access database does not need to be accessed directly, catering the system to those with limited technical knowledge. It has specific tabs for major procedures, like Order Entry and Customer Entry, where a user can enter information in well-identified fields. The Order Entry Sheet gathers information like OrderID, CustomerID, ServiceType, Weight, DateReceived, and Status, while the Customer Entry Sheet records data like CustomerID, CustomerName, Phone, and Email.

The frontend is heavily reliant on VBA, which drives buttons such as "Add Order" and "Add Customer" to speed up the data transfer process from Excel into the Access database. There are built-in validation mechanisms in the UI to ensure that users enter the correct data, for example, numeric fields like Weight need to actually contain a number, and date fields like DateReceived need to have the correct date formatting. That is to say, any errors — a missing entry, a duplicate entry — are immediately flagged and accompanied by helpful messages to point the user toward correcting their inputs. Initially, the Excel frontend acts as a productivity booster due to its familiar interface, easier to use, and minimizes errors in the day-to-day operations of the laundry shop.

VBA Automation

The Laundry Shop Management System VBA middleware is responsible for handling the communication between the Excel frontend and Access database. VBA automates essential processes, ensuring data flows smoothly from input to output, with validation and storage occurring without manual involvement. It functions as a solid intermediary that takes user inputs from Excel, runs SQL queries to add, edit, or delete records in the Access database. Main features include datatypes validation, duplicates check and control of referential integrity between tables. The AddOrder macro, for example, checks the order details like CustomerID, ServiceType, and Weight before they are added to the Orders table. Like the AddCustomer macro, the CustomerID is checked to ensure uniqueness prior to committing customer data to the database.

Moreover, VBA enables error management, which returns clear indications to users when invalid data have been entered, or database contacts are unsuccessful. The middleware, via ActiveX Data Objects (ADO), connects to the Access database and performs dynamic SQL queries, such as inserting or retrieving data. Such automation not only mitigates the risk of human error, but it also saves time and increases the overall efficiency of the system. The VBA middleware serves as a backbone of the whole process, coordinating all the data manipulations and ensuring seamless integration of the whole system.

Conclusion

Laundry Shop Management System is a simple project that help you improve your daily laundry business. This system combats the common issues with Excel through the combination of incorporating Microsoft Access to store data, Excel to be the user's front end and VBA to automate the tasks. A stable structure: The relational database has a structure with tables like Customers, Orders, Payments, etc., that ensures your data is stored in a consistent manner and connected with meaningful relationships. Together, primary keys, foreign keys, and validation prevent data integrity issues, and help reduce bugs during the data entry process. The system is built with usability as a guideline and takes advantage of Excel's user-friendly environment for data entry. Through easy forms, users can fill up or update their customer and order details, and

Complex backend operations are handled by a VBA script to update the database, handle errors, and generate feedback; It helps staff reduce the load and facilitates faster transaction processing.

The system has been designed to be scalable beyond its initial capabilities. Features can be easily scaled up to include reporting, cloud storage, and payment system integrations. Adding dashboards and customer-facing tools would make it even more useful though, especially for larger businesses. This is a simple example of how powerful tools such as Access and Excel which are available to all of us can be leveraged to build something pragmatic, and repeatable in a small business context.

GitHub Repository

<https://github.com/jaindevaryan/LaundryManagementSystem.git>