

Supplier Management System Using CRUD in Python

This presentation explores the development of a Supplier Management System (SMS) using CRUD operations in Python. We'll delve into the system's design, implementation, and benefits for businesses looking to streamline their supplier relationships.



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Project Overview

The supplier industry is a critical component of business operations, ensuring that companies receive quality products and services while maintaining cost efficiency. However, managing suppliers manually can lead to inefficiencies, compliance issues, and financial mismanagement. To address these concerns, businesses can leverage CRUD (Create, Read, Update, Delete) operations to maintain a structured and organized supplier database.

Inspired by real-world supplier tracking systems, this guide details how to implement a **Supplier Management System (SMS)** using Python. This system not only allows businesses to store, track, and update supplier information efficiently but also integrates budget control, filtering, and reporting features for optimal decision-making.



The Problem

Many businesses struggle with manual supplier tracking, leading to data mismanagement, compliance risks, and financial losses due to uncontrolled budget allocations.

The Solution

This project aims to develop a Supplier Management System (SMS) that goes beyond basic CRUD operations by integrating budget controls, supplier performance analysis, and a structured workflow for procurement management.

Step-by-Step Implementation of a Supplier Management System in Python

Setting Up the Supplier Database

The system uses a Python dictionary to store supplier data, with each supplier represented by a unique reference ID (RefID) and their associated details.

CRUD Operations

The system implements CRUD operations using Python functions, allowing users to create, read, update, and delete supplier records.



Understanding CRUD in Supplier Management

1 Create

Registering new suppliers with their essential details, such as code, name, type, city, and status.

2 Read

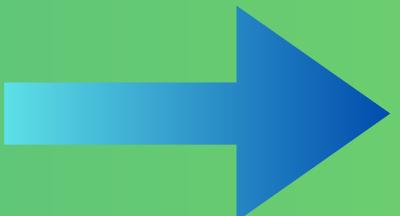
Viewing existing supplier data in a structured format, providing a comprehensive overview of all registered suppliers.

3 Update

Modifying supplier information, such as contact details, contract status, or budget allocation, ensuring data accuracy.

4 Delete

Removing inactive suppliers from the database, streamlining the system and maintaining data integrity.



On Hand with Cmd

MAIN MENU

- This is the central hub where users can select different operations.
- The menu provides clear options for interacting with supplier data.
- Ensures a user-friendly experience by guiding users to each function.

1. Report Data Supplier
2. Add Data Supplier
3. Change Data Supplier
4. Delete Data Supplier
5. Exit

Please enter the menu number you'd like to access: 5

Exiting the program. Goodbye!

ENTER EMAIL

- Users must enter their email address before accessing the system.
- This step validates user identity and provides a basic security measure.
- Helps track who is managing supplier data.

```
D:\DTI Purwadhika Course\M1 Project>python m1yosua.py
Enter your email: yosua.login@startup.com
You entered: yosua.login@startup.com
```

REPORT DATA SUPPLIER

- Displays all supplier records in a structured format.
- Users can review supplier details such as name, type, city, and status.
- Helps businesses monitor supplier performance and availability.

RefID	Code	Name	Type	City	Status
Ref001	4123	PT.Halcom	IT	Batam	Fixterm
Ref002	4124	PT.Wischo	Accessories	Batam	Contract
Ref003	4125	PT.Dutacom	Accessories	Batam	Fixterm
Ref004	4126	PT.Infocom	IT	Jakarta	Contract
ref005	4127	PT.Generate	IT	Bandung	Fixterm
ref006	4128	PT.Sunlicom	IT	Medan	Fixterm
ref007	4129	PT.Servicejaya	Accessories	Bogor	Contract
ref008	4130	PT.Petron	IT	Surabaya	Contract
ref009	4131	PT.Pilar	Accessories	Bekasi	Fixterm
ref010	4132	PT.Bisnet	IT	Jakarta	Fixterm

ADD DATA SUPPLIER

- Allows users to register a new supplier in the system.
- Requires Reference ID, Name, Type, City, and Status as inputs.
- Ensures supplier records remain up to date and organized.

```
1. Report Data Supplier
2. Add Data Supplier
3. Change Data Supplier
4. Delete Data Supplier
5. Exit
Please enter the menu number you'd like to access: 2
refref011
Code4133
NamePT.BSAcom
TypeIT
CityPalembang
StatusContract
RefID      Code      Name          Type      City      Status
=====
Ref001    4123    PT.Halcom        IT        Batam    Fixterm
Ref002    4124    PT.Wischo        Accessories Batam    Contract
Ref003    4125    PT.Dutacom       Accessories Batam    Fixterm
Ref004    4126    PT.Infocom       IT        Jakarta  Contract
ref005   4127    PT.Generate      IT        Bandung  Fixterm
ref006   4128    PT.Sunlicom      IT        Medan    Fixterm
ref007   4129    PT.Servicejaya  Accessories Bogor    Contract
ref008   4130    PT.Petron        IT        Surabaya Contract
ref009   4131    PT.Pilar         Accessories Bekasi   Fixterm
ref010   4132    PT.Bisnet        IT        Jakarta  Fixterm
ref011   4133    PT.BSAcom       IT        Palembang Contract
```

CHANGE DATA SUPPLIER

- Users can modify existing supplier records without re-entering all data.
- Only fields that need to be changed are updated.
- Prevents data duplication and ensures record accuracy.

```
1. Report Data Supplier
2. Add Data Supplier
3. Change Data Supplier
4. Delete Data Supplier
5. Exit
Please enter the menu number you'd like to access: 3
Enter reference ID: ref011

Enter values you want to change or leave blank:
Name: PT.SAS
City: Pekanbaru
Status: Fixterm

Data updated successfully.

RefID      Code    Name          Type     City      Status
=====
Ref001    4123    PT.Halcom      IT       Batam    Fixterm
Ref002    4124    PT.Wischo       Accessories  Batam   Contract
Ref003    4125    PT.Dutacom      Accessories  Batam   Fixterm
Ref004    4126    PT.Infocom      IT       Jakarta  Contract
ref005    4127    PT.Generate     IT       Bandung  Fixterm
ref006    4128    PT.Sunlicom     IT       Medan    Fixterm
ref007    4129    PT.Servicejaya  Accessories  Bogor   Contract
ref008    4130    PT.Petron       IT       Surabaya Contract
ref009    4131    PT.Pilar        Accessories  Bekasi  Fixterm
ref010    4132    PT.Bisnet       IT       Jakarta  Fixterm
ref011    4133    PT.SAS         IT       Pekanbaru Fixterm
```

DELETE DATA SUPPLIER

- Allows users to remove inactive or outdated suppliers.
- Ensures the database remains clean and relevant.
- Prevents unnecessary clutter in supplier records.

```
1. Report Data Supplier
2. Add Data Supplier
3. Change Data Supplier
4. Delete Data Supplier
5. Exit
Please enter the menu number you'd like to access: 4
Enter the reference ID to delete: ref011
Supplier with reference 'ref011' has been deleted.

RefID      Code    Name           Type      City      Status
=====
Ref001     4123    PT.Halcom       IT        Batam    Fixterm
Ref002     4124    PT.Wischo        Accessories Batam    Contract
Ref003     4125    PT.Dutacom       Accessories Batam    Fixterm
Ref004     4126    PT.Infocom        IT        Jakarta  Contract
ref005     4127    PT.Generate       IT        Bandung  Fixterm
ref006     4128    PT.Sunlicom       IT        Medan    Fixterm
ref007     4129    PT.Servicejaya    Accessories Bogor    Contract
ref008     4130    PT.Petron         IT        Surabaya Contract
ref009     4131    PT.Pilar          Accessories Bekasi   Fixterm
ref010     4132    PT.Bisnet         IT        Jakarta  Fixterm
```

EXIT

- Users can exit the program safely after completing their tasks.
- Ensures data is saved before closing the system.
- Provides a structured and professional end to the session.

```
1. Report Data Supplier
2. Add Data Supplier
3. Change Data Supplier
4. Delete Data Supplier
5. Exit
Please enter the menu number you'd like to access: 5
      Exiting the program. Goodbye!
```



Enhancing Supplier Management with Budget Controls

Budget Allocation

The system ensures that supplier contracts are allocated within predefined financial limits, preventing overspending and maintaining financial stability.

Cost Tracking

The system monitors supplier spending and provides real-time insights into budget utilization, enabling proactive financial management.

Performance Reports

The system generates reports that rank suppliers based on their efficiency and cost-effectiveness, helping businesses identify top-performing vendors.

Advantages and Weaknesses of CRUD-Based Supplier Registration

Advantages

- Improved supplier tracking and compliance.
- Efficient supplier data management.
- Quick registration and verification process.
- Prevents budget overruns with allocation controls.
- Automated and structured supplier verification.

Weaknesses

- Requires manual data validation.
- Security risks if sensitive data is not protected.
- Limited real-time analytics without external database integration.

Target Market and Business



Manufacturing & Logistics:
Managing raw material
suppliers.



Retail & E-Commerce:
Handling vendor sourcing.



Healthcare &
Pharmaceuticals: Ensuring
compliance with medical
suppliers.

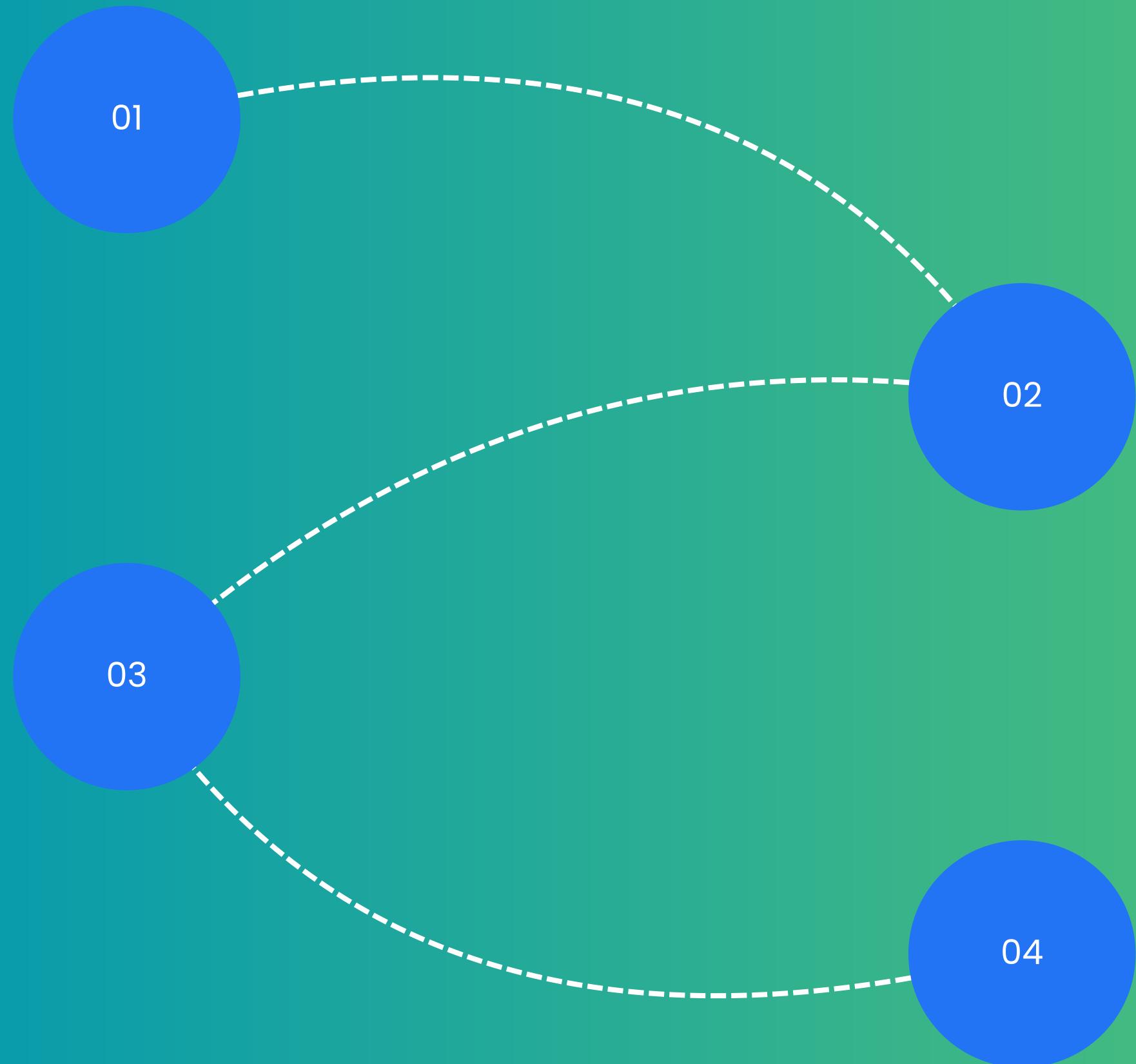


Food & Beverage Industry:
Tracking certified food
suppliers.



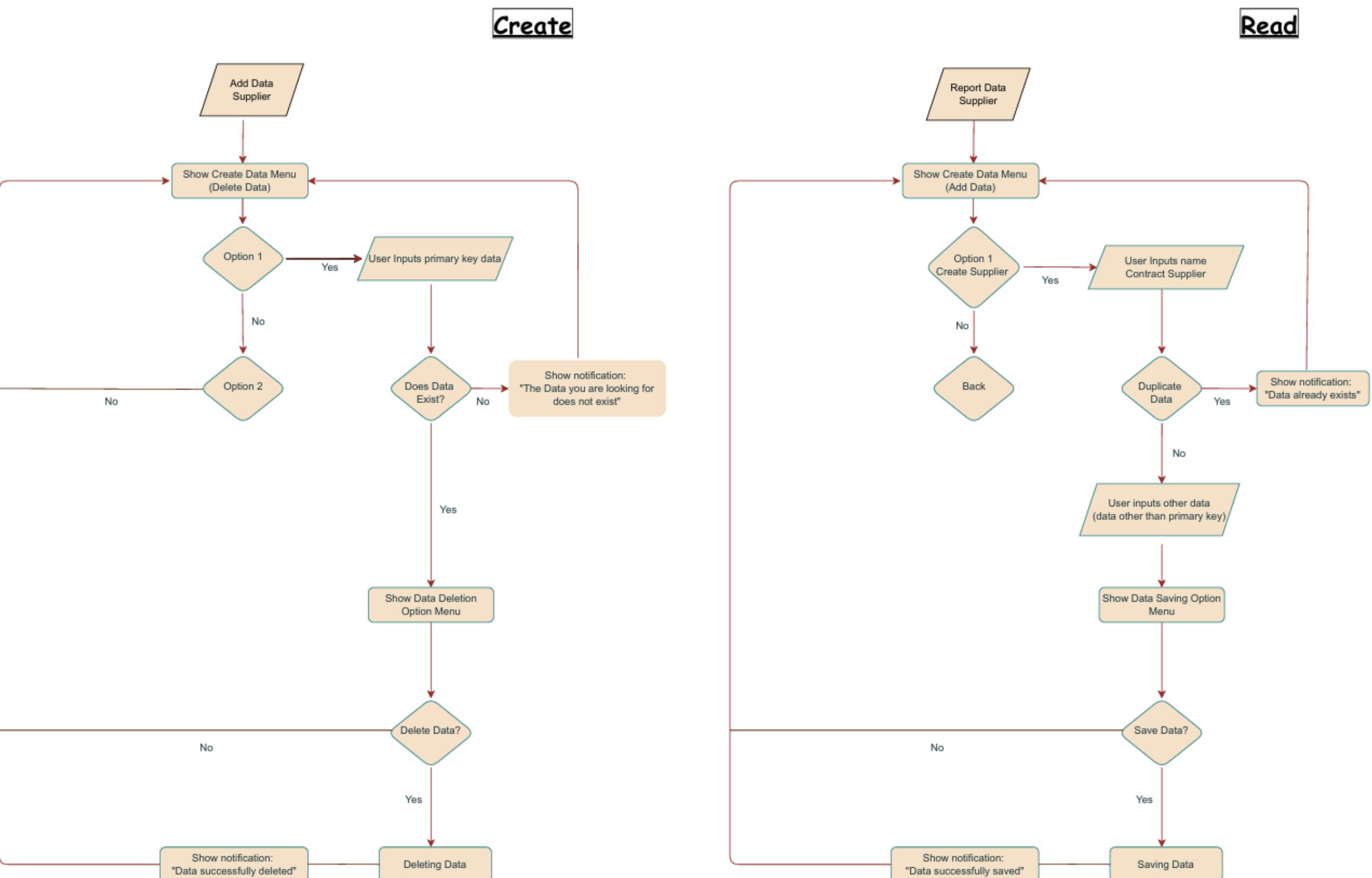
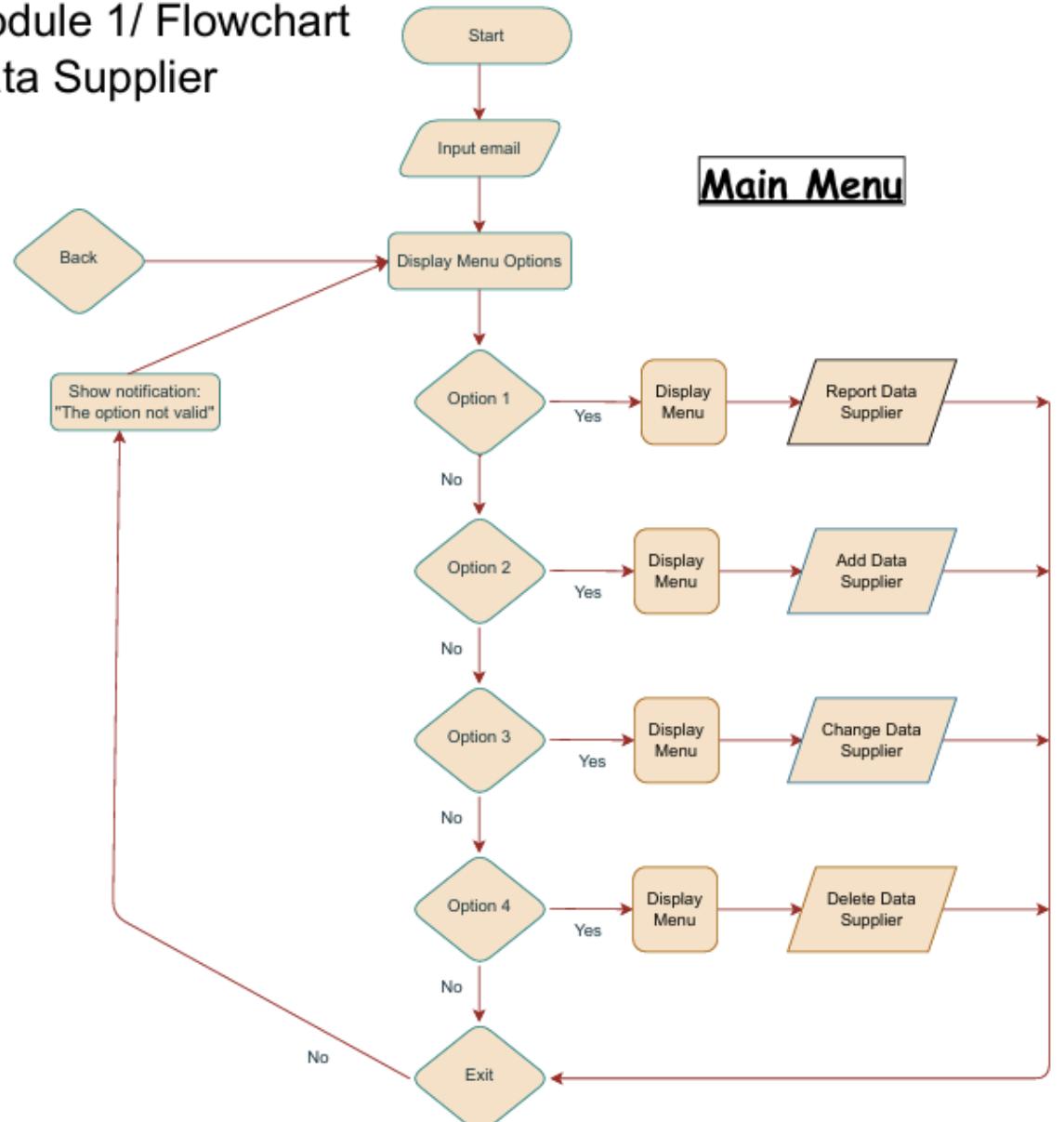
Technology & IT Services:
Managing software and
hardware vendors.

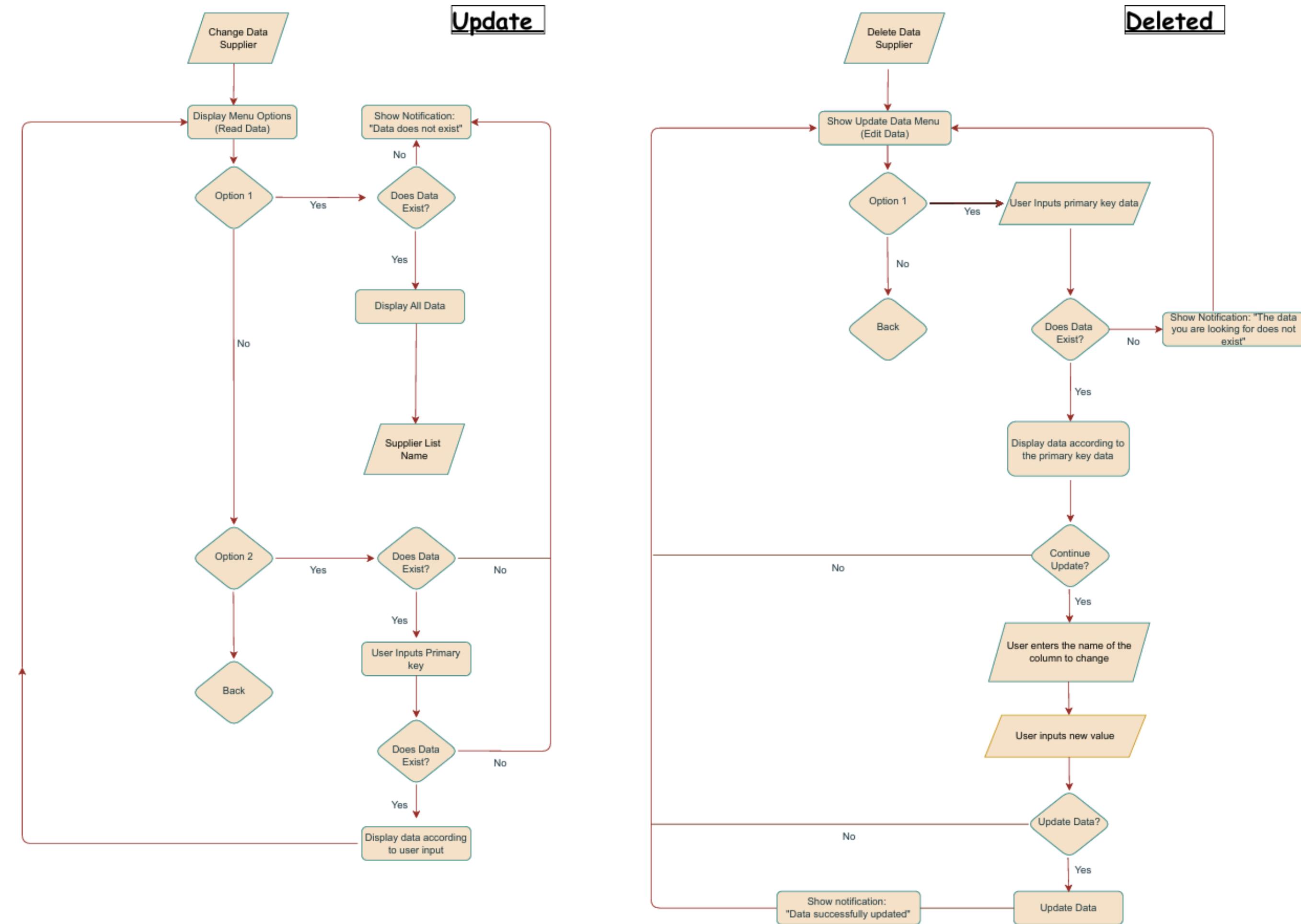
Flowchart Design



Yosua Lubis

Purwadhika
Module 1 / Flowchart
Data Supplier





Sample Data/ Dict

Ref	Code	Name	Type	City	Status
Ref001	4123	PT.Halcom	IT	Batam	Fixterm
Ref002	4124	PT. Wischo	Accessories	Batam	Contract
Ref003	4125	PT. Dutacom	Accessories	Batam	Fixterm
Ref004	4126	PT. Infocom	IT	Jakarta	Contract
Ref005	4127	PT. Generate	IT	Bandung	Fixterm
Ref006	4128	PT. Sunlicom	IT	Medan	Fixterm
Ref007	4129	PT. Servicejaya	Accessories	Bogos	Contract
Ref008	4130	PT. Petron	IT	Surabaya	Contract
Ref009	4131	PT. Pilar	Accessories	Bekasi	Fixterm
Ref010	4132	PT. Bisnet	IT	Jakarta	Fixterm



Conclusion

A CRUD-based Supplier Management System provides businesses with a structured, scalable, and efficient approach to vendor relationships. By implementing budget tracking, performance evaluation, and structured data management, companies gain better financial oversight and supplier efficiency. For businesses looking to enhance supplier tracking, adopting a CRUD-based system is a cost-effective and scalable solution. Using Python, organizations can automate supplier registration, optimize budgets, and improve procurement management.