Inventory Management System Report

Introduction

The Inventory Management System is built using Python, Streamlit, and MySQL. It allows users to manage suppliers, products, customers, and orders in an efficient and interactive manner.

1. Code Explanation

Importing Required Libraries

```
import mysql.connector

import streamlit as st

import pandas as pd
```

- mysql.connector is used to connect and interact with a MySQL database.
- streamlit provides the UI components for building a web application.
- pandas is used for data manipulation and display.

Database Connection

```
def get_connection():
    return mysql.connector.connect(
        host="localhost",
        port=3306,
        user="root",
        password="root",
        database="InventoryManagement"
    )
```

This function establishes a connection to the MySQL database using the provided credentials.

Creating Database Tables

```
def create_tables():
    conn = get_connection()
    c = conn.cursor()
```

- get_connection() is called to establish a database connection.
- A cursor object c is created to execute SQL queries.

Creating Suppliers Table

```
c.execute("""
CREATE TABLE IF NOT EXISTS Suppliers (
    supplier_id INT AUTO_INCREMENT PRIMARY KEY,
    supplier_name VARCHAR(255) NOT NULL,
    contact_name VARCHAR(255),
    location_supplier VARCHAR(255),
    phone_supplier VARCHAR(20),
    email_supplier VARCHAR(255),
    address_supplier TEXT
)""")
```

- Defines a Suppliers table to store supplier details.
- supplier_id is the primary key with auto-increment.
- Other fields store supplier contact details.

Creating Products Table

```
c.execute("""
CREATE TABLE IF NOT EXISTS Products (
    product_id INT AUTO_INCREMENT PRIMARY KEY,
    product_name VARCHAR(255) NOT NULL,
    description TEXT,
    price_product DECIMAL(10,2) NOT NULL,
    stock_quantity_product INT NOT NULL,
    supplier_id INT,
    FOREIGN KEY (supplier_id) REFERENCES Suppliers(supplier_id) ON DELETE SET NULL
)""")
```

- Defines a Products table with product_id as the primary key.
- The supplier_id field establishes a foreign key relationship with the Suppliers table.

Creating Customers Table

```
c.execute("""
```

```
    CREATE TABLE IF NOT EXISTS Customers (
        customer_id INT AUTO_INCREMENT PRIMARY KEY,
        first_name VARCHAR(255),
        last_name VARCHAR(255),
        email_customer VARCHAR(255) UNIQUE,
        phone_customer VARCHAR(20),
        address_customer TEXT
    )""")
```

- Defines a Customers table to store customer details.

Creating Orders Table

```
    c.execute("""
    CREATE TABLE IF NOT EXISTS Orders (
        order_id INT AUTO_INCREMENT PRIMARY KEY,
        customer_id INT,
        order_date TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
        total_amount DECIMAL(10,2),
        status ENUM('Pending', 'Shipped', 'Delivered', 'Cancelled', 'Refunded') DEFAULT 'Pending',
        FOREIGN KEY (customer_id) REFERENCES Customers(customer_id) ON DELETE CASCADE
    )""")
```

- Defines an Orders table with order_id as the primary key.
- customer_id establishes a foreign key relationship with the Customers table.

Executing Queries

```
def execute_query(query, params=()):
    conn = get_connection()
    c = conn.cursor()
    c.execute(query, params)
    conn.commit()
    conn.close()
```

- Executes SQL queries and commits changes to the database.

Fetching Data

```
def fetch_all(query, params=()):
    conn = get_connection()
    c = conn.cursor()
    c.execute(query, params)
    data = c.fetchall()
    conn.close()
    return data
```

- Retrieves all records from a database table.

Viewing Records

```
def view_suppliers():
    return fetch_all("SELECT * FROM Suppliers")
```

- Fetches supplier records from the database.

Deleting a Record

```
def delete_record(table, column, value):
    execute_query(f"DELETE FROM {table} WHERE {column} = %s", (value,))
```

- Deletes a record from the specified table.

Streamlit UI

```
st.title("Inventory Management System")
create_tables()
```

- Displays the application title and ensures tables are created before the app loads.

Sidebar Menu

```
menu = ["Suppliers", "Products", "Customers", "Orders"]
choice = st.sidebar.selectbox("Menu", menu)
```

- Provides a sidebar menu for navigation.

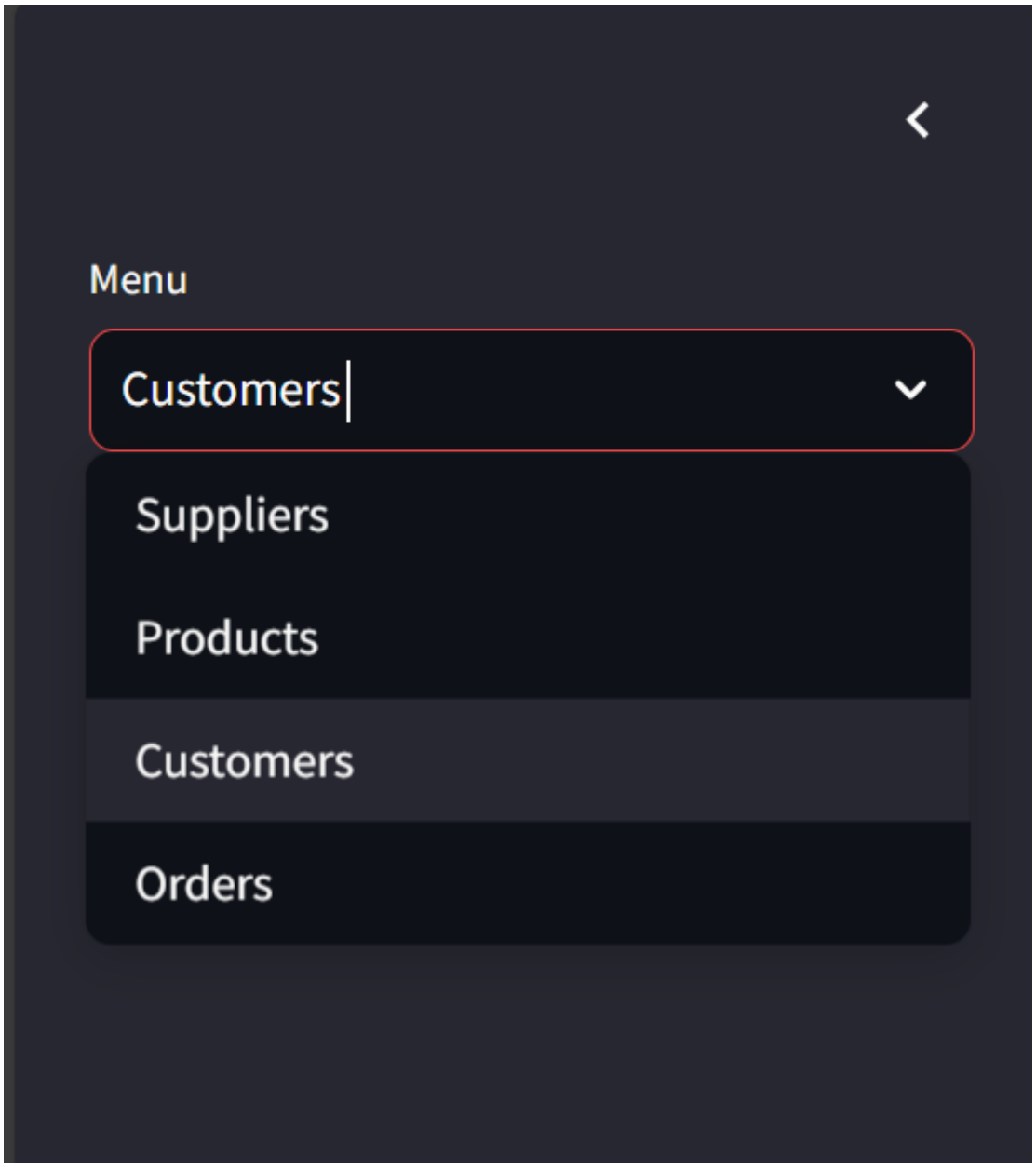
Displaying Data in Streamlit

```
def display_table(data, columns, table, column):
    df = pd.DataFrame(data, columns=columns)
```

st.dataframe(df)

- Converts data into a Pandas DataFrame and displays it in a table format.

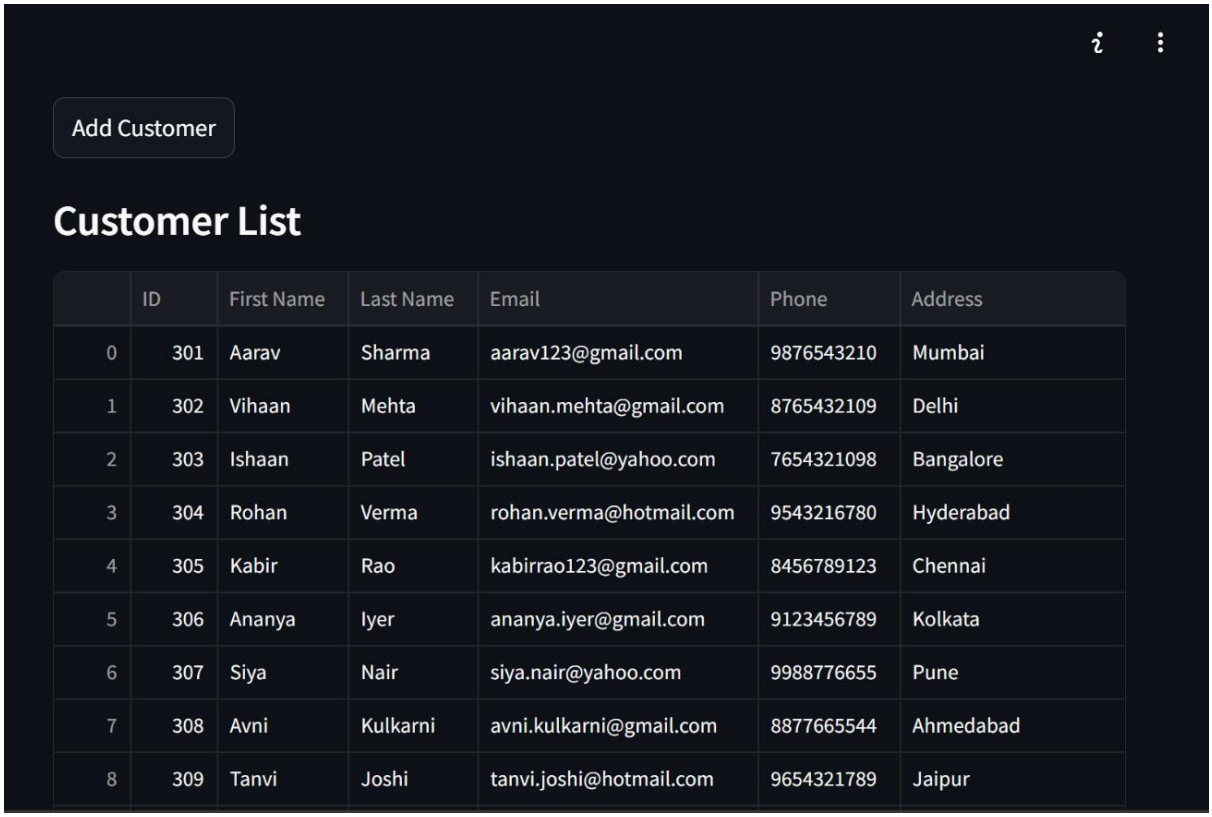
2. Output Screenshots & Functionalities



The above screenshot represents the navigation menu of the Inventory Management System. It includes a dropdown menu allowing users to switch between different sections

- **Suppliers**.
- **Products**
- **Customers**
- **Orders**
- **Navigation & User Experience** –

- The "Manage Customers" screen is designed to facilitate the management of customer information within the Inventory Management System. It allows users to add, edit, and manage customer details efficiently. The key functionalities of this interface include:
- **User Input Fields** – The screen contains multiple input fields for entering customer details, including:
- **First Name**: Allows the user to enter the first name of the customer.
- **Last Name**: Captures the last name of the customer.
- **Email**: Stores the email address of the customer for communication purposes.
- **Phone**: Holds the phone number for contacting the customer.
- **Address**: Enables users to enter the complete address of the customer.
- **Data Entry & Validation** – Each input field ensures that the necessary information is provided correctly. Validation rules may be applied to prevent incorrect data entry (e.g., ensuring email format, mandatory fields).
- **Customer Management** – This screen is connected to a database, allowing the system to store customer details, update existing records, or retrieve stored information when needed.



	ID	First Name	Last Name	Email	Phone	Address
0	301	Aarav	Sharma	aarav123@gmail.com	9876543210	Mumbai
1	302	Vihaan	Mehta	vihaan.mehta@gmail.com	8765432109	Delhi
2	303	Ishaan	Patel	ishaan.patel@yahoo.com	7654321098	Bangalore
3	304	Rohan	Verma	rohan.verma@hotmail.com	9543216780	Hyderabad
4	305	Kabir	Rao	kabirrao123@gmail.com	8456789123	Chennai
5	306	Ananya	Iyer	ananya.iyer@gmail.com	9123456789	Kolkata
6	307	Siya	Nair	siya.nair@yahoo.com	9988776655	Pune
7	308	Avni	Kulkarni	avni.kulkarni@gmail.com	8877665544	Ahmedabad
8	309	Tanvi	Joshi	tanvi.joshi@hotmail.com	9654321789	Jaipur

The "Customer List" screen provides an overview of all customers stored in the Inventory Management System. It allows users to view customer details, manage records, and perform actions such as adding new customers.

Key Functionalities:

1. **"Add Customer" Button**
    - Provides an option to add a new customer to the database.
    - navigates to a form where users can input new customer details.
2. **Customer Data Table**
    - Displays a structured list of customers with essential information:
        - **ID**: Unique identifier assigned to each customer.
        - **First Name & Last Name**: Customer's full name.
        - **Email**: Contact email for communication.
        - **Phone**: Customer's phone number.
        - **Address**: Location details of the customer.
    - The table helps in quick reference and easy lookup of customer details.
3. **Data Management**
    - Users can view customer details without manually searching the database.

The "Delete Customer Record" screen allows users to remove a customer from the database by selecting their **Customer ID**.

Key Functionalities:

- **Customer ID Selection**
- A dropdown menu allows users to select a **Customer ID** from the list of available customers.
- Ensures that users choose an existing record to avoid errors.
- **"Delete Record" Button**
- Confirms the deletion of the selected customer from the database.
- Once clicked, it likely removes the corresponding customer entry permanently.

The "Manage Suppliers" screen allows users to **add, edit, or update supplier details** in the inventory management system.

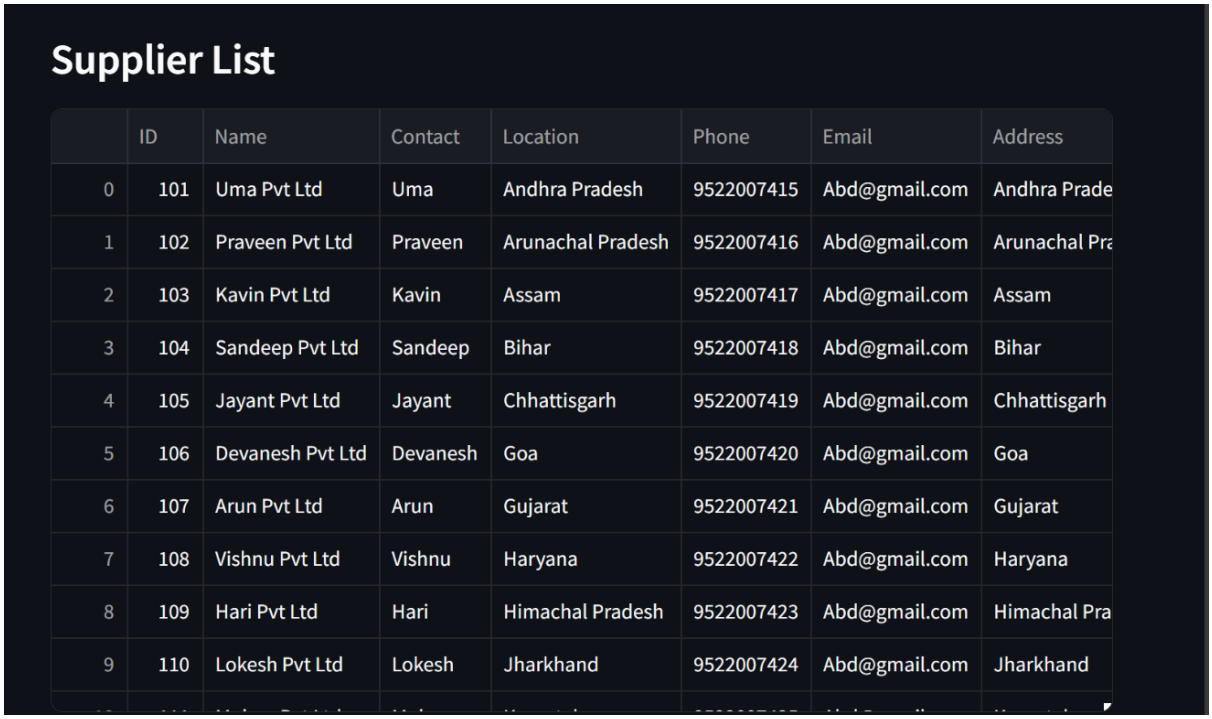
Key Functionalities:

1. **Supplier Name**
    - A text input field to enter the supplier's company name.
    - Ensures that the supplier is correctly identified in the database.
2. **Contact Name**
    - A field for entering the name of the primary contact person for the supplier.
    - Useful for direct communication and business transactions.
3. **Location**
    - Specifies the geographical location of the supplier.
    - Helps in logistics planning and supply chain management.
4. **Phone**
    - A field to enter the supplier's contact number.
    - Allows easy communication for orders and inquiries.
5. **Email**

- Stores the supplier’s email address.
- Useful for digital communication, order confirmations, and invoice exchanges.

Expected Actions:

- After filling in the details, the system may offer options to **Save, Update, or Cancel** entries.
- Validation checks can be implemented to **ensure correct data formatting (e.g., phone number format, valid email address, etc.).**
- The information entered here will likely be reflected in a **Supplier List** for easy access and management.



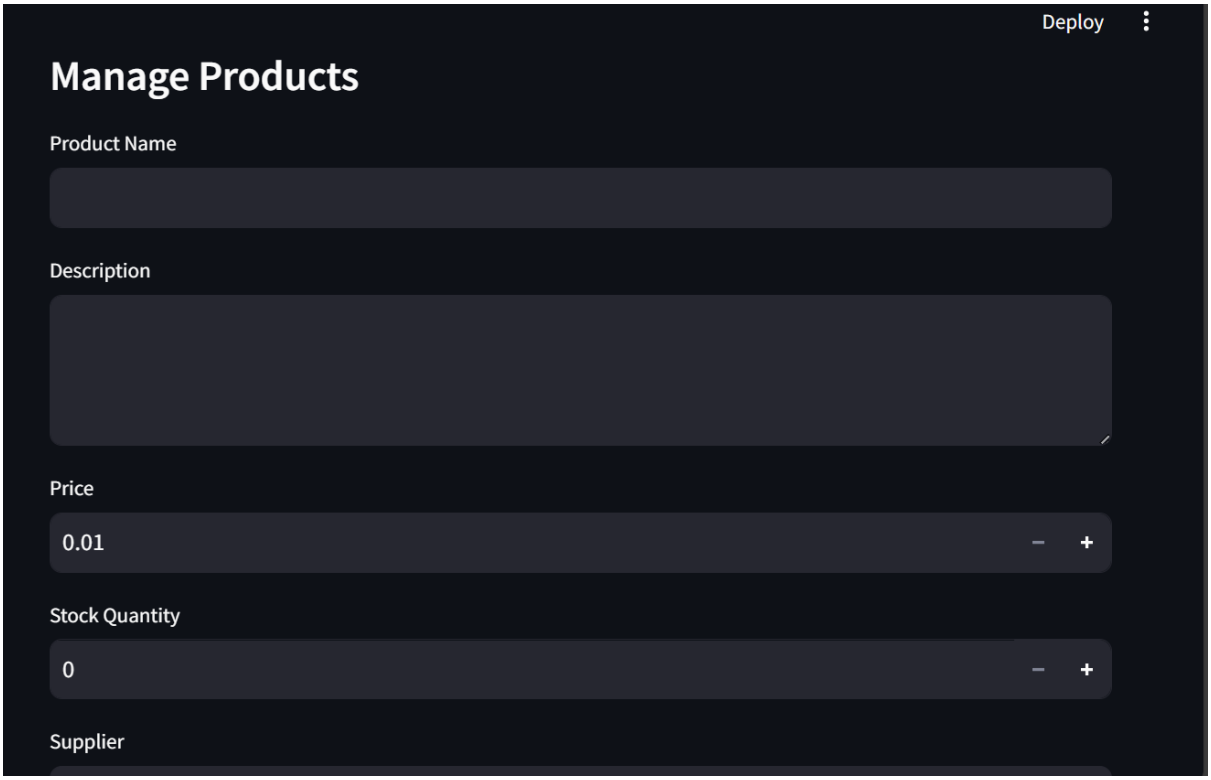
Supplier List

	ID	Name	Contact	Location	Phone	Email	Address
0	101	Uma Pvt Ltd	Uma	Andhra Pradesh	9522007415	Abd@gmail.com	Andhra Prade
1	102	Praveen Pvt Ltd	Praveen	Arunachal Pradesh	9522007416	Abd@gmail.com	Arunachal Pra
2	103	Kavin Pvt Ltd	Kavin	Assam	9522007417	Abd@gmail.com	Assam
3	104	Sandeep Pvt Ltd	Sandeep	Bihar	9522007418	Abd@gmail.com	Bihar
4	105	Jayant Pvt Ltd	Jayant	Chhattisgarh	9522007419	Abd@gmail.com	Chhattisgarh
5	106	Devanesh Pvt Ltd	Devanesh	Goa	9522007420	Abd@gmail.com	Goa
6	107	Arun Pvt Ltd	Arun	Gujarat	9522007421	Abd@gmail.com	Gujarat
7	108	Vishnu Pvt Ltd	Vishnu	Haryana	9522007422	Abd@gmail.com	Haryana
8	109	Hari Pvt Ltd	Hari	Himachal Pradesh	9522007423	Abd@gmail.com	Himachal Pra
9	110	Lokesh Pvt Ltd	Lokesh	Jharkhand	9522007424	Abd@gmail.com	Jharkhand

- The **"Supplier List"** screen displays a table containing details of all suppliers stored in the inventory management system.
- **Key Functionalities:**
- **Displays Supplier Information**
- The table provides a structured **view of all suppliers**, including their **ID, name, contact person, location, phone number, email, and address**.
- Helps users quickly **search, verify, or reference supplier details** when needed.
- **Column Breakdown**
- **ID** → Unique identifier for each supplier.
- **Name** → The supplier's company name.

- **Contact** → Name of the primary contact person.
- **Location** → Geographical location of the supplier.
- **Phone** → Contact number for communication.
- **Email** → Supplier's email for correspondence.
- **Address** → Full address of the supplier.
- **Efficient Data Management**
- Likely integrated with **Add, Edit, and Delete functionalities** for managing supplier records.
- May support **sorting and filtering options** to quickly find specific suppliers.
- **Data Consistency and Verification**
- Ensures that all supplier records are up-to-date and easily accessible.
- Helps in **tracking supplier details** for purchase orders, shipments, and business communication.

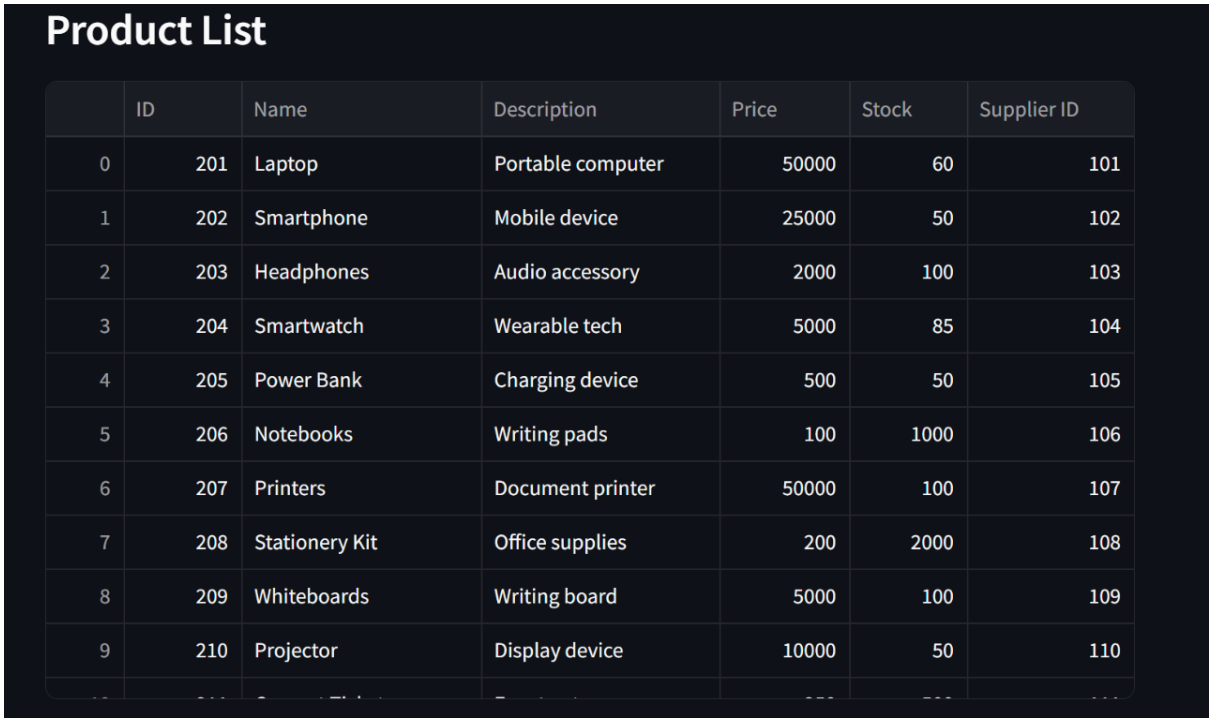
The **"Delete Supplier"** screen allows users to remove supplier records from the system



The **"Manage Products"** screen allows users to add or edit product details in the inventory system.

Key Functionalities:

1. **Product Name Field**
    - Users can input the **name of the product** they want to add.
2. **Description Field**
    - A **multi-line text area** for users to add details about the product.
    - Helps in providing **specific product information**.
3. **Price Input**
    - Allows users to set the **price of the product**.
    - Likely restricted to numerical values to **prevent errors**.
4. **Stock Quantity Input**
    - Users can enter or adjust the **stock quantity**.
    - The **"-" and "+"** buttons allow for easy increment or decrement of stock levels.
5. **Supplier Selection**
    - Users can assign a **supplier** to the product.
    - Helps in tracking **which supplier provides the item**.



Product List

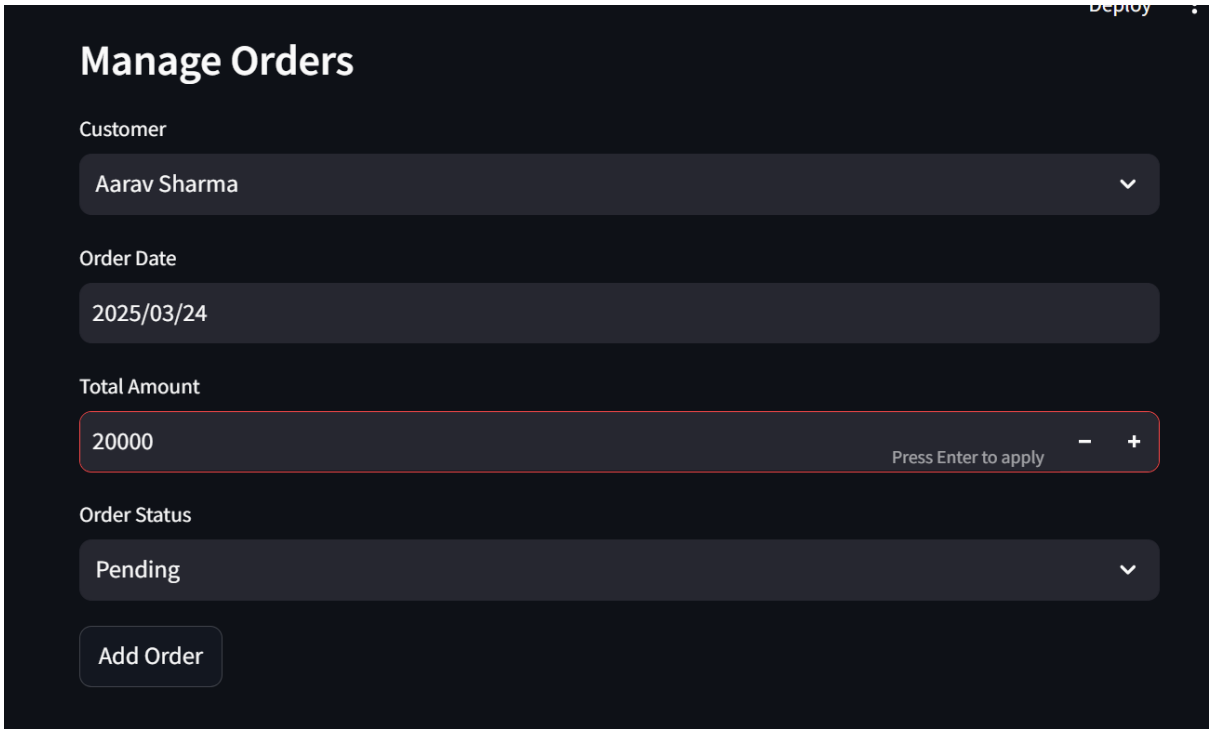
	ID	Name	Description	Price	Stock	Supplier ID
0	201	Laptop	Portable computer	50000	60	101
1	202	Smartphone	Mobile device	25000	50	102
2	203	Headphones	Audio accessory	2000	100	103
3	204	Smartwatch	Wearable tech	5000	85	104
4	205	Power Bank	Charging device	500	50	105
5	206	Notebooks	Writing pads	100	1000	106
6	207	Printers	Document printer	50000	100	107
7	208	Stationery Kit	Office supplies	200	2000	108
8	209	Whiteboards	Writing board	5000	100	109
9	210	Projector	Display device	10000	50	110

The **"Product List"** screen displays all products currently available in the inventory.

Key Functinalities:

1. **Product ID (ID Column)**
    - Unique identifier for each product in the database.
2. **Name Column**
    - Displays the **name of the product**.
3. **Description Column**
    - Short description of the product, helping in **quick identification**.
4. **Price Column**
    - Shows the **cost per unit** of the product.
5. **Stock Column**
    - Indicates the **current quantity available** in inventory.
6. **Supplier ID Column**
    - Identifies which **supplier provides the product**.

The **"Delete Record"** screen allows users to remove a product from the inventory by selecting its ID.



The **"Manage Orders"** screen allows users to create and manage customer orders efficiently.

Key Features:

1. **Customer Selection**
   - A dropdown menu lets users select an existing customer.
2. **Order Date**
   - Displays the current date (e.g., 2025/03/24).
3. **Total Amount**
   - Allows users to enter or adjust the total order value.
   - Displays a warning (red border) if an invalid or unconfirmed value is entered.
4. **Order Status**
   - Defaults to **"Pending"**, indicating that the order is yet to be processed.
5. **Add Order Button**
   - Saves the order in the database upon clicking.

Order List

	ID	Customer ID	Order Date	Total Amount	Status
0	601	301	2024-03-18 00:00:00	1250.5	Pending
1	602	302	2024-03-19 00:00:00	2300	Shipped
2	603	303	2024-03-20 00:00:00	750.75	Delivered
3	604	304	2024-03-21 00:00:00	1899.99	Cancelled
4	605	305	2024-03-22 00:00:00	999.5	Refunded
5	606	306	2024-03-23 00:00:00	450	Pending
6	607	307	2024-03-24 00:00:00	3000	Shipped
7	608	308	2024-03-25 00:00:00	1299.99	Delivered
8	609	309	2024-03-26 00:00:00	500	Cancelled
9	610	310	2024-03-27 00:00:00	750.5	Refunded

The **"Order List"** screen provides an overview of all customer orders, displaying their details in a structured table format.

Key Features:

1. **Order ID**
    - Unique identifier for each order.
2. **Customer ID**
    - Identifies the customer associated with the order.
3. **Order Date**
    - Displays when the order was placed in YYYY-MM-DD HH:MM:SS format.
4. **Total Amount**
    - Shows the total cost of each order.
5. **Status**
    - Indicates the current state of the order:
        - **Pending** → Order is awaiting processing.
        - **Shipped** → Order has been dispatched.
        - **Delivered** → Order has reached the customer.
        - **Cancelled** → Order has been canceled.

- **Refunded** → Customer has been refunded.

The **"Delete Record"** screen allows users to remove an order from the database by selecting an order ID and confirming deletion.

Key Features:

1. **Dropdown Menu (Select ID to delete)**
    - Users can choose an order ID from the list of existing orders.
2. **Delete Record Button**
    - Confirms the deletion process and removes the selected order from the database.