**Case Study: E-commerce Management System**

**Section 1: Python Standalone Console Application**

Design and implement a standalone console application for an E-commerce Management System using Python. The application should utilize collections, object-oriented programming (OOP), and exception handling to manage products, customers, orders, and inventory.

**Requirements:**

1. **Product Management:**
   * Implement the functionality to add, update, and delete product records.
   * Each product should have attributes such as product\_id, name, description, price, and stock\_quantity.
2. **Customer Management:**
   * Implement the functionality to manage customers.
   * Each customer should have attributes such as customer\_id, name, email, and address.
3. **Order Management:**
   * Implement the functionality to handle orders.
   * Each order should have attributes such as order\_id, customer\_id, product\_id, order\_date, and quantity.
4. **Inventory Management:**
   * Implement the functionality to manage inventory levels.
   * Automatically update stock quantities based on orders.

**Business Functionalities:**

1. **Manage Products:**
   * Create a class Product with attributes product\_id, name, description, price, and stock\_quantity.
   * Implement methods to add a new product, update product details, and delete a product from the system.
2. **Manage Customers:**
   * Create a class Customer with attributes customer\_id, name, email, and address.
   * Implement methods to add a new customer, update customer details, and delete a customer.
3. **Manage Orders:**
   * Create a class Order with attributes order\_id, customer\_id, product\_id, order\_date, and quantity.
   * Implement methods to place a new order, update order details, and delete an order.
4. **Manage Inventory:**
   * Implement methods to update inventory levels when an order is placed or canceled.

**Section 2: MySQL Database Management**

Design a MySQL database schema to support the E-commerce Management System and provide solutions for the problem statements.

**Table Structures:**

1. **Products Table:**

* product\_id: INT, Primary Key
* name: VARCHAR(255)
* description: TEXT
* price: DECIMAL(10, 2)
* stock\_quantity: INT

1. **Customers Table:**

* customer\_id: INT, Primary Key
* name: VARCHAR(255)
* email: VARCHAR(255)
* address: VARCHAR(255)

1. **Orders Table:**

* order\_id: INT, Primary Key
* customer\_id: INT, Foreign Key References Customers(customer\_id)
* product\_id: INT, Foreign Key References Products(product\_id)
* order\_date: DATE
* quantity: INT

**Problem Statements:**

* Write a query to find the total sales revenue generated in a specific month.
* Write a query to find the customers who have placed more than five orders.
* Write a query to find the products that need restocking (stock\_quantity < 10).
* Write a query to find the most popular products (most ordered).
* Write a query to find the details of orders placed by a specific customer.