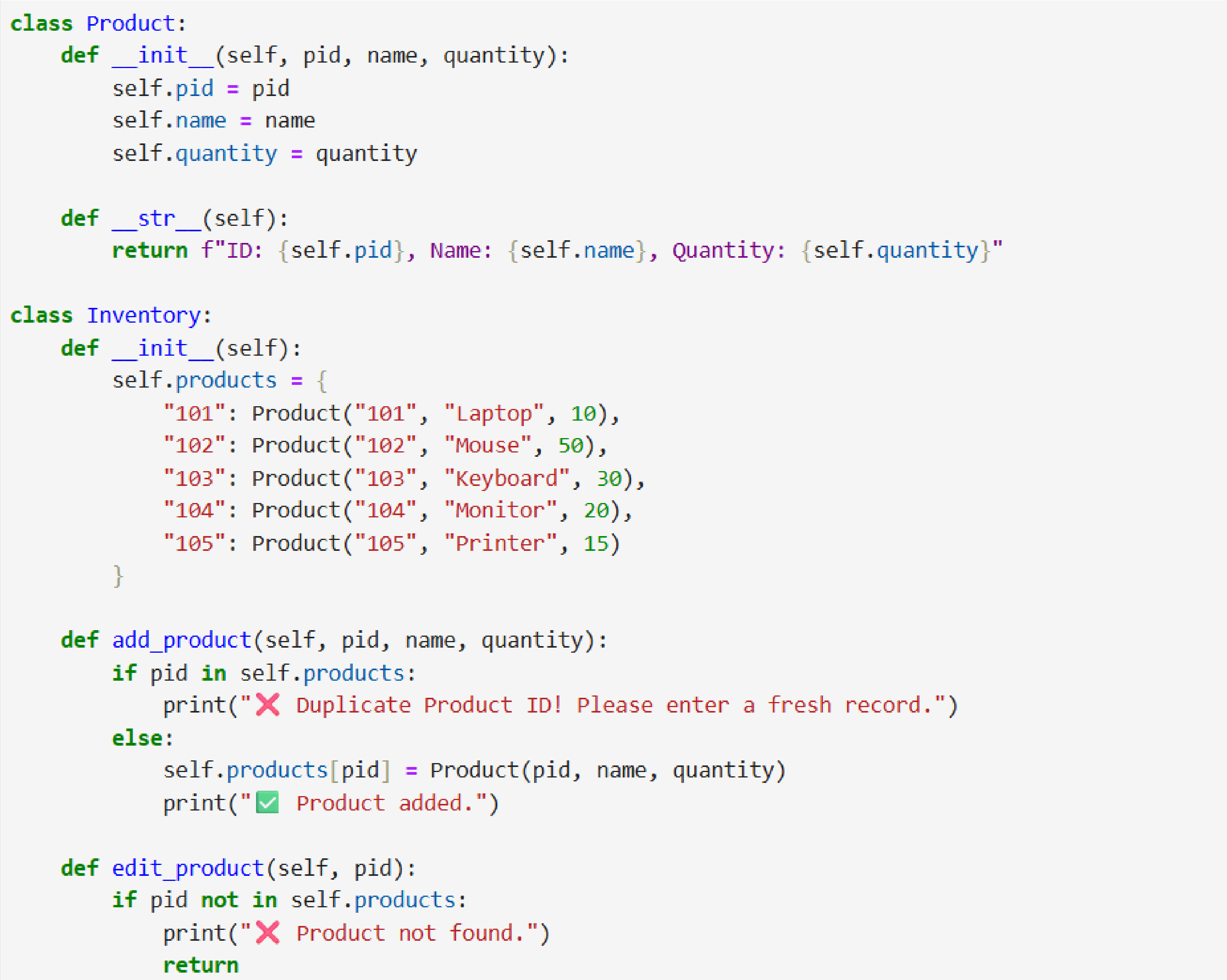
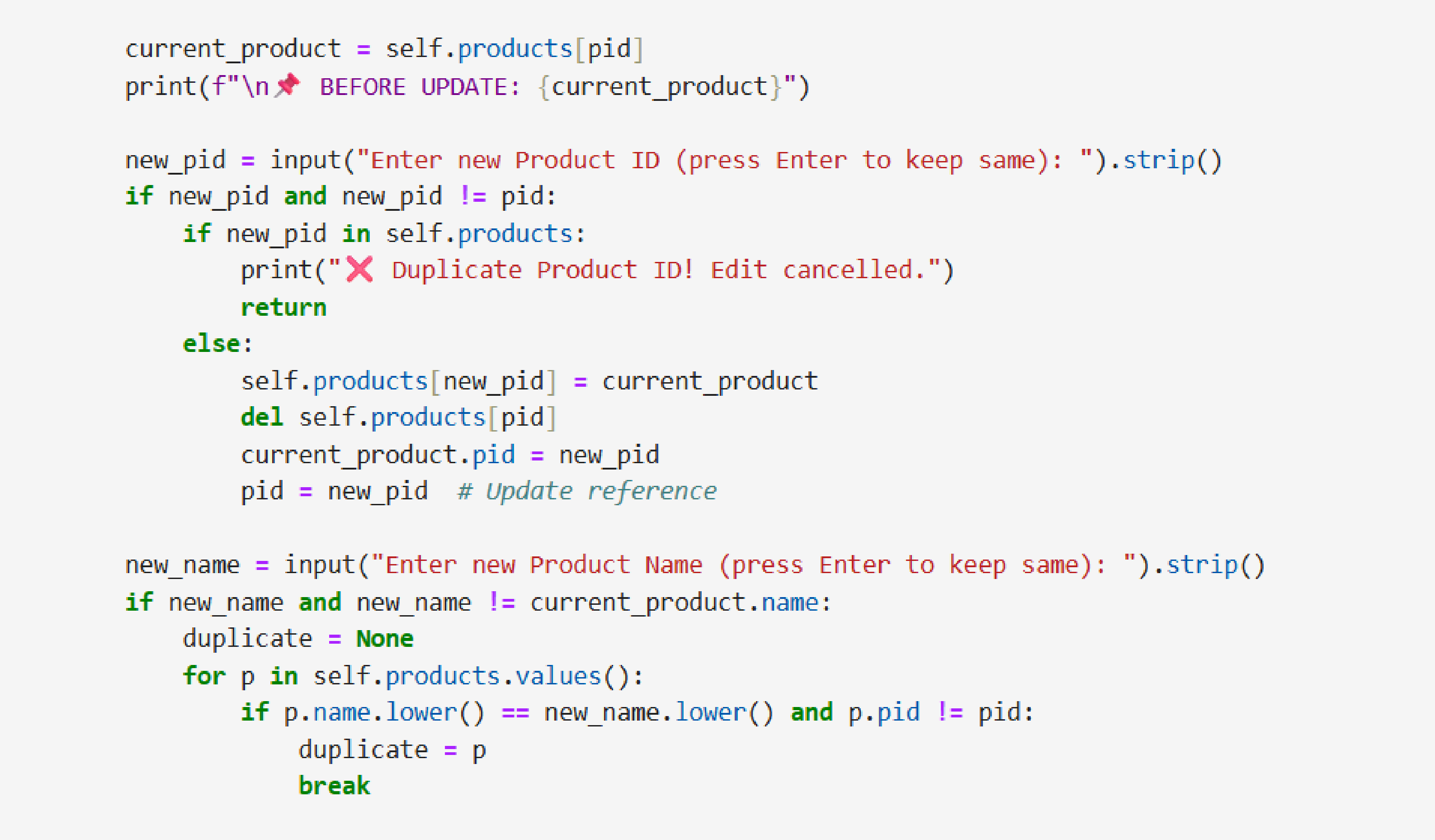
Question - Create an Inventory Management System
Build a Python program to manage inventory for a store or warehouse.
The system should allow users to add, edit, and delete products, track inventory levels

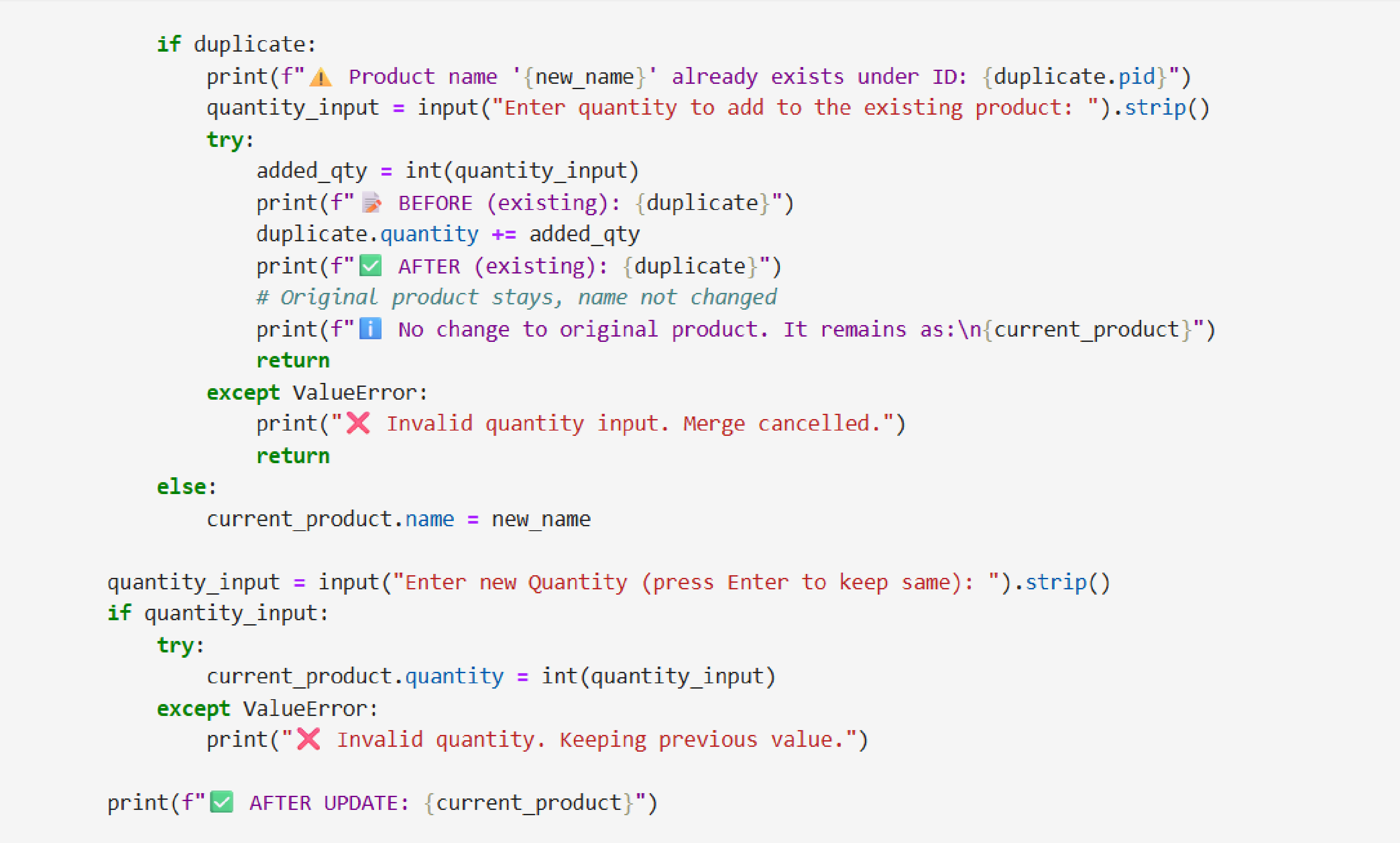
CODE



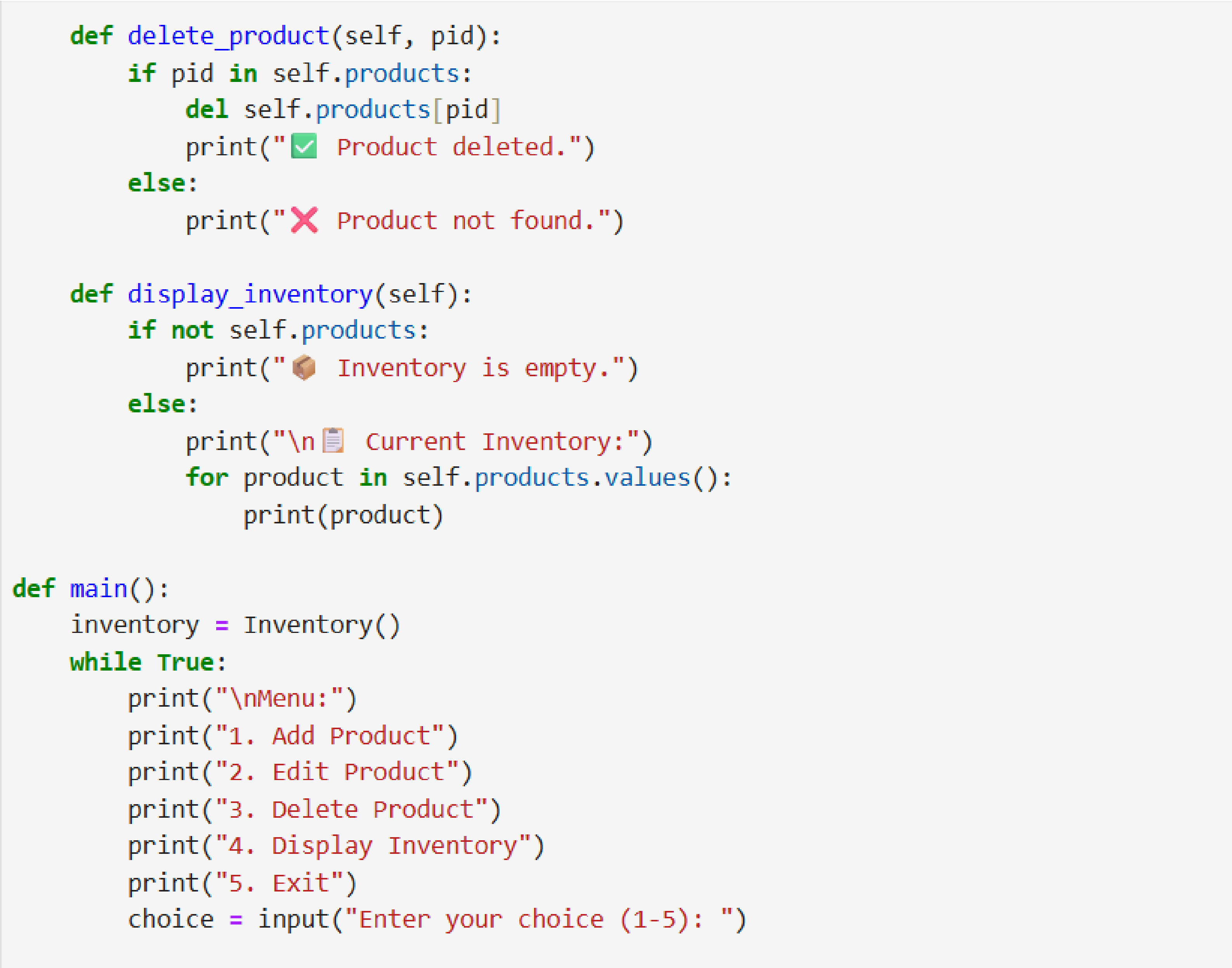
```python
class Product:
    def __init__(self, pid, name, quantity):
        self.pid = pid
        self.name = name
        self.quantity = quantity

    def __str__(self):
        return f"ID: {self.pid}, Name: {self.name}, Quantity: {self.quantity}"

class Inventory:
    def __init__(self):
        self.products = {
            "101": Product("101", "Laptop", 10),
            "102": Product("102", "Mouse", 50),
            "103": Product("103", "Keyboard", 30),
            "104": Product("104", "Monitor", 20),
            "105": Product("105", "Printer", 15)
        }

    def add_product(self, pid, name, quantity):
        if pid in self.products:
            print("❌ Duplicate Product ID! Please enter a fresh record.")
        else:
            self.products[pid] = Product(pid, name, quantity)
            print("✅ Product added.")

    def edit_product(self, pid):
        if pid not in self.products:
            print("❌ Product not found.")
            return
```



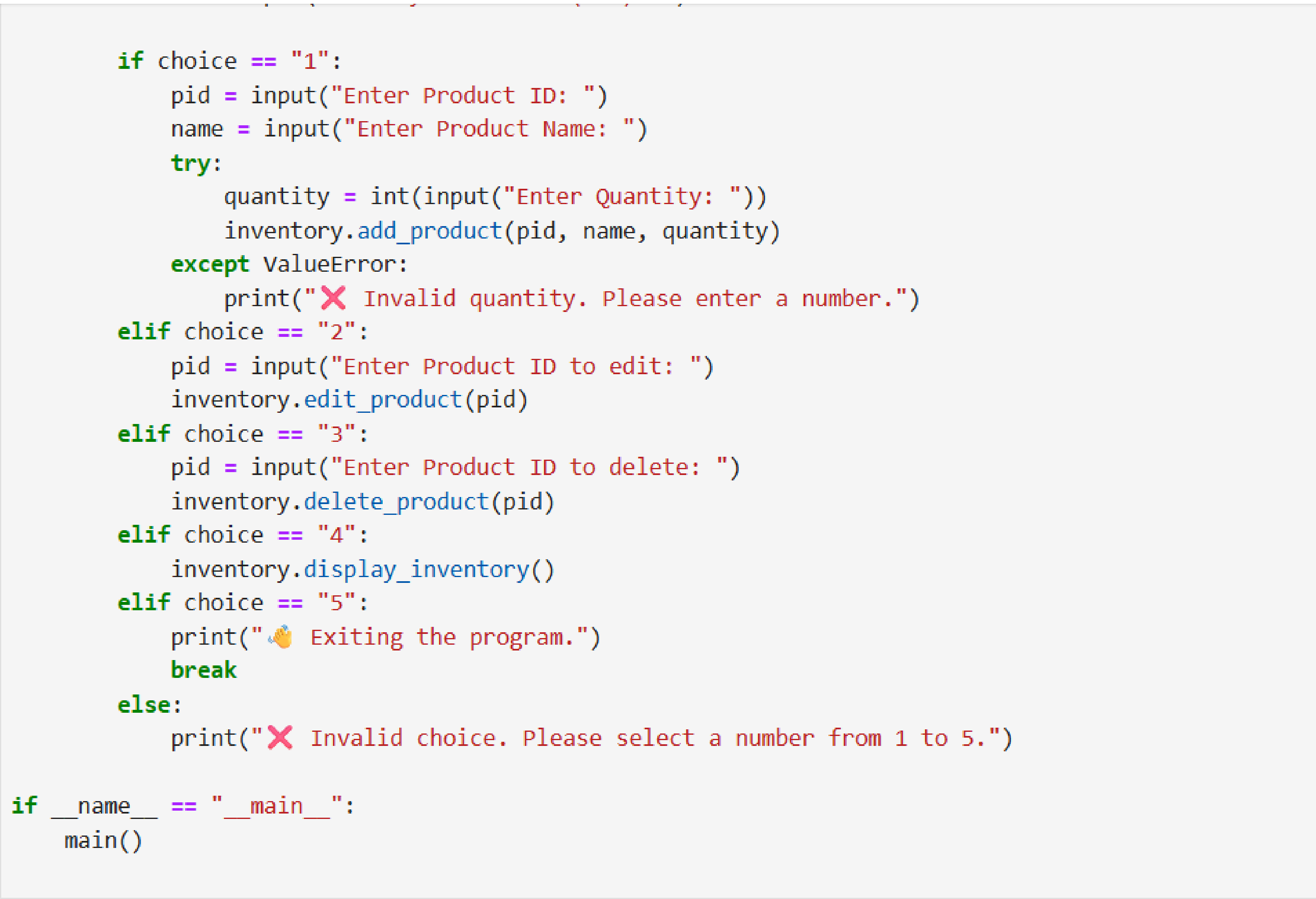
```python
current_product = self.products[pid]
print(f"\n📌 BEFORE UPDATE: {current_product}")

new_pid = input("Enter new Product ID (press Enter to keep same): ").strip()
if new_pid and new_pid != pid:
    if new_pid in self.products:
        print("❌ Duplicate Product ID! Edit cancelled.")
        return
    else:
        self.products[new_pid] = current_product
        del self.products[pid]
        current_product.pid = new_pid
        pid = new_pid  # Update reference

new_name = input("Enter new Product Name (press Enter to keep same): ").strip()
if new_name and new_name != current_product.name:
    duplicate = None
    for p in self.products.values():
        if p.name.lower() == new_name.lower() and p.pid != pid:
            duplicate = p
            break
```



```
    if duplicate:
        print(f"⚠️ Product name '{new_name}' already exists under ID: {duplicate.pid}")
        quantity_input = input("Enter quantity to add to the existing product: ").strip()
        try:
            added_qty = int(quantity_input)
            print(f"📝 BEFORE (existing): {duplicate}")
            duplicate.quantity += added_qty
            print(f"✅ AFTER (existing): {duplicate}")
            # Original product stays, name not changed
            print(f"ℹ️ No change to original product. It remains as:\n{current_product}")
            return
        except ValueError:
            print("❌ Invalid quantity input. Merge cancelled.")
            return
    else:
        current_product.name = new_name

quantity_input = input("Enter new Quantity (press Enter to keep same): ").strip()
if quantity_input:
    try:
        current_product.quantity = int(quantity_input)
    except ValueError:
        print("❌ Invalid quantity. Keeping previous value.")

print(f"✅ AFTER UPDATE: {current_product}")
```

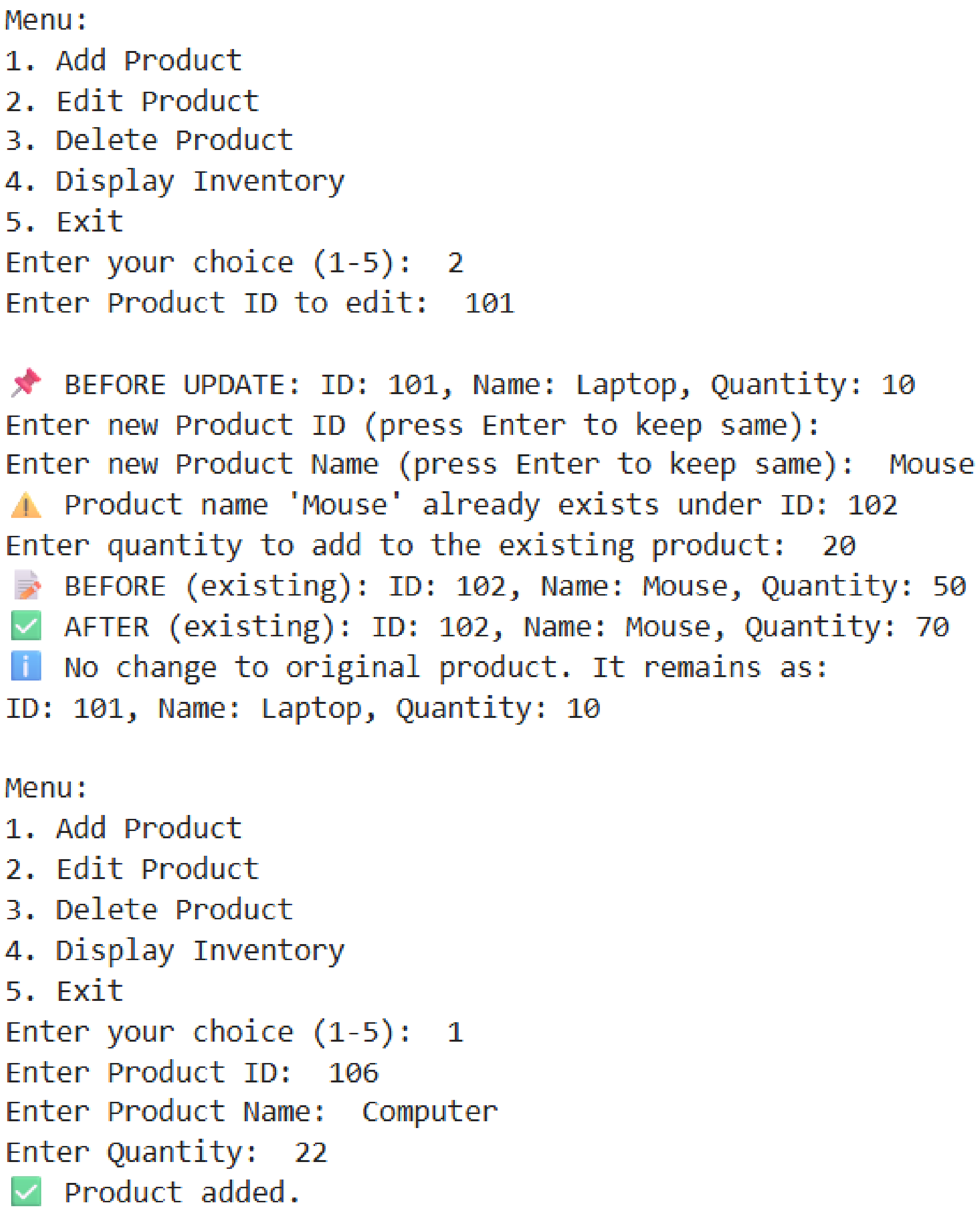


```python
    def delete_product(self, pid):
        if pid in self.products:
            del self.products[pid]
            print("✅ Product deleted.")
        else:
            print("❌ Product not found.")

    def display_inventory(self):
        if not self.products:
            print("📦 Inventory is empty.")
        else:
            print("\n📋 Current Inventory:")
            for product in self.products.values():
                print(product)

def main():
    inventory = Inventory()
    while True:
        print("\nMenu:")
        print("1. Add Product")
        print("2. Edit Product")
        print("3. Delete Product")
        print("4. Display Inventory")
        print("5. Exit")
        choice = input("Enter your choice (1-5): ")
```

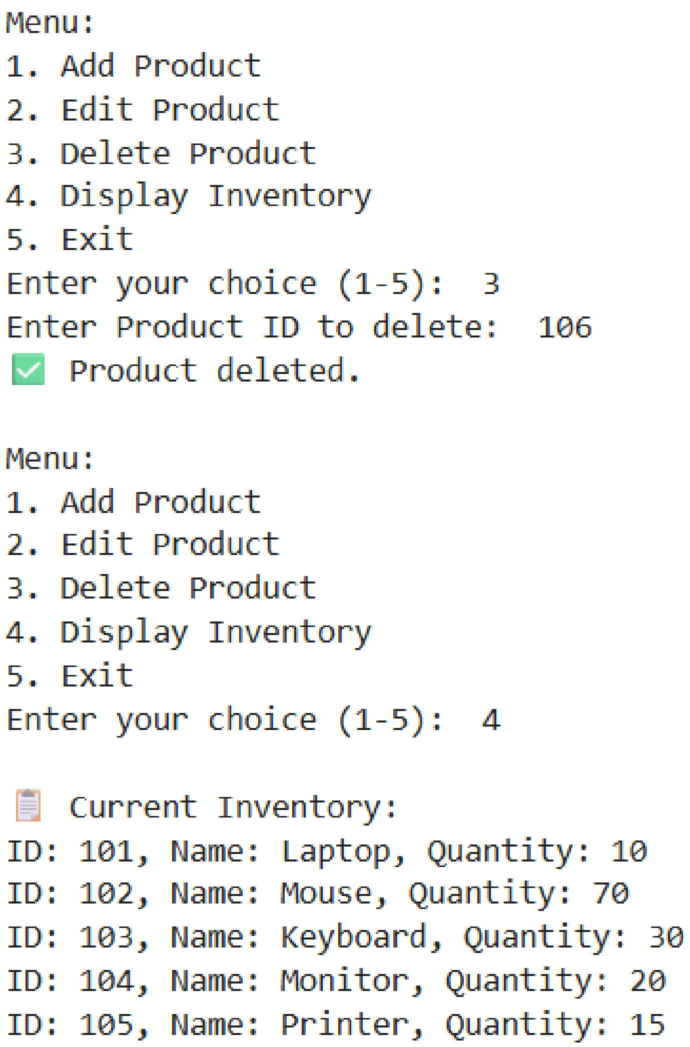


```
        if choice == "1":
            pid = input("Enter Product ID: ")
            name = input("Enter Product Name: ")
            try:
                quantity = int(input("Enter Quantity: "))
                inventory.add_product(pid, name, quantity)
            except ValueError:
                print("❌ Invalid quantity. Please enter a number.")
        elif choice == "2":
            pid = input("Enter Product ID to edit: ")
            inventory.edit_product(pid)
        elif choice == "3":
            pid = input("Enter Product ID to delete: ")
            inventory.delete_product(pid)
        elif choice == "4":
            inventory.display_inventory()
        elif choice == "5":
            print("👋 Exiting the program.")
            break
        else:
            print("❌ Invalid choice. Please select a number from 1 to 5.")

if __name__ == "__main__":
    main()
```

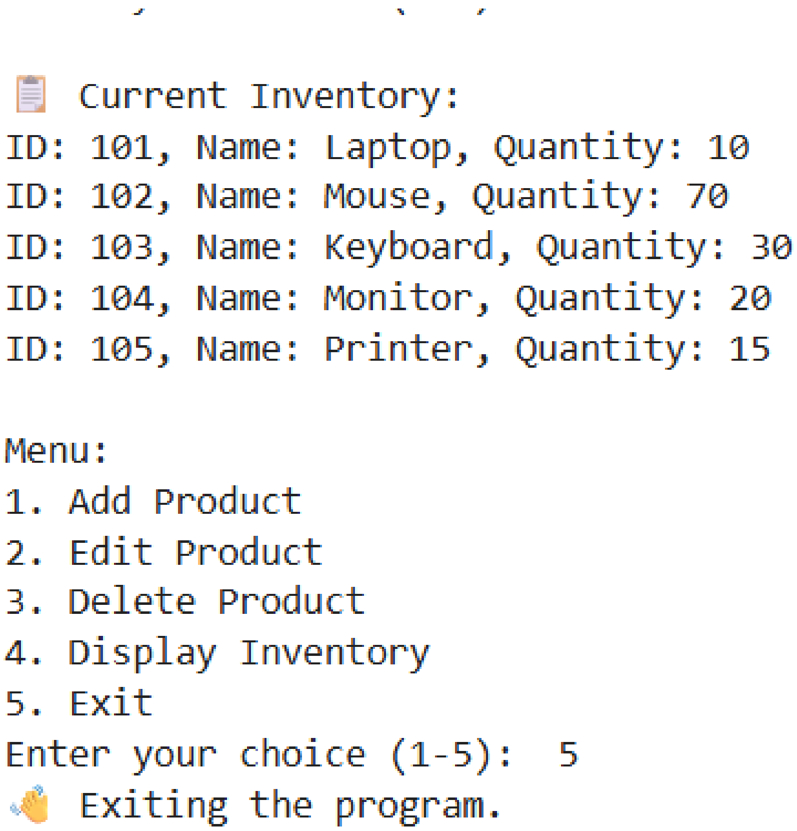
OUTPUT



```
Menu:
1. Add Product
2. Edit Product
3. Delete Product
4. Display Inventory
5. Exit
Enter your choice (1-5):  2
Enter Product ID to edit:  101

📌 BEFORE UPDATE: ID: 101, Name: Laptop, Quantity: 10
Enter new Product ID (press Enter to keep same):
Enter new Product Name (press Enter to keep same):  Mouse
⚠️ Product name 'Mouse' already exists under ID: 102
Enter quantity to add to the existing product:  20
📝 BEFORE (existing): ID: 102, Name: Mouse, Quantity: 50
✅ AFTER (existing): ID: 102, Name: Mouse, Quantity: 70
ℹ️ No change to original product. It remains as:
ID: 101, Name: Laptop, Quantity: 10

Menu:
1. Add Product
2. Edit Product
3. Delete Product
4. Display Inventory
5. Exit
Enter your choice (1-5):  1
Enter Product ID:  106
Enter Product Name:  Computer
Enter Quantity:  22
✅ Product added.
```



```
Menu:
1. Add Product
2. Edit Product
3. Delete Product
4. Display Inventory
5. Exit
Enter your choice (1-5):  3
Enter Product ID to delete:  106
✅ Product deleted.

Menu:
1. Add Product
2. Edit Product
3. Delete Product
4. Display Inventory
5. Exit
Enter your choice (1-5):  4

📋 Current Inventory:
ID: 101, Name: Laptop, Quantity: 10
ID: 102, Name: Mouse, Quantity: 70
ID: 103, Name: Keyboard, Quantity: 30
ID: 104, Name: Monitor, Quantity: 20
ID: 105, Name: Printer, Quantity: 15
```



```
📋 Current Inventory:
ID: 101, Name: Laptop, Quantity: 10
ID: 102, Name: Mouse, Quantity: 70
ID: 103, Name: Keyboard, Quantity: 30
ID: 104, Name: Monitor, Quantity: 20
ID: 105, Name: Printer, Quantity: 15

Menu:
1. Add Product
2. Edit Product
3. Delete Product
4. Display Inventory
5. Exit
Enter your choice (1-5):  5
👋 Exiting the program.
```