

Inventory Management System

Introduction: This program helps the user to manage their inventory system with basic commands in C++. The system can do these: Track the products, manage stock levels, check the prices.

The Project follow a modular structure, seperating the header files from their source files. This approach fits encapsulation and modularity principle of Object Oriented Programming.

I seperated the codes into 5 files, this makes the code cleand and modular. I used 2 main classes:

Item Class:

Item.h and Item.cpp this class repersents the products. I used encapsulation here.

Private: Variables like id, name, brand, quantity and price are private. This prevents accidental changes from outside and protects the data.

Public:

Item(...)(Constructor): It runs when we create a new item. It initializes the ID, name, brand, quantity, and price.

getId(), getName(), getBrand(): These are "Getter" functions. They allow the system to read the item's details without changing them.

getQuantity(), getPrice(): These functions return the current stock and price.

setQuantity(int): This "Setter" function updates the stock level safely.

setPrice(double): This function allows updating the price of a product.

display(): This function prints the item's details (ID, Name, Brand, etc.) in a formatted table row on the screen.

toFileString(): This is a helper function. It converts the item data into a single text line (CSV format) so it can be saved to the file.

InventoryManager Class: InventoryManager.h and InventoryManager.cpp this class manage the list of the items. I used vector to store the items because vectors can resize dynamically. These are the methods that i used.

Private:

loadFromFile(): This helper method is Private because it is only used internally by the class when the program starts. It reads the text file.

Public:

InventoryManager(): The constructor. It calls the private loadFromFile method automatically.

addItem(...): It creates a new Item object and adds it to the list.

deleteItem(int id): It removes the item with the given ID.

searchItem(string name): It finds and shows the product details.

updateItem(int id): It updates the quantity and price of a specific item.

displayAll(): It shows all items in the list.

sortByName(): It sorts the list alphabetically (A-Z).

lowStockReport(int limit): It lists items that are running low.

saveToFile(): It saves all data to the text file before exiting.

Main Program: Main.cpp this file is the entry point of the application. It acts as the User Interface.

I used while loop to keep program running² continuously until the user selects the "Save and Exit" option. The program use cout to show the menu options 1-8 and cin to get the user's choice. It creates an instance of the InventoryManager class. On the user's choice, it calls the correct function for example if user press 1 it calls the manager.addItem. It prevents errors using cin.clear() and cin.ignore() to prevent the program from crashing if the user enters text instead of a number.

Feature of The Project:

Users can add item with ID, name, brand, quantity, price. I used getline so users can enter names with spaces. It shows all items in a clean table when we use list item command. User can find items by name and update their stocks and price using the ID. The program can sort products alphabetically by name. It can generate a "Low Stock Report" to warn the user about finishing products.

==== PROFESYONEL ENVANTER SISTEMI ====

1. Urun Ekle
2. Urunleri Listele
3. Urun Ara
4. Urun Sil
5. Urun Guncelle
6. Kaydet ve Cik
7. Sirala (A-Z)
8. Kritik Stok Raporu

Secim: 1

ID: 1

Isim: su

Marka: hayat

Adet: 500

Fiyat: 5

Urun eklendi.

==== TUM URUNLER ====

ID	Urun Adi	Marka	Adet	Fiyat	
1	su	hayat	500	5.00	TL

Secim: 3

Aranacak isim: su

==== ARAMA SONUCLARI ====

ID	Urun Adi	Marka	Adet	Fiyat	
1	su	hayat	500	5.00	TL
2	su	assu	200	5.00	TL

Secim: 4

ID: 1

Urun silindi.

Secim: 5

ID: 2

Yeni Adet: 1000

Yeni Fiyat: 10

Urun guncellendi.

Secim: 7
Isme gore siralandi.

--- TUM URUNLER ---

ID	Urun Adi	Marka	Adet	Fiyat	TL
1	cikolata	ulker	100	15.00	TL
2	su	assu	1000	10.00	TL

Secim: 8
Limit: 999

--- KRITIK STOK RAPORU (Limit: 999) ---

ID	Urun Adi	Marka	Adet
1	cikolata	ulker	100