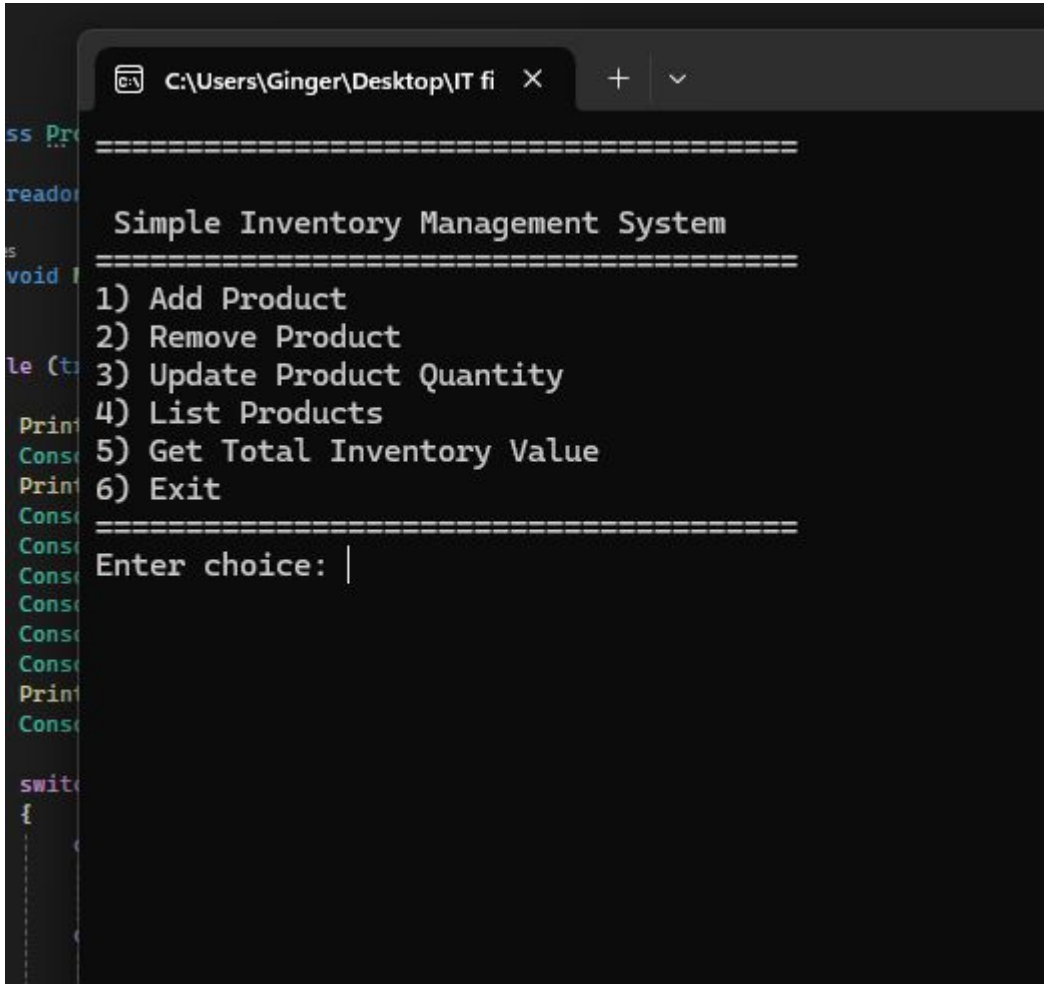
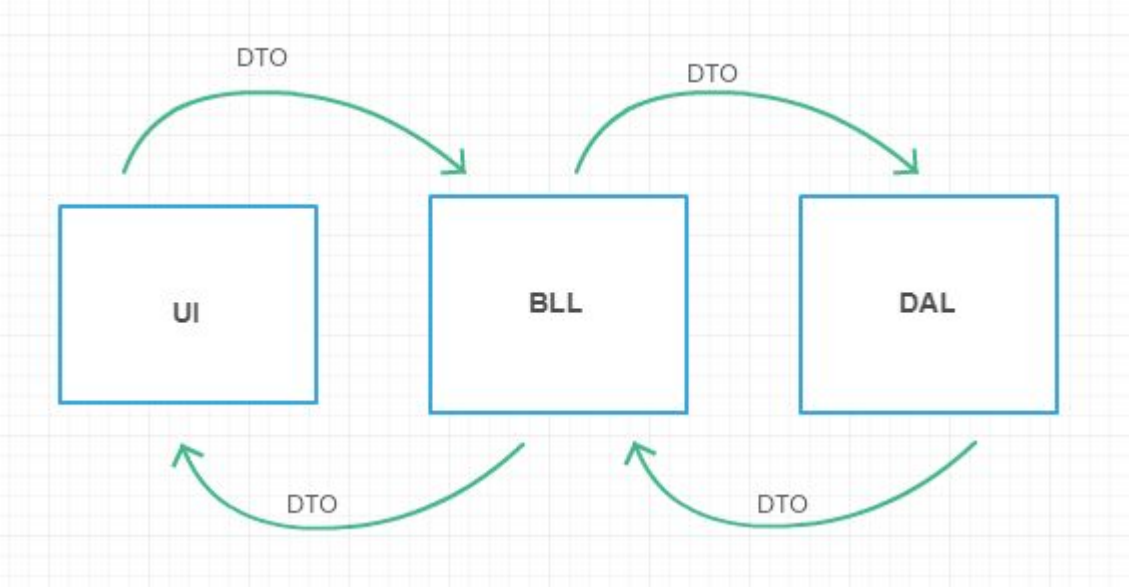


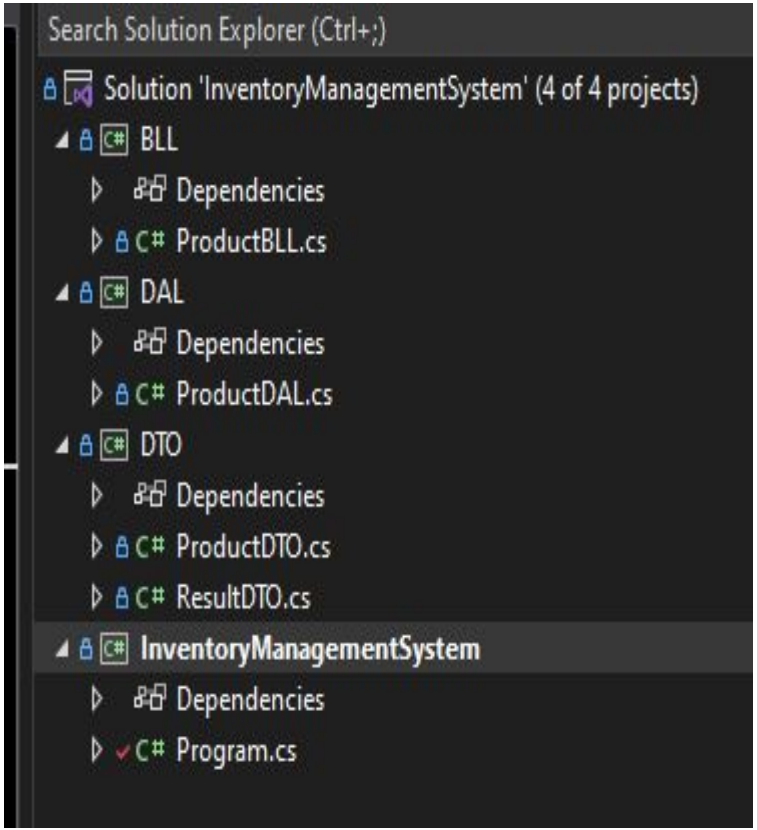
Task : Build a simple inventory management system for a retail store using a C# console application.

N-layer architecture



- I implemented an N-layer architecture for building the system wherein it divides the application into multiple layers UI, Business Logic Layer(BLL), Data Access Layer (DAL) ensuring strict separation between concerns.
- Database is not used in this system therefore the products will reset to empty upon termination of system

File Structure



- BLL layer acts as the core of the application, handling business rules and processing.
- DAL layer is responsible for interacting with datas.
- DTO is a simple data structure used to transfer data between layers.
- This layers will ensure scalability, maintainability and security.

```
=====================================

 Simple Inventory Management System
=====================================
1) Add Product
2) Remove Product
3) Update Product Quantity
4) List Products
5) Get Total Inventory Value
6) Exit
=====================================
Enter choice: 4
=====================================
Inventory is empty.
=====================================

 Simple Inventory Management System
=====================================
1) Add Product
2) Remove Product
3) Update Product Quantity
4) List Products
5) Get Total Inventory Value
6) Exit
=====================================
Enter choice: |
```

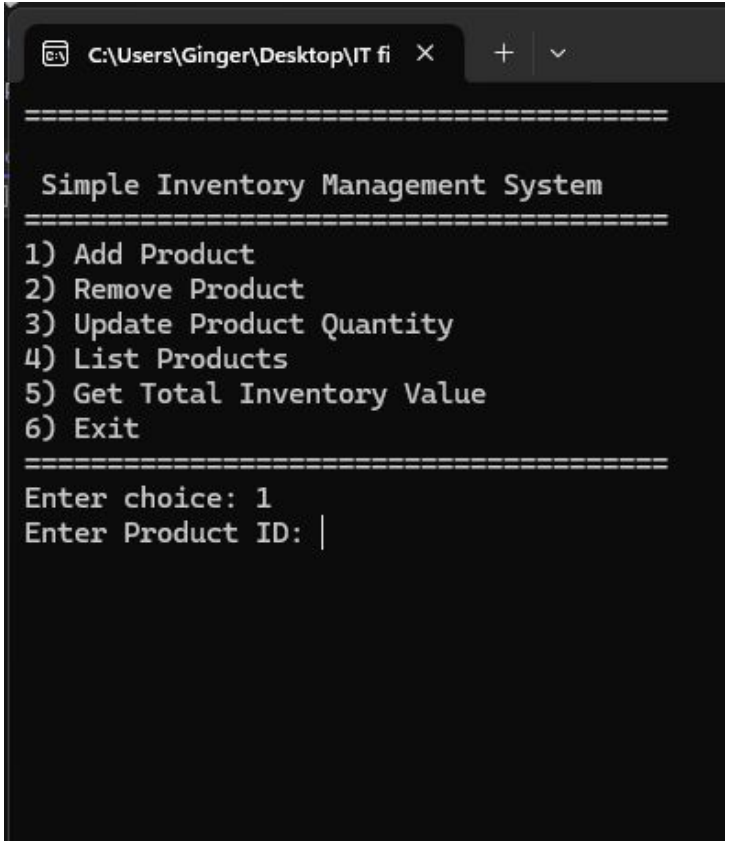
```
=====================================

 Simple Inventory Management System
=====================================
1) Add Product
2) Remove Product
3) Update Product Quantity
4) List Products
5) Get Total Inventory Value
6) Exit
=====================================
Enter choice: 4
=====================================
ID: 1 || Name: ProductONe || Quantity: 23 || Price: Php 3125.00
=====================================
ID: 2 || Name: ProductTwo || Quantity: 3 || Price: Php 12.00
=====================================
ID: 3 || Name: ProductThree || Quantity: 54 || Price: Php 123.00
=====================================
```

Listing of Products

- List products by entering ‘4’ as a choice.
- System will display productids, name,quantity and price of product
- System will show ‘Inventory is empty’ if no product is added yet.

Adding of products



Choose `1` in the menu

Adding products

```
=====================================

 Simple Inventory Management System
=====================================
1) Add Product
2) Remove Product
3) Update Product Quantity
4) List Products
5) Get Total Inventory Value
6) Exit
=====================================
Enter choice: 1
Enter Product ID: 1
Enter Name: ProductOne
Enter Quantity: 23
Enter Price: 12
=====================================
Product Added Successfully.
=====================================
```

- System will require you to input Product ID, Name, Quantity, Price.
- Upon successful input , system will display `Product Added successfully.`

Adding products

```
 Simple Inventory Management System
========================================
1) Add Product
2) Remove Product
3) Update Product Quantity
4) List Products
5) Get Total Inventory Value
6) Exit
========================================
Enter choice: 1
Enter Product ID: -1
Enter Name: 234
Enter Quantity: -1
Enter Price: -1
========================================
ProductId should be positive integer.
Product price should be non-negative.
Product quantity should be non-negative.
========================================
```

- System will display error messages if you enter a negative number for product Id, quantity and price.

```
========================================

 Simple Inventory Management System
========================================
1) Add Product
2) Remove Product
3) Update Product Quantity
4) List Products
5) Get Total Inventory Value
6) Exit
========================================
Enter choice: 1
Enter Product ID: 1
Enter Name: ProductThree
Enter Quantity: 23
Enter Price: 5
========================================
Product ID already exists.
========================================
```

- If the user inputs an existing product ID the system will prompt that `Product ID already exists`.

Updating product quantity

```
========================================
ID: 1 || Name: ProductOne || Quantity: 23 || Price: Php 12.00
========================================
ID: 3 || Name: ProductTwo || Quantity: 3 || Price: Php 23.00
========================================

 Simple Inventory Management System
========================================
1) Add Product
2) Remove Product
3) Update Product Quantity
4) List Products
5) Get Total Inventory Value
6) Exit
========================================
Enter choice: 3
Enter Product ID: 1
Enter New Quantity: 2
========================================
Product updated.
========================================
```

- Input choice ‘3’
- The system will require to input the product ID of the product you want to update and the new quantity to update.
- Upon successful, input, the system will prompt `Product updated.`

Updating product quantity

```
 Simple Inventory Management System
=====================================
1) Add Product
2) Remove Product
3) Update Product Quantity
4) List Products
5) Get Total Inventory Value
6) Exit
=====================================
Enter choice: 3
Enter Product ID: 1
Enter New Quantity: 2
=====================================
Product updated.
=====================================

 Simple Inventory Management System
=====================================
1) Add Product
2) Remove Product
3) Update Product Quantity
4) List Products
5) Get Total Inventory Value
6) Exit
=====================================
Enter choice: 4
=====================================
ID: 1 || Name: ProductOne || Quantity: 2 || Price: Php 12.00
=====================================
ID: 3 || Name: ProductTwo || Quantity: 3 || Price: Php 23.00
=====================================
```

- If we list the products again, the product quantity of productID `1` is updated to `2`

Updating product quantity

```
----------------------------------------

 Simple Inventory Management System
========================================
1) Add Product
2) Remove Product
3) Update Product Quantity
4) List Products
5) Get Total Inventory Value
6) Exit
========================================
Enter choice: 3
Enter Product ID: -1
Enter New Quantity: -1
========================================
ProductId should be positive integer.
Product quantity should be non-negative.
========================================
```

- Validations for negative inputs are also implemented

Removing of Products

```
========================================
ID: 1 || Name: ProdcutOne || Quantity: 23 || Price: Php 1.00
========================================
ID: 2 || Name: ProductTwo || Quantity: 23 || Price: Php 1.00
========================================
ID: 3 || Name: ProductThree || Quantity: 23 || Price: Php 1.00
========================================

 Simple Inventory Management System
========================================
1) Add Product
2) Remove Product
3) Update Product Quantity
4) List Products
5) Get Total Inventory Value
6) Exit
========================================
Enter choice: 2
Enter Product ID to Remove: 2
========================================
Product Removed Successfully.
```

- Choose number `2`
- The system will require the product Id of the product you want to remove.
- Upon successful input, the system will prompt `Product Removed Successfully`.

Removing of Products

```
========================================
Product Removed Successfully.
========================================

 Simple Inventory Management System
========================================
1) Add Product
2) Remove Product
3) Update Product Quantity
4) List Products
5) Get Total Inventory Value
6) Exit
========================================
Enter choice: 4
========================================
ID: 1 || Name: ProductOne || Quantity: 23 || Price: Php 1.00
========================================
ID: 3 || Name: ProductThree || Quantity: 23 || Price: Php 1.00
========================================
```

- If you list the products again, it will show that the selected product is removed

```
========================================

 Simple Inventory Management System
========================================
1) Add Product
2) Remove Product
3) Update Product Quantity
4) List Products
5) Get Total Inventory Value
6) Exit
========================================
Enter choice: 2
Enter Product ID to Remove: -1
========================================
ProductId should be positive integer.
========================================
```

- Validations are also implemented for negative inputs
-

Calculate total inventory value

```
========================================

 Simple Inventory Management System
========================================
1) Add Product
2) Remove Product
3) Update Product Quantity
4) List Products
5) Get Total Inventory Value
6) Exit
========================================
Enter choice: 4
========================================
ID: 1 || Name: ProductOne || Quantity: 2 || Price: Php 12.00
========================================
ID: 3 || Name: ProductTwo || Quantity: 3 || Price: Php 23.00
========================================

 Simple Inventory Management System
========================================
1) Add Product
2) Remove Product
3) Update Product Quantity
4) List Products
5) Get Total Inventory Value
6) Exit
========================================
Enter choice: 5
========================================
Total Inventory Value: Php 93
========================================
```

- Choose number `5` for getting the total inventory value
- System will compute the value by multiplying product quantities to its price then total all the value.