Assignment 1 – New Version of Shop

Console, LINQ, OOP, Generics

Introduction

To repeat what we did in the FUB, along with adding LINQ, a new version of the shop project should be made. It's allowed to start from a previous version, but it's recommended to do it all from scratch again, just to practice writing code.

The programs functionality

The program should supply the following functionality, available to users.

- Let the user search for an (or multiple) item(s) in stock
- See the stock sorted by price
- See the stock sorted by name
- See the stock sorted by price and name
- See the stock sorted by price, grouped by category
- Search the storage based on name (both exact matches and matches containing the term)
- Search the storage based on price (lower than, higher than)
- Search the storage based on price and name
- Search for products based on price OR name, within a preselected category
- Let the user add one or multiple items to their shopping cart
- Let the user view their shopping cart
- Let the user checkout their shopping cart and view a receipt

Instructions and tips

- All searching, sorting and other queries should be done with LINQ
  - Feel free to use both query syntax and lambda syntax
- Use the previous shop project for guidelines if needed
- Put most of the focus on writing and understanding LINQ
  - It's better to hand in a project with all working LINQ parts, without a functioning menu, rather than a fully functioning menu with no LINQ.
- On the next page, you can see a class breakdown for the program.

Expected Techniques

The following techniques is expected to be in your application

- LINQ
- Loops
- Console I/O
- Generics
- Implementations of the following interfaces:
  - IEnumerable
  - IComparable
  - IEquatable
- Variables
- OOP

Best of luck!

Class breakdown

- Item : IEquatable<Item>, IComparable<Item>
  - Art. Number
  - Name
  - Price
  - Category
  - Implementation of IEquatable
  - Implementation of IComparable
- ItemStorage<T> : IEnumerable<T>
  - ID
  - InternalStorage[T]
  - GetAllItems()
  - SearchFunctions – If they are used by both ShopStorage and ShoppingCart (if any)
  - SortFunctions – If they are used by both ShoppingCart and ShopStorage (if any)
  - Implementation of IEnumerable
- ShopStorage : ItemStorage<Item>
  - Extended Search and Sort Functions needed only by ShopStorage (if any)
  - Optional: Handling how many items are in stock
- ShoppingCart : ItemStorage<Item>
  - Extended Search and Sort Functions needed only by ShoppingCart (if any)
  - Checkout()
  - GetReciept()
- Program
  - Console Menu to navigate through the shop