CCCS 301 Assignment 4

Introduction

You must do this assignment individually, and you should follow all the instructions including all the naming and wording for methods name and project name. When you submit your file, make sure that your code compiles and runs even if you cannot complete the program. Do Not submit a file that is not be able to run. You may end up with 0 because of it.

No late assignments are permitted. You will get 0 for a late assignment.
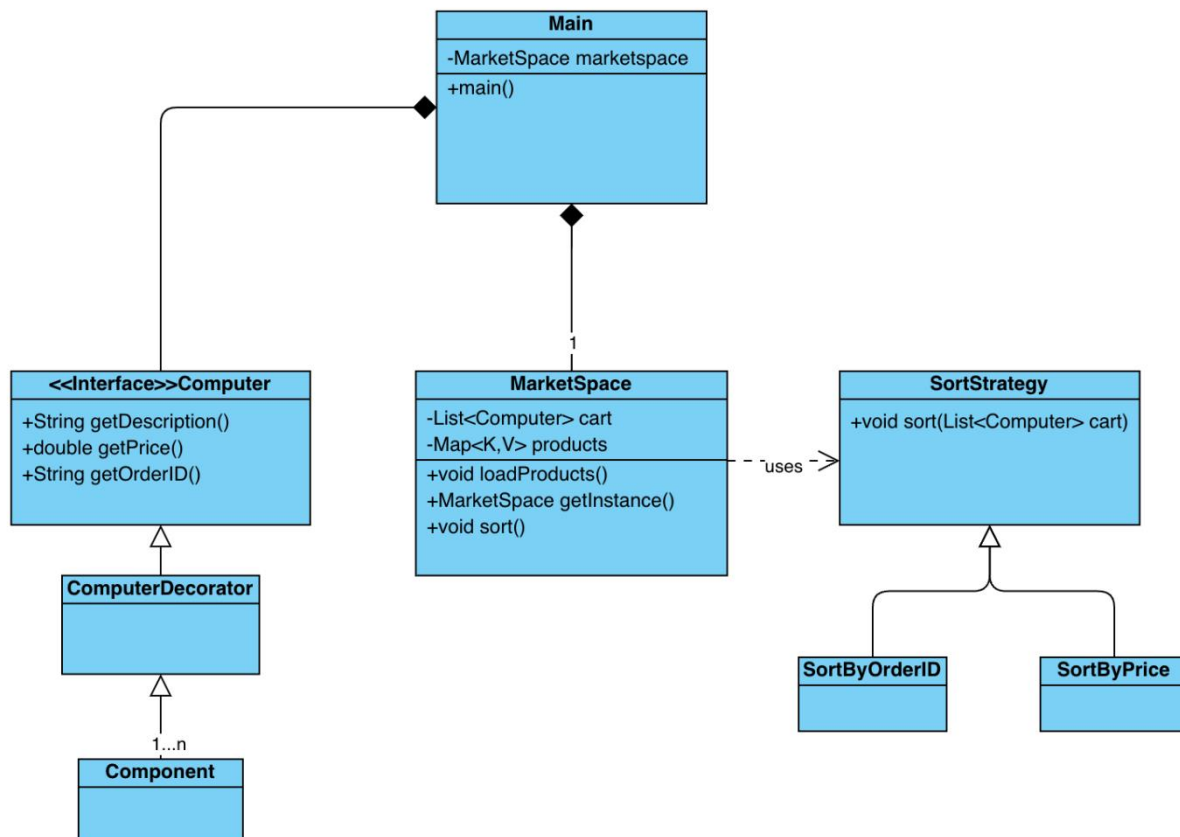
Due Date

See MyCourses

What to submit

- Zip and submit the following projects onto MyCourses: $YOUR_NAME$_A4

Question: E-commerce (100 points)

You are working in an E-commerce company called Amazon. You received a task from your supervisor asking you to write a program for a company called Best Buy. In this program, a customer can buy not only a computer but also many other side products such as a keyboard, monitor, mouse, GPU, etc. Your program must be scaleable (easy to add side products), robust (No crash or logic error), and maintainable (easy to read).

To achieve the above requirements, your supervisor came out with a software design as follow:

Your task is to write a program using Java and meet the above architecture. You are free to add additional classes, attributes, methods, or any other design pattern to improve this project. However, you must use the decorator pattern for building a computer order, the singleton pattern for the market space, and the strategy pattern to sort orders. In market space, you must load all the side products from the provided file called products.txt. You should not hardcode these products in your class.

For sorting, there are two types: sorted by price and order ID. Both should be sorted in descending order. Each order should have a unique ID which the format should be **OrderID@[Numbers].** The number should be between 1 ~100.

Please check below for multiple sample outputs.

Scenario 1:

```
Hi, what would you like to do?
1: Buy a computer
2: See my shopping cart
3: Sort by order ID (Descending order)
4: Sort by order price (Descending order)
5: Quit
1

Current Build: Default Computer, and total price is 700.0
What component would you like to add?
1: Ben's Picture $4000.0
2: GPU 3080 Ti $1949.86
3: Keyboard $89.99
4: Microphone $231.18
5: Monitor $325.2
6: Mouse $38.99
7: Speaker $109.31
8: USB HD camera $205.49
9: Done
3

Current Build: Default Computer + Keyboard, and total price is 789.99
What component would you like to add?
1: Ben's Picture $4000.0
2: GPU 3080 Ti $1949.86
3: Keyboard $89.99
4: Microphone $231.18
5: Monitor $325.2
6: Mouse $38.99
7: Speaker $109.31
8: USB HD camera $205.49
9: Done
6

Current Build: Default Computer + Keyboard + Mouse, and total price is 828.98
What component would you like to add?
1: Ben's Picture $4000.0
2: GPU 3080 Ti $1949.86
3: Keyboard $89.99
4: Microphone $231.18
5: Monitor $325.2
6: Mouse $38.99
7: Speaker $109.31
8: USB HD camera $205.49
9: Done
7
```

Current Build: Default Computer + Keyboard + Mouse + Speaker, and total price is
938.29
What component would you like to add?
1: Ben's Picture $4000.0
2: GPU 3080 Ti $1949.86
3: Keyboard $89.99
4: Microphone $231.18
5: Monitor $325.2
6: Mouse $38.99
7: Speaker $109.31
8: USB HD camera $205.49
9: Done
9

Hi, what would you like to do?
1: Buy a computer
2: See my shopping cart
3: Sort by order ID (Descending order)
4: Sort by order price (Descending order)
5: Quit
2

[OrderID@43: Default Computer + Keyboard + Mouse + Speaker $938.29]
Hi, what would you like to do?
1: Buy a computer
2: See my shopping cart
3: Sort by order ID (Descending order)
4: Sort by order price (Descending order)
5: Quit
3

Hi, what would you like to do?
1: Buy a computer
2: See my shopping cart
3: Sort by order ID (Descending order)
4: Sort by order price (Descending order)
5: Quit
2

[OrderID@43: Default Computer + Keyboard + Mouse + Speaker $938.29]
Hi, what would you like to do?
1: Buy a computer
2: See my shopping cart
3: Sort by order ID (Descending order)
4: Sort by order price (Descending order)
5: Quit
4

Hi, what would you like to do?
1: Buy a computer
2: See my shopping cart
3: Sort by order ID (Descending order)
4: Sort by order price (Descending order)
5: Quit
2

```
[OrderID@43: Default Computer + Keyboard + Mouse + Speaker $938.29]
Hi, what would you like to do?
1: Buy a computer
2: See my shopping cart
3: Sort by order ID (Descending order)
4: Sort by order price (Descending order)
5: Quit
5
```

Scenario 2:

```
Hi, what would you like to do?
1: Buy a computer
2: See my shopping cart
3: Sort by order ID (Descending order)
4: Sort by order price (Descending order)
5: Quit
2

No items
Hi, what would you like to do?
1: Buy a computer
2: See my shopping cart
3: Sort by order ID (Descending order)
4: Sort by order price (Descending order)
5: Quit
3

No items
Hi, what would you like to do?
1: Buy a computer
2: See my shopping cart
3: Sort by order ID (Descending order)
4: Sort by order price (Descending order)
5: Quit
4

No items
Hi, what would you like to do?
1: Buy a computer
2: See my shopping cart
3: Sort by order ID (Descending order)
4: Sort by order price (Descending order)
5: Quit
1

Current Build: Default Computer, and total price is 700.0
What component would you like to add?
1: Ben's Picture $4000.0
2: GPU 3080 Ti $1949.86
3: Keyboard $89.99
```

4: Microphone $231.18
5: Monitor $325.2
6: Mouse $38.99
7: Speaker $109.31
8: USB HD camera $205.49
9: Done
1

Current Build: Default Computer + Ben's Picture, and total price is 4700.0
What component would you like to add?
1: Ben's Picture $4000.0
2: GPU 3080 Ti $1949.86
3: Keyboard $89.99
4: Microphone $231.18
5: Monitor $325.2
6: Mouse $38.99
7: Speaker $109.31
8: USB HD camera $205.49
9: Done
2

Current Build: Default Computer + Ben's Picture + GPU 3080 Ti, and total price is
6649.86
What component would you like to add?
1: Ben's Picture $4000.0
2: GPU 3080 Ti $1949.86
3: Keyboard $89.99
4: Microphone $231.18
5: Monitor $325.2
6: Mouse $38.99
7: Speaker $109.31
8: USB HD camera $205.49
9: Done
9

Hi, what would you like to do?
1: Buy a computer
2: See my shopping cart
3: Sort by order ID (Descending order)
4: Sort by order price (Descending order)
5: Quit
1

Current Build: Default Computer, and total price is 700.0
What component would you like to add?
1: Ben's Picture $4000.0
2: GPU 3080 Ti $1949.86
3: Keyboard $89.99
4: Microphone $231.18
5: Monitor $325.2
6: Mouse $38.99
7: Speaker $109.31
8: USB HD camera $205.49
9: Done
3

Current Build: Default Computer + Keyboard, and total price is 789.99
What component would you like to add?
1: Ben's Picture $4000.0
2: GPU 3080 Ti $1949.86
3: Keyboard $89.99
4: Microphone $231.18
5: Monitor $325.2
6: Mouse $38.99
7: Speaker $109.31
8: USB HD camera $205.49
9: Done
9

Hi, what would you like to do?
1: Buy a computer
2: See my shopping cart
3: Sort by order ID (Descending order)
4: Sort by order price (Descending order)
5: Quit
1

Current Build: Default Computer, and total price is 700.0
What component would you like to add?
1: Ben's Picture $4000.0
2: GPU 3080 Ti $1949.86
3: Keyboard $89.99
4: Microphone $231.18
5: Monitor $325.2
6: Mouse $38.99
7: Speaker $109.31
8: USB HD camera $205.49
9: Done
8

Current Build: Default Computer + USB HD camera, and total price is 905.49
What component would you like to add?
1: Ben's Picture $4000.0
2: GPU 3080 Ti $1949.86
3: Keyboard $89.99
4: Microphone $231.18
5: Monitor $325.2
6: Mouse $38.99
7: Speaker $109.31
8: USB HD camera $205.49
9: Done
9

Hi, what would you like to do?
1: Buy a computer
2: See my shopping cart
3: Sort by order ID (Descending order)
4: Sort by order price (Descending order)
5: Quit
1

Current Build: Default Computer, and total price is 700.0
What component would you like to add?
1: Ben's Picture $4000.0
2: GPU 3080 Ti $1949.86
3: Keyboard $89.99
4: Microphone $231.18
5: Monitor $325.2
6: Mouse $38.99
7: Speaker $109.31
8: USB HD camera $205.49
9: Done
6

Current Build: Default Computer + Mouse, and total price is 738.99
What component would you like to add?
1: Ben's Picture $4000.0
2: GPU 3080 Ti $1949.86
3: Keyboard $89.99
4: Microphone $231.18
5: Monitor $325.2
6: Mouse $38.99
7: Speaker $109.31
8: USB HD camera $205.49
9: Done
7

Current Build: Default Computer + Mouse + Speaker, and total price is 848.3
What component would you like to add?
1: Ben's Picture $4000.0
2: GPU 3080 Ti $1949.86
3: Keyboard $89.99
4: Microphone $231.18
5: Monitor $325.2
6: Mouse $38.99
7: Speaker $109.31
8: USB HD camera $205.49
9: Done
9

Hi, what would you like to do?
1: Buy a computer
2: See my shopping cart
3: Sort by order ID (Descending order)
4: Sort by order price (Descending order)
5: Quit
2

[OrderID@83: Default Computer + Ben's Picture + GPU 3080 Ti $6649.86, OrderID@31:
Default Computer + Keyboard $789.99, OrderID@65: Default Computer + USB HD camera
$905.49, OrderID@26: Default Computer + Mouse + Speaker $848.3]
Hi, what would you like to do?
1: Buy a computer
2: See my shopping cart
3: Sort by order ID (Descending order)
4: Sort by order price (Descending order)

```
5: Quit
3

Hi, what would you like to do?
1: Buy a computer
2: See my shopping cart
3: Sort by order ID (Descending order)
4: Sort by order price (Descending order)
5: Quit
2

[OrderID@83: Default Computer + Ben's Picture + GPU 3080 Ti $6649.86, OrderID@65:
Default Computer + USB HD camera $905.49, OrderID@31: Default Computer + Keyboard
$789.99, OrderID@26: Default Computer + Mouse + Speaker $848.3]
Hi, what would you like to do?
1: Buy a computer
2: See my shopping cart
3: Sort by order ID (Descending order)
4: Sort by order price (Descending order)
5: Quit
4

Hi, what would you like to do?
1: Buy a computer
2: See my shopping cart
3: Sort by order ID (Descending order)
4: Sort by order price (Descending order)
5: Quit
2

[OrderID@83: Default Computer + Ben's Picture + GPU 3080 Ti $6649.86, OrderID@65:
Default Computer + USB HD camera $905.49, OrderID@26: Default Computer + Mouse +
Speaker $848.3, OrderID@31: Default Computer + Keyboard $789.99]
Hi, what would you like to do?
1: Buy a computer
2: See my shopping cart
3: Sort by order ID (Descending order)
4: Sort by order price (Descending order)
5: Quit
5
```

ZIP your project and hand it in to myCourses when you are done. Pl ease DO NOT RAR it or use other compression extension like .7z, you will lose marks because of it.