BLG252E Object Oriented Programming Assignment 1

Release Date: March 16, 2020
Due Date: March 30, 2020, 23.59

Late submissions will NOT be accepted. Please submit your homeworks only through Ninova. This is an individual homework and in case of inappropriate exchange of information is detected, disciplinary actions will be taken.

- Your code must be compiled with following command: **g++ 150150113.cpp**
- Write your name and ID on the top of each document that you will upload.
- Compile your code on Linux using g++. You can test your code through ssh. Do not use any pre-compiled header files or STL commands. Be sure that you have included all of your header files.
- Use comments to explain your code.
- Be careful with the methods/attributes which are supposed to be constant, static, private.
- Handle exceptions and display error messages wherever necessary.
- If you have any questions about the homework please contact me via akti15@itu.edu.tr
- **Submit your homework in a .zip file where it contains all of the necessary .h and .cpp files.**

Problem Description

In this homework, you are supposed to implement a pizza delivery system. The pizza and drink orders will be taken from customers and added into an order list. Then, the orders can be listed, delivered and removed from the list.

There are 3 classes that you need to implement:

1) Pizza class: An object from this class is needed to be created for each pizza order.

Private attributes:
name: name of the pizza in string type
size: “small”, “medium”, “big” (must be in string type)
ingredients: it changes depending on the type of pizza and keeps the list of ingredients in string type
crust_type: “thick”, “normal”, “thin” (must be in string type)

Constructors:
Pizza( ): creates pizza with medium size, normal crust and mozarella as the ingredient

Pizza(string size, string crust_type, int pizza_type): creates pizza with given size, crust type and ingredients for chosen type. The pizza types and their ingredients are as follows:

1. Chicken Pizza: mozarella, chicken, mushroom, corn, onion, tomato
2. Broccoli Pizza: mozarella, broccoli, pepperoni, olive, corn, onion
3. Sausage Pizza: mozarella, sausage, tomato, olive, mushroom, corn

Pizza(Pizza&): Lists the ingredients of copied object and asks the customer the ingredients that are wanted to be removed. The ingredients of the new object will updated accordingly.

2. Order Class: An object from this class must be created for each order.

Private attributes:
customer: name of the customer
pizza: list of the pizzas that are ordered
drink: list of the drinks that are ordered. Drink types are as follows:

1. Cola
2. Soda
3. Ice tea
4. Fruit juice

Constructors:
There will be two constructors for this class where one of them is called with 3 parameters as customer name, pizza and drink and the other one of them will be called with 2 parameters as customer name and pizza in case of customer does not want to drink anything.

Public methods:
getPrice( ): this function must return the price of the order. The price table is as follows:

Products	Prices
Small pizza	15 TL
Medium pizza	20 TL
Big pizza	25 TL
Cola	4 TL
Soda	2 TL
Ice tea	3 TL
Fruit juice	3.5 TL

printOrder( ): this function prints the order as customer name, ordered pizzas and drinks.

3) OrderList class: where the main functions and the list of the orders are kept

Private attributes:
n (number of orders)
head (head of the Orders list, if the linked list structure is used)

Constructors:
Default constructor must initialize n to 0 and head to NULL.

Public methods:
takeOrder( ): an Order object must be created and inserted into the list. The steps for this process are given below:

- Print the pizza types. Take the first pizza order, create Pizza. Ask the customer the amount of the pizzas. If it is more than 1, then for each extra pizza create a copy of first pizza using copy constructor of Pizza class. Keep the pizzas in a suitable data structure (i.e. linked list).
- Print the drink types and get drink order from the customer. Customer can enter multiple options and it is possible to enter one option more than once.
- Add the Order into the OrderList and print the new added order.

listOrders( ): this function must iterate over the order list and print all orders one by one. The print function must print the orders in following format:

deliverOrders( ): this function must list all of the orders and then make you choose which order you want to deliver. After choosing the order by the customer name, the order list will be searched through the customer names and related order will be delivered. When delivering the order, the initial price must be calculated and printed. Then a promotion code must be requested from user. If the promotion code that the user enters matches with the “I am a student” code, then a 10% discount will be applied on price, else the price will be the same. At the end, new price will be printed onto the screen and order will be delivered by printing the order information. Then, the related order must be removed from the list.

Notes:

- Each class must have a destructor where the allocated memory parts are freed. Memory leaks will cause minus points.
- If you use arrays, please allocate memories dynamically.
- In function calls, call by reference must be used when sending objects as parameters. Also, please do not forget to define constant parameters when it is needed.
- One order can include multiple pizzas of the same type and multiple drinks of different types.
- You may add some other attributes and implement any getter and setter methods when they are needed.

Sample outputs:

```
Welcome to Unicorn Pizza!
1. Add an order
2. List orders
3. Deliver order
4. Exit
Choose what to do: 1
Pizza Menu
1. Chicken Pizza (mozarella, chicken, mushroom, corn, olive, onion, tomato)
2. Broccoli Pizza (mozarella, broccoli, pepperoni, olive, corn, onion)
3. Sausage Pizza (mozarella, sausage, tomato, olive, mushroom, corn)
0. Back to main menu
2
Select size: small (15 TL), medium (20 TL), big (25 TL)
medium
Select crust type: thin, normal, thick
thin
Enter the amount:2

Please enter the number of the ingredient you want to remove from your pizza.
1. mozarella
2. broccoli
3. pepperoni
4. onion
5. olive
6. corn
Press 0 to save it.
4
5
0
Please choose a drink:
0. no drink
1. cola 4 TL
2. soda 2 TL
3. ice tea 3 TL
4. fruit juice 3.5 TL
Press -1 for save your order
2
4
-1
Please enter your name:
seyma

Your order is saved, it will be delivered when it is ready...
------------
Name: seyma

Broccoli Pizza(mozarella, broccoli, pepperoni, onion, olive, corn, )
size: medium, crust: thin

Broccoli Pizza(mozarella, broccoli, pepperoni, corn, )
size: medium, crust: thin

1 soda, 1 fruit juice,
-------------
```

```
Welcome to Unicorn Pizza!
1. Add an order
2. List orders
3. Deliver order
4. Exit
Choose what to do: 3
1
------------
Name: seyma

Broccoli Pizza(mozarella, broccoli, pepperoni, onion, olive, corn, )
size: medium, crust: thin

Broccoli Pizza(mozarella, broccoli, pepperoni, corn, )
size: medium, crust: thin

1 soda, 1 fruit juice,
-------------
2
------------
Name: alperen

Sausage Pizza(mozarella, sausage, tomato, olive, mushroom, corn, )
size: big, crust: normal


-------------
Please write the customer name in order to deliver his/her order: seyma
Following order is delivering...
------------
Name: seyma

Broccoli Pizza(mozarella, broccoli, pepperoni, onion, olive, corn, )
size: medium, crust: thin

Broccoli Pizza(mozarella, broccoli, pepperoni, corn, )
size: medium, crust: thin

1 soda, 1 fruit juice,
-------------
Total price: 45.5
Do you have a promotion code? (y/n)
n
The order is delivered successfully!

Welcome to Unicorn Pizza!
1. Add an order
2. List orders
3. Deliver order
4. Exit
Choose what to do: 4
Goodbye...
```