CPSC 2430 Spring 2020 Programming Assignment #1

Due date: Apr 24, 2020 11:59pm

DO NOT USE any of the STL in your code.
You can include <fstream> for reading in the input file.

Shopping List

Implement a Queue ADT for storing a list of shopping items. The class should be named ShoppingList and must be implemented using a dynamic array. Make a struct or a class named Item as a data member of ShoppingList. Each item has an item name, price, and category.

Reading in Items

The list of items to add to the shopping list will be in the **items.txt** file. Initialize an array of size 4 and add items until you reach the end of the file. When the queue is full, double the array in size and print "`Capacity doubled to X`".

Operations

Implement basic class functions (*constructors, destructor, copy assignment*) and basic queue functions (*enqueue, dequeue, getSize*). Use the **circular array** approach when adding items. In dequeue, print which item was bought (e.g. "Bought apple") instead of returning the item.

Also implement the following operations:

getPrice(string name): finds an item based on the name and returns the price of the item. If the item doesn't exist in the shopping list, return 0.

printList(): prints all items on the shopping list (example provided on the next page).

createList(ShoppingList& s2, string categ): adds all the items in that category in the current shopping list to s2.

Testing and submission

Provide a driver/client program to test the ShoppingList class thoroughly. Test all class functions as well as additional queue functions. Make sure all the class, struct, and function names match the instructions *exactly*.

Submit your program using the following command:
/home/fac/hkong/submit/cpsc2430/submit_pa1

The ShoppingList class should be in two files named **shopping.h** and **shopping.cpp**. The driver should be in a file named **pa1.cpp**.

Your class files should support tests such as these:

```
ShoppingList s = ShoppingList();
s.enqueue("headset", 34.99, "electronics");
cout << "The price of the headset is " << s.getPrice("headset") << endl;

ShoppingList s2 = ShoppingList();
s.createList(s2, "home");
s2.print(); //this prints all the items in category "home"
```

Sample lines from the input file

[item name,price,category]

```
banana,3.99,food
chair,24.20,home
shampoo,4.79,beauty
flower,5.50,home
shirt,25.99,clothing
```

Printed shopping list

[#. Item name - $price – Category]

```
1. banana – $3.99 – food
2. chair – $24.20 – home
3. shampoo – $4.79 – beauty
4. flower – $5.50 – home
5. shirt – $25.99 – clothing
```