Objects / Classes

Due Date : Monday October 7th – 2019

No Later than 12:45 pm

One of common places to buy candy , chips .. etc. is from a vending machine. One particular vending machine sells candies, chips, gums , and cookies. You have been asked to write a C++ program for this vending machine.

The program should do the following:

1. Show the customer the different products sold by the vending machine.
2. Let the customer make the selection.
3. Show the customer the cost of the item selected.
4. Accept money from the customer.
5. Release the item.

The machine has two main components: **a built-in cash register** and **several dispensers** to hold and release the products.

Define class Cash Register in C++ with the following descriptions :

integer variable to store cash on hand as a **private** member.

Define the following as public members:

- A default constructor that sets the cash in the register to 500.
- A constructor that sets the cash in the register to a specific amount.
- A function that returns value of cash on hand
- A function that receives the amount deposited by the customer and update the amount in the register

Define class Dispenser Type in C++ with the following descriptions :

Define integer variable indicating number of items available as a private member.
Define integer variable to store the cost as a private member.

Define the following as public members:

- A constructor that sets the cost **and** number of items in the dispenser to the values specified by the user. For test purposes, **use small numbers for the number of items**
- A function to return the value of number of items.
- A function to return the value of cost.
- A function to reduce the number of items by 1.

When the program executes, the program must do the following:

- Show the different products sold by the vending machine.
- Show how to select a particular product.

Once the user has made the appropriate selection, the vending machine must act accordingly. If the user has opted to buy a product and that product is available, the vending machine should show the cost of the product and ask the user to deposit the money. If the amount deposited is at least the cost of the item, the vending machine should sell the item and display an appropriate message.

Notes :

- Must define a class and its functions, followed by implementation of class functions, and finally followed by main program to run the program. **All in one .cpp.**
- The program accepts only integer data type

Style Guidelines :

At the beginning of your program (and **before** the #include statement), include the following :

Header comments (file documentation block) should be at the top of each file and should contain: Author / s, Due Date, Assignment Number, Course number and section, Instructor, and a brief description of the purpose of the code in the file. For example :

```
//      Author / s : (Your name here!!)
//      Serial Number / s :      xxxxxxxxx
//
//      Due Date :
//      Programming Assignment Number 3
//      Fall 2019 - CS 3358 - Your Section Number
//
//      Instructor:  Husain Gholoom.
//
//       <Brief description of the purpose of the program>
```

Variable names :

- Must be meaningful.
- The initial letter should be lowercase, following words should be capitalized, no other caps or punctuation (i.e. `weightInPounds`).
- Each variable must be declared on a separate line with a descriptive comment.

Named constants :

- Use for most numeric literals.
- All capitals with underscores (i.e. `TX_STATE_SALES_TAX`)
- Should occur at top of function, or global (only if necessary)

Line length of source code should be no longer than 80 characters (no wrapping of lines).

Indentation :

- Use 2-4 spaces (but be consistent throughout your program).
- Indent blocks, within blocks, etc.
- Use blank lines to separate sections.

Comments for variables :

All variable definitions should be commented as follows:

```
int  gender;    // integer value for the gender,
                // 1 = Male , 2 = Female ,
```

Rules :

1. **This program must be done as a group. Individual work will not be accepted and a grade of zero will be assigned.**
2. Your program **must compile** and run. The program will be tested using the latest version of Codeblocks for windows.
3. Your program must be properly **documented according the style above . See the website for the sample programming style program.**
4. You must use the appropriate libraries in writing this program.
5. Must properly format the output as it is shown on the sample run below. Replace my first and last name with your name / S .

6. You must name your program as follows :
   - **LastName_FirstName_F2019_3358_PG3.cpp**

   Where LastName is your Last Name and FirstName is your First Name. For example , the file name should look something like : Gholoom_Husain_F2019_3358_PG3.cpp (not .cbp)

7. You must upload your programs no later than the indicated time of on the due date. **No late assignments will be accepted.**

   Use TRACS To upload your program. **Everybody must upload** the electronic version of the assignment.

8. You must **also** turn in hard copy of your source code no later than **indicated time** on the due date**. One hard copy / group.** Should the hard copy consist of more than one page , then , the hard copy must be **stapled**. if you are unable to turn in a printout during class, You can take the program to the computer science department and hand it to the front desk personal (Comal 211) before the deadline. Make sure that the front office stamps the program. Make sure that they include the date and time. Finally ,make sure that they place the program in my mailbox.

The following points will be deducted if :

- Compilation Errors **,** Incorrect file format such as uploading .cbp instead of .cpp , missing electronic copy , missing the hardcopy , assignment done as an individual work and not part of a group , Using data structure that was not covered in the class, using header and implementation files **(- 10 points)**

- Logical Errors **(at least - 1 point)**

- Other **(at least 1 point)** if **any** of the following takes a place :

    - Unable to read the source code due to unclear printing
    - **Missing function prototypes & definitions, incorrect number of functions , missing switch statements .. etc**
    - Incorrect Output format.
    - Incorrect program file name.
    - Hard copy is not stapled.
    - Incorrect Style **such as but not limited to** Missing Header , footer , comments or program documentations , missing roster number , missing group number , missing section number … etc

Sample Run

```
*** Welcome to Husain Gholoom's  Vending Machine ***

Select  One of the following

      1 for Candy
      2 for Chips
      3 for Gum
      4 for Cookies
      9 to exit
10
Invalid selection.

Select  One of the following

      1 for Candy
      2 for Chips
      3 for Gum
      4 for Cookies
      9 to exit
p
Invalid selection.

Select  One of the following

      1 for Candy
      2 for Chips
      3 for Gum
      4 for Cookies
      9 to exit
3
Please deposit 45 cents
45

Collect your item at the bottom and enjoy.
*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*

Select  One of the following

      1 for Candy
      2 for Chips
      3 for Gum
      4 for Cookies
      9 to exit
3
Please deposit 45 cents
50

Collect your item at the bottom and enjoy.
Collect your change  5
*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*
```

Header

Keeps going until user input = 9

can be a function

```
Select  One of the following

      1 for Candy
      2 for Chips
      3 for Gum
      4 for Cookies
      9 to exit
3

Sorry, this item is sold out.
*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*

Select  One of the following

      1 for Candy
      2 for Chips
      3 for Gum
      4 for Cookies
      9 to exit
1
Please deposit 50 cents
30
Please deposit another 20 cents
10

The amount is not enough. Collect what you deposited.
*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*

Select  One of the following

      1 for Candy
      2 for Chips
      3 for Gum
      4 for Cookies
      9 to exit
1
Please deposit 50 cents
30
Please deposit another 20 cents
20

Collect your item at the bottom and enjoy.
*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*

Select  One of the following

      1 for Candy
      2 for Chips
      3 for Gum
      4 for Cookies
      9 to exit
9

*** Thank you for using Husain Gholoom's  Vending Machine ***
```

Test if quantity > 0

If quantity == 0 print this

2x then out

footer