DOO5441 Object Oriented Programming
Trimester 1, Session 2020/2021
Faculty of Computing and Informatics
Multimedia University

Submission Date and Time
5th Oct 2020, Mon, noon

Term Test on 7th Oct 2020, 2pm - 5pm
The term test will be used to replace the usual project interviews. Some or all questions in the term test will be related to your code submitted for this project. You need to be ready to submit your code again by 5pm on 7th Oct 2020.

Plagiarism
COPYING and SUBMITTING codes from other sources is not allowed except codes given in this course. If plagiarism is detected, all parties involved will get 0 marks.

Project Overview
The owner of a small shop selling books, magazines and movie DVDs wishes to set up a shopping kiosk at MMU. Two programs are needed for the kiosk. The first program is a program for the shop owner to manage shop items and the second program is a program for shoppers to place orders and make payment at the kiosk. The items ordered will then be sent to the addresses specified by the shoppers. Both programs will run in a personal computer embedded inside the kiosk.

The Program for the Shop Owner

This program is used by the shop owner to manage shop items. The requirements of this program include view items, insert new items, update information of items and delete items. Up to a maximum of 100 items need to be supported by this program. Assume that the screen of the kiosk can display only up to a maximum of ten items per screen.

The information to be recorded for each item is
- shop item id (auto generated by the program),
- name,
- price,
- number of units available and
- the name of the company which produces the item

There are three types of items at the shop. They are magazine, book and movie. Additional information needs to be recorded for each type. For a magazine, the year and the month of publication need to be recorded. For a book, the name of the author needs to be recorded and for a movie, the name of the main actor needs to be recorded.

The shop owner also wishes to analyze sales at the kiosk. The features required are viewing total sales amount and total sales units by product name, by company name and by item type.

The Program for Shoppers

This program is used by shoppers to shop at the kiosk. A shopper first needs to register at the kiosk by keying in
- his/her name,
- full address (treat this as one string object),
- customer type (assume the shopper selects the correct type truthfully) and
- password (a shopper logs in using his/her customer id and a password)

Customer id's are auto generated by the program.

There are three customer types. They are normal customer, MMU student and MMU staff. An MMU student needs to provide information about his/her major and an MMU staff needs to state the name of the department where he/she works at.

After registering, a shopper can use this program to shop for items. The program will allow the shopper to view items and add, delete and modify items in his/her shopping cart. He/she can also view his/her shopping records and delete past shopping records if he/she wishes to. In addition, the shopper can update his/her profile information and deregister himself/herself.

When a shopper checks out, the shopper only needs to enter his/her payment card number (assume this is a 10 digit number) to make payment.

Technical requirements

Implement two programs with easy to use user interfaces to facilitate the features described above. The programs have to be written in standard C++ code using only standard libraries. They have to be executable on any platform which supports standard C++.

Ask for login user name and password before allowing a shopper or the owner to use a program. The password can be stored in plain text without encryption.

Implement an abstract class called Shopper and three classes, Customer, MMUStudent and MMUStaff as its subclasses. The function to display a shopper's profile is to be coded as a pure virtual function in Shopper.

Implement an abstract class called ShopItem and three classes, Book, Magazine and Movie as its subclasses. The function to display a shop item is to be coded as a pure virtual function in ShopItem.

Use dynamic (late) binding when possible to display shopper profiles and shop items.

Every class must have a default constructor. If a class has a dynamically allocated data member, implement a copy constructor and a destructor for the class. If needed, overload the assignment operator (`operator=()`) for the class.

Use text files to store data entered by the manager, the profile data entered by shoppers and other pieces of information needed by the two programs. Sales data should be stored in its own text file. The recommended text file schema is as shown below. The schema follows the common practice used in relational data modelling for a many-to-many relationship.

sales id	customer id	shop item id	number of units
1	1	12	3
1	1	10	4
2	1	5	1
2	1	1	1
3	2	12	5

Group Project

This is a group project for two students within the same lecture group. One student will write the program for the shop owner and another will write the program for shoppers. Classes and text file schema should be designed together

Deliverables

a) Source code in one file (For example `TC01.1171777777.Tony.Gaddis.cpp).` It has to be properly formatted and documented with comments.
b) Design documents such as flowcharts, pseudo codes, class diagrams in PDF format to explain your work. This is recommended but can be omitted if your source code has good comments that explain the code well.
c) Screen-shots of your program running. The screenshots are to be compiled into a document in PDF format.

Additional Info on Deliverables

a) Executable files must not be submitted.

b) For ALL your .cpp and .h files, insert the following information at the top of the file:

```
/**********|**********|**********|
Program: YOUR_FILENAME.cpp / YOUR_FILENAME.h
Course: Object Oriented Programming
Year: 2010/11 Trimester 1
Name: Frank Carrano
```

```
ID: 1071001234
Lecture Section: TC02
Tutorial Section: TT05
Email: abc123@yourmail.com
Phone: 018-1234567
**********|**********|**********/
```

Soft-copy submission instruction

a) Create a folder in the following format:

TUTORIALSECTION_FULLNAME

For example, if your name is Frank Carrano, you come from TT05 tutorial section, then your folder name should be "TT05_FRANK_CARRANO" without the double quotes.

b) Place all files for submission into the folder.

c) Zip your folder to create a zip (TT05_FRANK_CARRANO.zip) archive.

d) Submit your assignment through MMLS.

Evaluation Criteria

Mark Sheet

Criteria	Max	Actual Marks
The Program for the Shop Owner		
Insert new items	1	
Update information of items in the shop	1	
Delete items from the shop	1	
View items in the shop	2	
Sales data analysis		
- by product name	1	
- by product company name	1	
- by item type	1	
Login and logout	1	
Documentation	2	
The Program for Shoppers		
Profile registration	1	
Update profile	0.5	
De-registration	0.5	
View items	2	

Add items to a shopping cart	0.5	
Delete items from a shopping cart	0.5	
Modify items in a shopping cart	0.5	
Payment	0.5	
View past shopping records	1	
Delete past shopping records	1	
Login and logout	1	
Documentation	2	
Shared		
Class definition and implementation	3	
Text file schema	1	
Total per student	15	

Note: If this project is implemented by one student only, he/she needs to implement only one program. The data provided by the other program can be simulated with text files with existing hard coded data.

Each feature will be evaluated based on fulfilment of requirements, correctness, compilation without warnings and errors, error free during runtime, basic error handling, quality of comments, user friendliness, and good coding format and style.