Object Oriented Programming
Assignment 4 – SE All sections
Submission date: 27th April 2023

Assignment Information

• Coding language: C++

Instructions (before starting the assignment):
1. Assignments are to be done individually.

2. The code you write must be your own and you must understand each part of your code. You are encouraged to get help from the course instructors through google classroom and email.

3. Apply all validations for invalid inputs.

4. Plagiarism: Plagiarism of any kind (copying from others, copying from the internet, etc.) is not allowed. If found plagiarized, you will be awarded zero marks in the assignment. Repeating such an act can lead to strict disciplinary actions and failure in the course.

5. Please start early otherwise you will struggle with the assignment.

Submission Guidelines

a. Only submit .cpp file for each question Your submission.cpp file must contain your name, student-id, and assignment # on the top of the file in the comments. Example the first line of every questions should be
//Maheen_Arshad_22i111. Missing this will result in 20% marks deduction in each question.

b. Move your all .cpp in one folder. The folder must contain only submission.cpp files (no binaries, no exe files etc.,). If we are unable to download your submission due to any reason you will be awarded zero mark.

c. Run and test your program on machine before submission. If there is a syntax error, zero marks will be awarded in that specific question.

d. Rename the folder as ROLL-NUM_SECTION (e.g. 21i-0001_A) and compress the folder as a **zip file**. (e.g. 21i-0001_A.zip). Only **zip file** will be acceptable.

e. Submit the .zip file on Google Classroom within the deadline. Late submission will be marked zero. No exceptions

f. Submission other than Google classroom (e.g. email etc.) will not be accepted.

g. The student is solely responsible to check the final zip files for issues like corrupt files, viruses in the file, mistakenly exe sent. If we cannot download the file from Google classroom due to any reason it will lead to zero marks in the assignment.

General Rules
• All coding standards must be followed (meaningful variable name, code comments etc.)
• Apply all validations for invalid inputs

In this assignment, you will be required to implement a cash and carry management system for a retail store. The system should be designed to handle a high volume of transactions, while ensuring that inventory levels and customer records are accurately maintained.

To achieve this assignment following modules must be implemented.

1.Inventory Management Module: This module should allow store Manager to manage the store's inventory levels and track the movement of goods. The module should be designed to streamline inventory management processes, such as products ordering, Products take, and Price management. Some of the key functions that should be included in this module are:

- **Products ordering:** This function should allow store employees to place orders for new products when inventory levels fall below a certain threshold (you could assume that whenever a product in inventory is less than 100 items). Store employee could place order for that product to the suitable supplier who supplies such kind of products.
- **Products take:** This function should allow store employees to perform regular products take to ensure that inventory levels match the system's records. So whenever a product is taken from the supplier that product quantity, price should be updated in the inventory.
- **Price management:** This function should allow store employees to set and update prices for the store's products. The system should be able to manage complex pricing structures, such as volume discounts, promotional pricing, or dynamic pricing based on market conditions (for example in Ramadan there should be 50% discount in the price of each product.) You can also think of more offers like this you should implement at least 5 such strategies.

2.Point of Sale (POS) Module: This module should provide a seamless checkout experience for customers, while enabling store salesman to process transactions efficiently. Some of the key functions that should be included in this module are:

- **Add to cart**: This function should allow store salesman to add items to the cart for customers. The system should be able to handle a high volume of transactions and provide real-time updates on stock availability for each product.
- **Apply discounts:** This function should allow store employees to apply discounts to customers' purchases based on promotions or other factors. The system should be able to manage complex discount structures, such as buy-one-get-one-free or percentage discounts.
- **Issue refunds:** This function should allow store employees to issue refunds to customers for returned items. The system should be able to process refunds quickly and accurately, while ensuring that inventory levels are updated accordingly.

3.Reporting Module: This module should provide store management with data on sales, inventory levels, and profits. The module should be designed to generate custom reports based on predefined parameters or ad hoc queries. Some of the key functions that should be included in this module are:

Sales reports: This function should generate reports based on sales data, such as sales by product, sales by day, or sales by customer. The system should be able to provide real-time data on sales performance.

Inventory reports: This function should generate reports on inventory levels, such as inventory by product, inventory by location, or inventory by supplier. The system should be able to provide real-time data on inventory performance.

Profit reports: This function should generate reports on profits, such as profits by product, profits by day, or profits by customer. The system should be able to provide real-time data on profit performance.

Your assignment will be evaluated on the basis of how much OOP concepts (Inheritance, Polymorphism, Composition, Aggregation and encapsulation) you have applied in this assignment, how well you have understood the assignment overall and completed the functionalities.

Your assignment should be menu driven for example when the assignment is being run there should be be two options at the start. Press 1 to continue as Manager Press 2 to continue as Store salesman and press 3 to exit. After pressing any of the two options 1 and 2 there should be further menu to perform different functionalities of Manager / salesman enlisted above.