جامعة أبوظبي
Abu Dhabi University
Department of Computer Science and Information Technology

Programming Assignment 1

CSC301: Data Structures and Algorithms

Deadline: Sunday, September 27th 2024, 23:59

Topic:

E-commerce Product Management System

Objective:

1. Comprehend OOP principles, including inheritance, encapsulation, and abstraction, and apply them to design and implement Java classes for different product types.
2. Develop practical coding skills by creating a structured Java application that allows users to manage products, add/update products, and generate sales or stock reports.
3. Analyze and evaluate code efficiency for handling large product datasets and customer interactions.

Assignment Description:

You are tasked with creating a Java application for managing various product categories in an e-commerce platform. The system will manage different product types such as electronics, clothing, and furniture, each with its own attributes like price, stock levels, and customer reviews. **You must add extra fields of your choice.**

Instructions:

1. Define Java classes for "ProductManager" and for different product types such as "Electronics," "Clothing," and "Furniture." **Make sure to use Java inheritance, an interface, and an abstract class.**
2. Develop a menu-driven program that provides the following options:

```
---------------------------------------------------------------------------
E-commerce Product Management System
---------------------------------------------------------------------------
1- Add a new product to a category.
2- Update product details such as price and stock.
3- Bulk addition of products from a file.
3- List all products in a category.
4- Calculate the total stock value of a selected category.
5- Quit
---------------------------------------------------------------------------
Your choice? ___
---------------------------------------------------------------------------
```

- Users should be able to perform actions like adding new product categories, updating product details, listing all products, and calculating the total stock value of a selected category.
- **Your system must store all the data in appropriate Java data structures of your choice such us simple uni or multi- dimensional array, ArrayList, or LinkedList.**
- **Use predefined exceptions and develop your own exceptions and use them in your program**
- **Bonus: including additional advanced functionalities can result in higher grades with a 1 mark bonus**.
- Please use the partial Java code provided with this assignment which prints the menu.

Grading Criteria and Rubric:

You will be evaluated based on a demo during which you will be asked individually various questions related to the implemented system. Your assignment will be assessed based on the following criteria:

Description	Maximum
Class hierarchy defined and use of inheritance, interface, and abstract classes.	1
Complexity and correctness of the data structures used to store the system's data.	0.5
Correctness of the code to implement all the system's functionality (0.5/functionality).	2.5
Efficiency of the developed methods/design.	0.75
Maintained clear, organized code with proper comments, naming, structure, and documentation.	0.25
Total marks:	**5 marks**

Deliverables:

- All Java files of the developed system.
- All Java files must be organized into a proper package structure**. Ensure each file includes the appropriate group number.** For example, if a file is named ProductManager.java, then it must be renamed to ProductManager_G4.java, assuming this is for group 4.
- **All files must be zipped together into a single archive**, following the correct package directory structure (e.g., src/group4/). Follow this tutorials to learn how to export your project: Ecliplse, NetBeans, IntelliJ
- No report is needed for this assignment.
- **Failure to do the above instructions will result in a -1 mark penalty.**

Due Date:

September 27th, 2024, at 23:59. Please note that this deadline is strictly enforced, and late submissions will incur a penalty of -10% per day. **Students can work in groups of at most three students (NO MORE).**

Evaluation:
All groups must present, do an individual demo of their work, and show their contributions and mastery of the developed system. If a student/group does not demo or is absent during the demo day, he will get **ZERO** in this assignment.

Demo Days: All demos will be scheduled during the week September 30 Sep – 04 Oct, 2024.