Seneca College

Applied Arts & Technology

SCHOOL OF COMPUTER STUDIES

**Workshop 1**

**Due Date: Thursday May 22, 2024**

**INSTRUCTIONS**

* *This workshop must be completed individually without any outside collaboration. All work must be your own. Copying or reproducing the work done by others (in part or in full) or letting others to copy or reproduce your own work is subject to significant grade reduction or getting no grade at all and/or being treated as academic dishonesty under the College’s Academic Dishonesty Policy.*
* *Your application must compile and run upon download to receive any mark.*
* *To submit the workshop, please follow the Submission Guideline provided at the end of this document.*

*You must submit your workshop by the due date. Late submissions policy is specified in the Academic Procedures for Evaluations document available through the class plan on Blackboard.*

***\*\*Workshop Description:\*\****

*In this workshop, students will practice their skills in object-oriented programming (OOP) using Java. They will design and implement a simple online shopping cart system. The workshop will focus on concepts such as classes, objects, inheritance, encapsulation, and polymorphism.*

*\*\*****Task****:\*\**

*Create a Java program for an online shopping cart system with the following features:*

*1. \*\*Product Class:\*\* Design a `Product` class with attributes such as product ID, name, description, price, and quantity in stock.*

*2. \*\*Shopping Cart Class:\*\* Create a `ShoppingCart` class that can hold a collection of products. Implement methods to add products to the cart, remove products, calculate the total cost of items in the cart, and display the items in the cart.*

*3. \*\*User Class:\*\* Implement a `User` class to represent users of the system. Users should have attributes like user ID, name, and address.*

*4. \*\*Guest User Class:\*\* Create a `GuestUser` class that extends the `User` class. Guest users can use the shopping cart without creating an account.*

*5. \*\*Registered User Class:\*\* Create a `RegisteredUser` class that extends the `User` class. Registered users can create accounts, log in, and save their cart for future sessions.*

*6. \*\*Main Application:\*\* Write a main application class that demonstrates the functionality of the online shopping cart system. Create instances of products, users (both registered and guest), add products to the cart, and calculate the total cost.*

***\*\*Requirements:\*\****

*1. Implement proper encapsulation by declaring instance variables as private and providing getter and setter methods where necessary.*

*2. Use inheritance to create the `GuestUser` and `RegisteredUser` classes based on the `User` class.*

*3. Demonstrate the use of polymorphism by allowing both guest and registered users to interact with the shopping cart.*

*4. Ensure that the program compiles without errors and runs successfully.*

*5. Include comments to explain the purpose of classes, methods, and any complex code blocks.*

***\*\*Deliverables:\*\****

*1. Java source code files (.java) organized in a proper directory structure.*

*2. A brief "reflect.txt" file explaining the design choices you made and any challenges you encountered.*

*3. A video demonstration (3-5 minutes) explaining core code concepts and showing the program in action.*

# Workshop Header

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**Workshop #**

**Course:***<subject type> - Semester*

**Last Name:***<student last name>*

**First Name:***<student first name>*

**ID:***<student ID>*

**Section:***<section name>*

*This assignment represents my own work in accordance with Seneca Academic Policy.*

*Signature*

**Date:***<submission date>*

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# Code Submission Criteria:

Please note that you should have:

* Appropriate indentation.
* Proper file structure
* Follow java naming convention
* Do Not have any debug/ useless code and/ or files in the assignment

# Deliverables and Important Notes:

**All these deliverables are supposed to be uploaded on the blackboard once done.**

* Submit your project on blackboard.
* Late submissions would result in additional 10% penalties for each day or part of it.
* Remember that you are encouraged to talk to each other, to the instructor, or to anyone else about any of the workshops, but the final solution may not be copied from any source.