The University of the West Indies, St. Augustine
COMP 3607 Object Oriented Programming II
2023/2024 Semester 1
Group Project Handout (30%)

Objectives:

This project requires you to work in a team to design, develop, evaluate and present an automated judge system for evaluating assignments submitted in Object Oriented Programming 1.

Your team's solution should accept a zipped file containing one or more Java program files, evaluate the correctness of the program code based on an assignment specification, produce a PDF report of the test cases that the program successfully passed and/or failed together with helpful corrective feedback where relevant, and an overall score for the submission.

Overall, the solution must:

- be implemented in Java,
- feature at least THREE design patterns (Singleton is not allowed),
- conform to SOLID design principles,
- be evaluated using a test suite of classes,
- be packaged as a Maven project.

Important: Read this review article for the background context of these types of systems:

Wasik, S., Antczak, M., Badura J., Laskowski, A., and Sternal T. (2018). A survey on online judge systems and their applications. ACM Computing Surveys 51(1):3, pp 1-34

Activity 1: Team Formation, Scope Description (1%) - Due Oct. 10, 2023 @10:00pm
Students are required to form teams of exactly 6 members by **Oct. 04, 2023 @10:00pm.** After this deadline, the remaining, unassigned students will be randomly allocated to form the rest of the teams. Next, teams are required to define the project boundaries for which their solutions should work in a scope document (max 2 pages). This is due on **Oct. 10, 2023 @10:00pm.**

Activity 2: Code Development (13%) - Due Nov 15, 2023 @ 10:00pm

Teams are required to design and develop a working solution for the defined project scope.
Essential features of the solution include:

- Accepting a zipped file containing zero or more student submissions as zipped files.
- Extracting and processing zero or more Java files in a student submission
- Evaluating all of the required features of the Java classes based on an assignment specification (such as class/method/attribute naming conventions and types, behaviour and functionality of methods, expected abstractions and inheritance hierarchies)
- Producing a PDF file, neatly formatted, that contains a list of all of the tests that the Java classes passed/failed together with helpful corrective feedback for the failed tests. This report file should be added to the same location as the student Java files and should contain the student ID.
- Calculating an overall score for the submission using the assignment rubric and printing a breakdown of the marks per test for each class.
- A Test suite for evaluation of the system's performance
- Code storage on a GitHub repository

Sound software engineering practices and design principles should be applied at all time.

Activity 3: Code Documentation and Demo Video (9%) - Due Nov 20, 2023 @10:00pm

Teams are required to produce documentation for their codebase using software engineering techniques on their GitHub project's wiki. Refer to the myElearning page for guidelines on sections to include and formatting instructions.

Teams are also required to produce a video summarising how the application's functionality was evaluated and how it is meant to be used. The following criteria should be met by the video:

- Identifies the scope area, and project team
- Within 5-8 minutes in length

- Illustrates how the test suite was used to test correct functionality
- Demonstrates with at least three use cases how the application produces reports and scores for three different kinds of submissions (fully correct, partially correct, completely incorrect).
- Clear narration or explanations in the video, no fuzzy shots, no shaking, no portrait views.
- Uploaded to YouTube with a link submitted on myElearning as indicated

Activity 4: Team Presentation (3%) - Due Nov 24, 2023 @10:00pm

Groups are required to produce a video summarising each member's experiences while working on the project. The following criteria should be met by the video:

- Identifies the scope area, and project team
- Within 5-6 minutes in length
- Each member must be visible at some point in the video and speak for 45-60 seconds.
- Each member is required to talk, identify and discuss features of the project that was (a) most challenging (b) most gratifying and (c) most impactful for him/her.
- Clear audio, no shaking, no portrait views, blur backgrounds of rooms as necessary.
- Uploaded to YouTube with a link submitted on myElearning as indicated

Activity 5: Peer Review Forms and In-class Activity (4%) - Due Nov 24, 2023 (in lab session)

Students are required to submit internal peer review assessments of their members' contributions using the supplied individual feedback forms. Feedback forms submitted on myElearning.

Peer review assessment of group work will be conducted during lab session in Week 12. All members must be present. Teams will be assigned to review the work produced by 3 other groups, generate and ask questions.

Video Suggestions

Use a camera on a smart phone to record your video. Mount on a tripod or a secure surface and record in an area with good lighting and low background noise. Avoid portrait views. There are many free video editing software options online or you may use Windows Movie Maker in the lab machines. Practice before recording.

Submission Instructions

Refer to myElearning for the instructions on how to submit the various parts of the project.