ICT1009 Object Oriented Programming

Group Project Specification for Java

AY 2019/2020 Tri 2

Contents

Objectives

The overall objective of the project is to put the object-oriented principles that we learn in class to use in a real application. Object-oriented programming (OOP) was created to solve some of the problems inherent in the development of large programs. OOP helps the design process because objects in the program typically correspond to objects in the user's world. The true power of OOP can only be appreciated by seeing a group of objects work together. Programming languages are only tools, the emphasis should be on the design and the use of the object-oriented principles.

Start by designing your system and think about your classes, do not start coding right away.

Learning outcomes

- Create objects of different classes in the same application
- Allow objects to communicate with each other
- Create more complex objects by combining simpler ones
- Derive new classes from existing ones
- Extend definition of existing classes
- Overriding methods

Key Concepts

Object-oriented design, encapsulation, inheritance, polymorphism

Application Requirements

Today, there are many online social media platforms (e.g. Twitter, Facebook, Instagram, News Websites etc.) which allow users to post/share information daily. The data generated in the social media platforms contains valuable information. Many companies have invested a large amount of money analysing the social media data to extract the insight and provide meaningful information to their customers. As a solution provider, your team aims to develop a Java application to provide useful information over the social media data. In this project, you will learn various new Java skills such as data crawling, data integration/analysis, application development and data visualization, which are highly demanded by the industry.

In particular, the application that you develop shall fulfil multiple requirements as shown below:

1. Build Java data crawlers to crawl data from at least two social media platforms. You need to decide what information you want to crawl based on user stories you are going to make in the application.
2. Store data into your local data storage, such as files or databases for the data processing purpose.
3. Based on the crawled data, you need to provide different features which can help users explore the information crawled and some insight after analysing the data. To be creative, you are free to create any story. The application should have some basic features such as:
    a. Allow users to view the crawled data, preferably to allow customized search like based on time, keywords etc.
    b. Provide some data integration features. You may figure out how the data crawled from different platforms can be analysed together, thus providing more meaningful information. Normally, it provides more interesting information by using multiple datasets.

One example application can be found below:

1. Crawl transportation related data in Singapore from both Facebook and Twitter.
2. Develop one application where users can a.) view all the comments and tweets that people discussed transportation. b.) show the comments or tweets based on different search filtering criteria such as time, location, keyword etc. c.) show some statistics (e.g. the number) of

comments or tweets d.) advanced functions: what are people's opinion (positive, negative or neutral) when they talk about the transportation (using the sentiment analysis library)? Does the Facebook and Twitter have the same sentiment to the transportation etc.

Note: Above is just one example about what the user story can be. However, you don't have to follow it. You are welcome to use your creativity to propose any innovative application based on the social media data.

Additionally, consider there will be a large amount of data crawled online. You only need to use a small size of sample data to showcase your ideas, as your laptop will not be able to process big data efficiently.

To simplify your job, it is up to you to choose how you want to design the system according to the skills of your teammates. The system can be either one standalone application with GUI or simple console input/output, or web-based system. However, Java shall be the main language for your development. In other words, you are free to decide your system UI. One preferred system UI, as whatever software you are using, should be user-friendly and easy to use.

Assessment criteria

Assignments will be assessed according to the criteria listed in the mark scheme in Table 1 (Group Assessment) and Table 2 (Individual Assessment). Note that the criteria are subject to change depending on the progress throughout the trimester.

Your mark for this assignment will be computed as follows:

Group assessment * individual_contribution

Table 1. Group assessment*

***Group assessment will be weighted by peer review**

Criteria	**Weight**
System implementation: • Functionalities • Code quality • Application of Object-oriented programming concepts (classes, inheritance, polymorphism, etc.) • Innovation	30
System Demonstration and Presentation • A clear and smooth demonstration and presentation • Innovative functionalities	35

• The ability to demo all the features of your system in the given time limitation.	
Report: • Professional writing with a clear logic and structure • Include your OOP design principles, the contribution of every teammate by clearly specifying which portion of code is written by whom, the screenshot of each feature • Highlight the strength and limitation of the system	20
Video: • You need to make one short video to demonstrate your system. The video should be less than 3 mins.	15

NOTE: Bonus marks will be awarded to those who can integrate more innovative ideas, design and functions into the project.

Table 2. Individual contribution assessment

Each individual team member is required to implement a portion of the application. Therefore, a clear task distribution is required. Peer evaluation score will be used as part of the individual contribution assessment factor.

Timeline and deliverables

Final submission: **Friday, 21 February, 2020 11.59pm**

Each group is to submit a zip file to their group's xSITE Dropbox ('Java Project'). One submission per team only.

The zip file should contain the PDF of the final report and all the source code files.

Final report should be not more than 15 pages and contain the following:

- Overall system design
- Object oriented principles adopted in the system and justification
- Clear and concise description of each team member's contribution. ***NOTE: EVERY team member must contribute in coding***
- Things that you want to highlight, for example unique and innovative features in your project.
- Limitation of the system

- Reflection from each team member regarding their learning journey throughout the project duration

Project presentation will be during the lab session on ***Week 8*** (after the recess). Each team will be interviewed individually by the professors.

Teams

The project will be done in groups of ***5 students***. The final teams will be listed on the LMS. No changes will be allowed. You will have a chance to review each of your teammates' performance in the peer review assessment at the end of the project.

Late submission

A penalty of 20% per day for each deliverable will be imposed for late submission unless extension has been granted by the lecturers ***prior*** to the submission date. Request for extension will be granted on a case-by-case basis. Any work submitted more than 4 days after the submission date will not be accepted and no mark will be awarded.

Plagiarism

The University's policy on copying does not allow you to copy software as well as your assessment solutions from another person. Copying of another person's work is unacceptable. It is the responsibility of all students that their assessment solutions are their own work. You must also ensure that others do not obtain access to your solutions for the purpose of copying a part of them. Where such plagiarism is detected, both of the assessments involved will receive ***ZERO*** mark.

--- END OF ICT1009 JAVA PROJECT SPECIFICATION --