

CS-420-1: Object-Oriented Design
Spring 2020
Northeastern Illinois University
Final Project: Due Tuesday, 04/28/20 at 5:00 p.m.

Overview

- Project Grade: 25%
- Class size: 16
- Max team size: 3
- Max number of teams: 8

Grading Distribution

- Instructor Evaluation: 70%
- Within team peer evaluation: 30%
To encourage equal participation, each team member will grade every other team member for their contributions to the project. Additionally, peer evaluations will be supported/based on submitted group messages (i.e. I reserve the right to reduce your participation grade if there is not sufficient evidence of your participation). You will receive a peer evaluation survey via Google forms that is specific to your team that you will fill out individually. If you do not fill out the survey, your evaluation score will be a zero.

Topic

The topic for the project is to investigate one of the following datasets using an object-oriented design with the techniques presented in class:

- NOAA Weather Data: <https://www.ncdc.noaa.gov/cdo-web/datasets>
You are required to use the API: <https://www.ncdc.noaa.gov/cdo-web/webservices/v2>
- WHO Global Health Observatory: <https://www.who.int/data/gho>
You are required to use the API: <https://www.who.int/data/gho/info/gho-odata-api>
- Worldometers.info data (this includes coronavirus data): <https://www.worldometers.info>
You are required to use the API: <https://www.worldometers.info/licensing/what/>

This should not be a re-implementation/re-display of the dataset that you chose, but instead designed to answer one or more interesting questions about the data (questions that you need to come up with!). An additional component is the way in which you display the results/content/interact with the user (suggestion: JavaFX). This should not be a website that you create, but instead an application.

Your code must include the following content:

- Interfaces
- I/O - both the Java IO and NIO.2 APIs
- Generics
- Collections
- Nested classes/Enumerated Types
- Lambdas
- Streams

Expectations: You have 5 weeks to complete the project and system description paper. A rule of thumb is 4 hrs per person per week (as this leaves time for your homework!). So if your project team has 3 members, then the project should have roughly 60+ hrs of work in it.

Report/Paper:

Each team will submit a 5+ page (excluding references and title page) report describing the project and results. Your margins should be no larger than 1-inch on any side and spacing should be no more than double-spaced. THIS MUST BE A PDF FILE! You should use the following structure for your paper:

1. Title: This should be in the following format
Team Name: Project Title
2. Authors/Team members
3. Abstract: 250-300 words
4. Introduction
5. Background/related work
6. Approach and code requirement description: This will describe the framework (i.e. system design) for your project. It should be a very detailed system description. In addition, your team should include a table of the . java files and lines that correspond to the above required code components.

7. Methodology/Results: This should detail the data you used, how you aggregated it, your evaluation methodologies, and results.
8. Conclusion: This will go over what you learned and what could be potential areas to improve
9. References: List all the work you used/referred to! Not citing others' work will count as plagiarism!
10. Team contributions, and meeting times: Your report should detail the following information about your team:
 - A table of meeting dates and what was accomplished/determined/organized for each meeting date and what technology was used for you to meet.
 - A table that clearly indicates each team member's roles and specific contributions to the project.
 - Multiple screenshots of group member interaction on a discussion forum of some sort. The choice of the discussion forum is up to the group (let me know if you want one created on Piazza), but your team must choose a discussion forum.

Code/Software:

You will package all your code along with a README file. This README file will contain all the relevant information to get the project running on a new machine. This will include installation instructions, libraries/dependencies usage along with their versions and instructions to run your code. You will package this into a zip file called `code.zip`. Your code and project report should be submitted to the appropriate folder on D2L.

Peer Evaluation:

You will be asked to grade your peers based on their participation in the group on the following areas in a D2L survey:

Work Distribution Considerations:

1. Project management - communication, reminders, detailed/final review, formatting, survey reminders, final checklist, etc.
2. Idea generation
3. Technical/coding aspects
4. Technical/coding review/testing
5. Project report
6. Project report review – grammar, all material included, etc.

7. Communication: Timeliness of responses to group discussions on whatever platform was chosen by the group (Slack, Google hangouts, etc), timeliness to meetings, constructive feedback and criticism, etc.

Project Grading Guidelines:

- Was the problem clearly stated? This should include a clear end goal that is to be achieved or a hypothesis that is to be tested.
- Was the motivation clearly described? Why is solving the problem relevant/useful/important/interesting and why are techniques from OOD helpful for approaching this problem?
- Did the team cover sufficient related/background work?
- Was the data/domain clearly described? When applicable, it must go over how the data was collected and cleaned, the data format along with proper citations of data sources.
- Implementation. What was the proposed approach and what was the reason behind its choice? How was it implemented? This will include the pipeline/process description, the tools used etc.
- Results/Evaluation. What was the result? Was the stated problem reasonably solved? Does the code run and run correctly?
- Quality of the paper (content agnostic).
- Quality of the object-oriented design (i.e there should definitely be more than 2-3 classes!).
- Quality of the results/presentation design.

Project and Paper Submission to D2L

- Once your group is formed, I will create a group dropbox for the team on D2L.
- One team member should submit the zipped project file and the pdf file to the D2L submission folder. **Do not place the pdf in the zipped project file.** Submit them separately.
- You will receive a peer evaluation survey via Google forms that is specific to your team that you will fill out individually.

Project Team Names and Titles/Topics from Fall 2020

Karaoke Squad: Chicago Crime Tracker

API: Chicago Beach Water Quality

ISY Solutions Group: Monthly Crime Data

Team Alpha: Crime Detector

Team Lambda: Chicago Early Learning Programs