Faculty of Science

Assignment 1

Weight: 15% final grade
To be completed by an individual or in pairs (groups of 2)
Due date: March 3, 2022 11:59pm

Overview
The goal of this assignment is to provide students with an opportunity to investigate, and apply design patterns and coding standards. Your job is to pick a design pattern, create a short presentation, and implement the pattern. You will also be expected to look at 2 other presentations and come up with a comprehension question (like a test/quiz question) for each of the 2 presentations.

Instructions
For this assignment you are expected to work individually or with a partner. Please complete the Tasks outlined below.

1. **Create a presentation (6%)** – Select a design pattern from the list below (Design Patterns section). Using the method of your choice, create a short presentation about your selected design pattern. Your presentation could be in the form of a **slideshow** or **a recorded video** (with or without audio) or some other **method of your choice**. You will not lose/gain marks solely based on your choice of method. There are many different ways to convey information, so be creative and try to have some "fun".

2. **Implement the design pattern (6%)** – Implement your selected design pattern in the language of your choice as a Gradle project. Your implementation should include sufficient documentation (Javadocs are preferred but not required) to convey an understanding of the design pattern. Inspiration for this task could come from a side project you are working on, a project from another class that could be improved with a design pattern, or a generic implementation that simply gets the point across. Feel free to use snippets of your implementation in your presentation if you wish.

3. **Comprehension questions (3%)** – This portion is **due on March 4, 2022 by 11:59pm**. Students will be posting links to their presentations on the Canvas Discussion Board (Assignment1-Discussion) by March 3, 2022 at 11:59pm. You/your group is required to view 2 presentations and come up with 1 comprehension question for each of the 2 presentations. Comprehension questions focus on the underlying concept of the topic, not necessarily small details from the presentation. This article may help guide you with coming up with questions (https://www.aidansevers.com/post/how-to-write-good-comprehension-questions).

Design Patterns

Please select a design pattern from the list below. You may pick the same pattern as another group/individual. The link next to the pattern has been provided as a starting point. Please investigate beyond this initial source.

- Builder Pattern (https://www.tutorialspoint.com/design_pattern/builder_pattern.htm)
- Factory Pattern (https://www.tutorialspoint.com/design_pattern/factory_pattern.htm)
- Prototype Pattern (https://www.tutorialspoint.com/design_pattern/prototype_pattern.htm)
- Adapter Pattern (https://www.tutorialspoint.com/design_pattern/adapter_pattern.htm)
- Bridge Pattern (https://www.tutorialspoint.com/design_pattern/bridge_pattern.htm)
- Decorator Pattern (https://www.tutorialspoint.com/design_pattern/decorator_pattern.htm)
- Proxy Pattern (https://www.tutorialspoint.com/design_pattern/proxy_pattern.htm)
- Façade Pattern (https://www.tutorialspoint.com/design_pattern/facade_pattern.htm)
- Mediator Pattern (https://www.tutorialspoint.com/design_pattern/mediator_pattern.htm)
- Memento Pattern (https://www.tutorialspoint.com/design_pattern/memento_pattern.htm)
- Template Pattern (https://www.tutorialspoint.com/design_pattern/template_pattern.htm)
- Visitor Pattern (https://www.tutorialspoint.com/design_pattern/visitor_pattern.htm)

Submission Instructions (Parts 1 & 2 are Due on March 3, 2022 by 11:59pm)

1. Submit your **presentation and implementation** code on Canvas.
    a. **Presentation** – Please submit a link to a presentation video or a PDF of your slide deck (Powerpoint: File -> Save As -> PDF, Google Slides: File -> Download -> PDF). If there are animations that are important to your presentation, please submit a video even if there is no audio.
    b. **Implementation code** – Please submit a link to your Github respository and a .zip folder of your Github repository.
2. **Create a new discussion** on the CSCI2020 discussion board on Canvas with the name of the design pattern you chose, and the names of your group members. Attach/post a link or PDF of your presentation.
3. **Find 2 other posts** on the discussion board and add your comprehension question as a reply to the thread. Please pick a thread with a different topic than the topic you chose, and please try to reply to threads with the fewest number of replies. **This part of the assignment is Due on March 4, 2022 by 11:59pm**.

Grading Guidelines

This is not a rubric, but general points to guide you. You will be graded considering:

1. The topic presentation
    a. Is the content of the presentation accurate and relevant to the topic chosen?
    b. Does the presentation demonstrate understanding of the design pattern?
2. The implementation accuracy
    a. Does the implementation accurately reflect the design pattern?
    b. Is your implementation in a Gradle project?
    c. Does the code compile/execute?
        i. If not, did the team submit their comments on their analysis? what is missing, or possible fixes?
    d. Does the code contain sufficient comments/documentation?
        i. Adhere to coding standards. Comments before all classes, functions/methods.
3. Discussion post/reply
    a. Is the question related to the content presented?
    b. Is the question you are about to post similar to other questions posted on this thread? If so, could your question focus on a different concept, or could you comment on a different thread?