SWE 6853 - DESIGN PATTERNS **Summer 2023**

Term Project Due: 07/24/2023 (11:59PM. ET)

As you know, term Project plays a significant role in this course and will count 50% toward your final grade in the course. To get full credit you must follow the instructions carefully and also be concerned about the *quality* at every step. I recommend that you begin your work as early as possible, but not later than next week.

You can work on this project individually or in a group of two or three students. If you want to do it in a group, you should email me and give the name of the two/three of you in the group. This must be done by Sunday 6/25/2023 (11:59PM. ET). No action is required if you want to do it individually. Please note: Your decision in this regard will be final and cannot be changed after 6/25/2023.

Choose one of the following two options for your term project:

Option 1 - Pattern Tutorial: This consists of designing and developing a tutorial for learning category of design patterns. This project will culminate in a fully documented tutorial covering a wide number of design patterns. Each student/group should select one category of design patterns that must be included in their tutorial. The tutorial should provide ***for each pattern*** in your category all of the following:

- A high-level description of the pattern explaining what it is used for;
- A UML diagram of the pattern;
- One fully described original example (that I can't find on the internet) including a UML diagram of the problem applying the pattern (if possible; some pattern types require other types of diagrams); and
- Consequences – pros and cons of the pattern.

In addition, for this option, you should present your work (PowerPoint slides) in the Discussion area (Project Presentation).

Option 2 - System Project: This is for the programmers out there who want to design and partially implement a system using their type of design patterns. It will include a number of the features required in the tutorial, but will be done in the context of a system. For example, if your category is one of the architectural types, like Distributed System Design Patterns, then you may choose to design and implement a distributed system that contains a number of these design patterns. You may select the type of system with the goal being to choose an application that allows you to incorporate as many of your category's design patterns as possible.

As an example, consider an online shopping system including catalog search, purchase, order, shopping cart processing, and invoice generation. While this example may not be appropriate for your category, you can see the depth of requirements I'm looking for.

For this option, the emphasis is still on the utilization of your type of design patterns. The deliverables for this option include architecture design docs consisting of UML diagrams, and documented source code. Additionally, ***for each design pattern used in your project*** include the following in your project documentation:

- A high-level description of the pattern explaining what it is used for;
- A UML diagram of the pattern;
- How it was used in your system (your system becomes the example) including a UML diagram of the application of the pattern (this will be a part of your overall design documentation as well),
- Documented printout of the source code implementing the example (cut and paste from your system code to emphasize this pattern);
- Consequences – pros and cons of using the pattern.

FINDING EXAMPLES

The goal for coming up with examples of applications of the patterns is to come up with your own interesting examples. Do not present an example found in your textbook or in any other patterns book or any website (NOTE: I have LOTS of patterns books and can also access the internet ☺, so don't use somebody else's example.) It is acceptable to use references to general descriptions and general UML diagrams found in your text, in other texts or in other websites. Just be sure to cite the reference and don't plagiarize – rewrite the description in your own words.

GOOD LUCK, and please let me know if you have any questions.