Software Design - Design Patterns Paired Homework

Points: 30

Due Date: Monday, October 10

For this assignment you may choose to work with a partner if you wish. Working with a partner will divide the work (described below), but will also require coordination to bring the work together and to prepare the paper and presentation. I think the total time spent working individually will not be that much different than working with a partner.

For this assignment you will choose a design pattern (first person or pair to select a pattern gets it) to research and prepare a brief presentation and paper that covers that design pattern (5 – 10 minutes). Your presentation needs to cover these aspects of the pattern:

- It's type (behavioral, structural, creational)
- The problem it is trying to provide a structure for
- The UML for the general structure of the pattern
- A description of a real example where this pattern could be applied and the UML for that example.

As you investigate a pattern you will find that the UML is presented differently for the same pattern. Give some UML that makes sense to you (you may want to verify with me that your UML is "correct" so you don't lose points)

These 3 web sites will be good starting points for your investigation:

- http://www.oodesign.com/
- https://sourcemaking.com/design_patterns
- http://www.newthinktank.com/videos/design-patterns-tutorial/

You may use Power point to create a few slides for your presentation, but that is not required. You are required to create electronic materials for your presentation. You will submit those materials.

You are also required to write a short approximately 2 page paper that covers the same material that you cover in the presentation and includes a picture of the class diagram. You should include the same images and code that you use in the presentation.

Grading: You will be graded on the correctness and completeness of the materials you create. Your presentation will determine a small amount of your score and will focus on your ability to present technical material clearly.

Dividing up partner work: When working with a partner, one person needs to prepare the background for the general structure of the pattern (the problem being solved, the general UML, and a description of how the UML is solving the problem). This includes both the paper and presentation of this part. The other person needs to prepare the specific example that applies the pattern (a description of the specific problem, specific UML for this problem and how it maps to the general UML). **Each person will submit their own presentation material and their own paper on Blackboard and will be graded separately.** However, the papers should read as one paper and so you will need to coordinate a transition between the separate papers. Your presentations need to be coordinated as well so you will need to know what each of you plans to say in your presentation.

Pattern Assignments. Presentations will take place beginning Monday October 10. We will have one or two presentations a day for a few days. **All material is due on Blackboard on the 10th, not the day you present.** You will need to test your computer to make sure it can connect to the display. If not we may be able to use Zoom and you can share your screen or you can send me your slides and run them from my machine. Partners, only one person will display their screen so have all slides on that one machine. Some suggested patterns to choose from are given here. You should let me know which pattern you choose and the patterns will be assigned on a first come first served basis. You may choose a pattern that is not listed here, but you should get permission first.

- The Model/View/Controller Pattern - XXXXX
- The Observer Pattern –
- The Decorator Pattern –
- The Adapter (Wrapper) Pattern -
- The Strategy Pattern –
- The Iterator Pattern -
- The Composite Pattern –
- The Proxy Pattern –
- The Chain of Responsibility Pattern –
- The Factory Method Pattern -
- The Visitor Pattern –
- Singleton Pattern – XXXXX
- Flyweight –