*Optional*

This exercise will not factor into your course grade, but the feedback provided could certainly help your final exam grade

SWEN 262 DESIGN EXERCISE

NAME:**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**INSTRUCTIONS:** Read the system description given to you and create the required artifacts for each. There are some ground rules (**read carefully**).

1. Submit your solution as a **PDF file** (please no Word documents).
2. While you are allowed to collaborate (and realistically there is nothing I can do to prevent you from doing so), **the work that you submit should be your own** in order to get the most learning from instructor feedback. I expect that the artifacts submitted by each student are unique in some way that distinguishes them from other students.
3. It is OK to submit hand-drawn (e.g. whiteboard or on paper) diagrams. However, these diagrams need to be **neat and legible** and the image that you submit must be of sufficient quality that I can understand and interpret it without 200+% magnification.
4. Any prose (writing) should be typed. No handwriting for this stuff, please.
5. See myCourses for the dropbox closing times. All exams must be submitted at that time. I will not accept exams via email. You will have unlimited submission attempts, so I suggest that you submit more than once. Use any extra time you have to review your answers, fix errors, and resubmit. I will grade the last submission for each student.
6. The problem is designed to be solvable in 1-2 hours. Pace yourself and do not spend too much time on one artifact. Limit yourself to ~15-30 minutes per artifact.
7. Remember the feedback from your projects and the extra credit assignment!
8. **Please, please, please delete any extra white space between your answers.**

**Design Problem**

**Noun/Verb Analysis**

Use the space below to do a noun/verb analysis of the problem statement. Begin by doing a markup of the original problem statement (e.g. use one color to highlight nouns, and another to highlight verbs). **Include your markup below** (copy and paste it). Then, use each row in the table below to list a noun and the verbs related to that noun. Verbs should be placed into the same row as the subject noun (doer). The object noun (receiver) is indicated using parentheses.

|  |  |
| --- | --- |
| **Nouns** | **Verbs** |
| Some Noun [Some Child] | Some Verb (Some Other Noun) |
| Some Other Noun(Some Attribute) | Some Other Verb (Some Noun) |
| Eliminated Noun | Eliminated Verb |
|  |  |
|  |  |
|  |  |
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|  |  |

**Domain Model**

Create a domain model for the system. Make sure to label each relationship between domain entities and indicate the multiplicity and direction. Identify key domain attributes for the entities, Avoid using relationships like “is a” and “has a” (hint: use the verbs from your noun/verb analysis).

**UML Class Diagram**

* 1. You should include one detailed, low level diagram that completely documents one subsystem with at least 3-5 classes in it that includes at least one pattern. Be sure to use context specific names for the application, but to include pattern stereotypes (e.g. “<<Strategy>>”, “<<Composite>>”) beneath the names of the classes that play that role in a pattern.
  2. No Observers. I am so sick of Observer.

**Design Pattern Usage**

*Complete* the GoF pattern card for the pattern documented in your UML class diagram. Here “complete” means that there should be a row for *each and every* participant in the pattern. You can refer to the [cheat sheet](http://www.se.rit.edu/~swen-262/resources/Design%20Patterns%20Information%20Sheet.pdf) on the course site. Below the card write a paragraph (4-5 sentences at least) about why you chose the pattern, how it improves the design, and any design decisions you made (and why). **Use design principles and language from the requirements**. For maximum feedback benefit, do not choose small/trivial patterns.

|  |  |  |
| --- | --- | --- |
| **Gof Pattern Name:** | | |
| **Class** | **GoF Participant Name** | **Participant’s activity within the pattern in the context of the application (2-3 sentences).** |
|  |  |  |
|  |  |  |
|  |  |  |
| **Deviations from the standard pattern:** | | |

**Reasoning:**

**Sequence Diagram**

Your diagram should document a single, non-trivial feature. It should include **four or more** participants, and **five or more** interactions.