

# SWEN 383 Final Exam Topics

## Format

- 120 Minutes
- Closed book, reference sheet provided with generic class diagram of each pattern covered.
- Optionally, you may bring one 8 1/2 x 11 notes sheet, both sides OK
- 4-5 questions, short answer (primarily based on topics since Exam #2)
- 2 design problems (applying design patterns we have covered during the entire term)

**If you need any special accommodations for the exam, please make me aware of this via email and provide me with all the materials I need before the beginning of last class for this term.**

(All inclusive, based on classroom discussion and resources provided via the course website and myCourses.)

## Topics Since Exam #2

- Service Oriented Programming/Web Services
- Anti-Patterns

## Design Patterns covered over the course of the term.

- Observer
- Adapter
- Factory Method
- Composite
- Proxy
- Command
- Mediator
- Façade
- Model-View-Controller (Architectural)

## Sample Questions

Feel free to work with anyone in the class or to consult any material on the Internet in developing your answers. You may also ask questions of your instructor, but he or she will only answer those which serve simply to clarify what is being requested.

***If necessary post your questions to the broader Forum on our communication channel***

**Remember:** You are allowed to bring one 8 1/2-inch by 11-inch sheet of paper to the exam; you may put whatever you want on both sides of the paper. Your instructor may ask you to turn in your sheet at

the end of the exam. You will also be given a handout with pattern descriptions (including some that have not been covered and thus are not applicable to this exam).

### **Sample Short Answer Questions**

1. Describe the characteristics of the Blob anti-pattern. During development what basic object-oriented principle do you want to keep in mind to prevent this anti-pattern from developing? If it already has developed, what are the steps you should take to remove it?
2. Give a short description of the Lava Flow anti-pattern. Describe the observations that might indicate symptoms of the anti-pattern being present in your code.
3. What design pattern(s) would be appropriate for the design of a subsystem that consumed a web service? What responsibilities would the pattern(s) have in the operation of consuming a web service?
4. Describe the difference between a web service and a web application. Describe the basic flow of data and the responsibilities for web service consumption.

### **Sample Design Question**

Consider the design of a multi-player, interactive, real-time, video network game. In this game, each player can (a) view his or her immediate surroundings in the game's virtual world, (b) see summary information on the opposing players in the game, and (c) make moves in the game based on this knowledge. If an opposing player enters the field of view, this will be shown visually on the player's screen. Players can join or depart at any time during the game.

As players join, depart, and make moves in the game, the resulting game information must be updated for all current players. Your job is to design the coordination portion of the game.

1. Select at least TWO (reasonable) design patterns you would you apply to solve this problem? Why are they appropriate?
2. Given your choice, provide a class diagram showing the structure and possible flow of information among the various classes.
3. Provide a relevant subset of the methods in each class that will convince me that you understand how the pattern applies to this problem.
4. Give a sequence diagram with two players and whatever other objects are necessary to show what happens when Player#1 makes a move and, as a result, becomes visible to Player#2.