Midterm Exam
CSCE 606
October 17, 2013
75 minutes

Name: ________________________________
UIN: ________________________________

Instructions
This exam is closed book, closed notes, no calculator, etc. Provide brief but complete answers to the following questions in the space provided, using figures as necessary. You are given plenty of space for your answers. Don’t feel the need to fill all of the space. Show your work for partial credit.

1. Agile software development was developed to deal with some of the shortcomings of existing software development processes.
   a. (10 pts) Describe some features of the typical agile software development process.

   b. (5 pts) What are some advantages of agile software development?

   c. (5 pts) What are some disadvantages of agile software development?
2. (10 pts) For the Adapter design pattern, describe how it works (use a brief example if necessary), the types of problems it solves, when one should use it, and any particular advantages or disadvantages. Draw a UML diagram if it will help you explain it.

3. (10 pts) List the two main activities of the requirements process and explain what they are in one sentence each. Hint: the two main stakeholders in the requirements process.

4. (10 pts) Name three of Bertrand Meyer’s Seven Sins of the Specifier. If you cannot remember the exact term he used, just explain the idea of the “sin”.

5. (10 pts) What are the three main components in a specification following the IEEE Software Requirements Specification standard? For each main component, describe its contents with a sentence or two.

6. (10 pts) In configuration management, give an example of where a conflict may arise when merging a feature branch into a development branch.

7. (10 pts) Explain the process of performing class design based on an analysis of the requirements specification.
8. (20 pts) Draw a UML diagram of the class design for a simple digital watch. Include appropriate public and private methods and state variables in each class. The watch has a display that shows the time of day (hours/minutes/seconds as HH:MM:SS), a button that toggles between 12 hour/24 hour mode whenever the button is pressed, a button that turns on the backlight while pressed, a button to increment the time quickly (1 hour per second) while pressed, and a button to increment the time slowly (1 minute per second) while pressed. When the increment buttons are not pressed, the time advances at the normal rate. Make appropriate assumptions (e.g. that a 60 Hz signal is available).