

COMP 4882  
**Midterm Study Guide**  
Spring 2012

This document contains a list of the topics and skills that will be covered on the midterm. For problems that require reading/interpreting/modifying/writing code, you need not memorize the exact APIs covered, but you should be able to understand/apply the APIs if I provide you a listing of their classes and method signatures.

## **Development Problems and Processes**

- Know/understand the problems of software development:
  - Requirements
  - Cost estimation
  - Bugs
  - Maintenance
- Know/understand what iterative development is and why we do it.
- Know/understand what agile methods are and why we use them.
  - Know the agile values from the Agile Manifesto.

## **Agile Planning and Requirements**

- Be able to write/critique user stories.
  - Know/apply the US template (who/what/why).
- Know how planning poker is played and why it's useful.
- Know what a Kanban board is.

## **Servlets and JSP**

- Understand how web browsers and web servers interact (i.e., HTTP).
- Know the parts of a URL.
  - Including optional parameters.
- Know the basic structure of HTTP requests and responses.
  - Know the differences between GET and POST requests.
  - Know what it means for an operation to be *idempotent*.
- Know how request/response data flows between a web browser and a servlet.
  - Understand how the container manages request/response objects.
  - Understand how the container manages threads.
- Be able to read/interpret/modify a web.xml deployment descriptor.
  - You need not memorize the exact tag names, but you should know what they mean if I show them to you.
- Be able to read/interpret/modify a Java servlet implementation.
  - Know how to print HTML from within servlet method.
  - Know how to use a ServletConfig object and what it's good for.
  - Know how to use a ServletContext object and what it's good for.

- Know how to use a ServletContextListener object and what it's good for.
  - Know how to use a HttpSession object and what it's good for.
- Be able to read/interpret/modify a simple JSP.
  - Know how to forward a request to a JSP from a servlet.
  - Know how to pass data from a servlet to a JSP via the request object.
  - Know how to use the <% ... %> and <%= ... %> tags.
  - Be able to read/interpret/modify basic HTML (possibly containing a form).
- Know how to apply the Model-View-Controller architectural pattern with servlets and JSP.
- Understand the scope and lifecycle of servlets, ServletConfigs, ServletContexts, and HttpSessionS.

## Concurrent Programming in Java

- Know the possible states that a thread can be in.
- Understand the semantics of multithreaded execution in Java.
- Be able to use the Java thread API to read/interpret/modify/write a multithreaded program.
  - Be able to use the Thread class and Runnable interface.
  - Be able to apply the monitor pattern to synchronize a multithreaded program.
    - Understand/apply synchronized methods.
    - Understand/apply the wait(), notify(), and notifyAll() Object methods.

## Subversion (SVN)

- Know the basic SVN client operations and how they affect the repository and/or your working copy.
- Be able to choose the client operation(s) to apply in a given situation or to solve a particular problem.