

# CIS 498 Senior Software Engineering Project I

## Second Mid-Term Exam

Fall 2013

**IMPORTANT:** Do not write essays! Use “bullets” to organize your answers! This is a 50-minute exam. You are expected to address major issues and provide structured answers. You are expected to provide comprehensive answers to questions.

1. (30p) What is the role of prototyping in the requirements engineering process during the inception and the elaboration phase of the software development process? What role does user interface prototyping play in this process? How is interface prototyping connected to requirements engineering? What role if any does the prototyping play in the construction and transition phase of the software development process?
2. (30p) Explain significance of software architecture in context of software design and in the wider context of software engineering process. Why is software architecture important, when is the architecture addressed for the first time in the software development process? By when in the software process do we have to define (make a commitment to) the software architecture?
3. (40p) Justify the following basic principles of software design:
  - o **The Open-Closed Principle** – “A module/component should be open for extension but closed for modification”
  - o **The Liskov Substitution Principle** – “Subclasses should be substitutable for their base classes”
  - o **The Release Reuse Equivalency Principle** – “The granule of reuse is the granule of release”
  - o **Dependency Reversion Principle** – “Depend on abstractions. Do not depend on concretions”
  - o **The Common Closure Principle** – “Classes/modules that change together belong together”
  - o **The Common Reuse Principle** – “Classes/modules that aren’t reused together should not be grouped together”
  - o **The Interface Segregation Principle** – “Many client-specific interfaces are better than one general purpose interface”