

## Assignment #5

### Detailed Designs

CS 3398, Fall 2013

**due: Section 251: Wednesday, Apr 9, and Section 252: Thursday, Apr 10, in class**

Draw models to answer the following questions (hand-drawn or computer-drawn are both acceptable).

1. Draw a UML class diagram (chapter 5, slide 9) representing a book defined by the following statement: "A book is composed of a number of parts, which in turn are composed of a number of chapters. Chapters are composed of sections." Focus only on classes and relationships. Add multiplicity to the class diagram you produced.
2. Extend the class diagram of Exercise 1 to include the following attributes (you may submit a single drawing as the answer for both questions 1 and 2, with classes, attributes, and relationships):
  - a book includes a publisher, publication date, and an ISBN
  - a part includes a title and a number
  - a chapter includes a title, a number, and an abstract
  - a section includes a title and a number
3. (Draw as a separate diagram) Consider the class diagram of Exercise 3. Note that the Part, Chapter, and Section classes all include a title and a number attribute. Add a base class and a generalization relationship to factor out these two common attributes into the base class.
4. Given the following UML class diagram (on the next page), decompose it into a set of components (subsystems) so that you have at least 2 but no more than 4 components (see Detailed Design, slide 31). Use the goals of low coupling and high cohesion for deciding which classes should go in each component. You may print the page and draw on top of the diagram and submit that page with the rest of your answers.

