

## **Exam 2 – Learning objectives and format**

### **DRAFT (November 1, 2003)**

**Learning objectives.** Students should be able, for Exam 2, to:

#### **1. Design an appropriate class diagram for a given problem**

- a. Diagrams with boxes containing appropriate class and interface names
- b. Appropriate arrows (indicating IS-A, HAS-A, implements) connecting the class/interface boxes
- c. Each class/interfaces box expanded to also indicate the fields and methods for that class/interface
- d. Each field expanded to also indicate its type
- e. Each method expanded to also indicate its type and the type of its parameters

#### **2. Follow a disciplined process in implementing a given class diagram**

- a. Design an appropriate screen review (or other appropriate method to specify the intended functionality of the application)
- b. Design an appropriate iterative enhancement plan for implementing the specified functionality of the application
- c. Follow the iterative enhancement plan in implementing that functionality, with each stage of the plan implemented:
  - i. First by a “detailed design” which contains classes, methods and fields appropriate to the stage, with appropriate Javadoc documentation, but with the methods having stubs (empty bodies)
  - ii. Then by filling in the stubs with appropriate statements to accomplish what the documentation specifies
- d. Obey a standard set of coding conventions

#### **3. Implement a given class diagram by using appropriate expressions and statements**

- a. Classes that extend classes and implement interfaces
- b. Fields
  - i. Private fields
  - ii. Protected and public fields
  - iii. Static (in particular, public static final) fields
  - iv. *Especially: Fields that implement that HAS-A relationship*
- c. Methods

- i. Public methods
  - ii. Protected and private methods
  - iii. Static methods
- d. Parameters
- e. Local variables
- f. Asking an object to do something (“who dot what”), giving that object arguments if needed*
- g. Assignments
- h. Iteration, by for and/or while loops
- i. The *this* and *super* keywords
- j. Arrays

**Format of Exam 2:**

1. [Roughly 25% of exam] A few paper and pencil problems
  - Some may be closed-book, some may be open-book
2. [Roughly 25% of exam] Draw a class diagram for a problem that we supply
  - Show the classes and their relationships (with appropriate arrows)
  - For each class, show its attributes and operations
3. [Roughly 50% of exam] Implement a class diagram that we supply (for a problem that we supply)