Spring ’15 CIS 212 Midterm Review

You may bring one page of notes, front and back.

Questions will be in short-answer format with partial credit for partial answers.

You will be asked to both read and write Java code, but only write code using primitive types (including Strings), Math.random(), System.out.println(), and any specific objects/methods below.

Topics:

• Basic Java: variables, control statements, methods
• Basic data structures and operations: Arrays (assign/access), ArrayLists (add/remove/access)
• Basic OO Programming: constructors, getters/setters, inheritance, interfaces, static, final
• GUIs: JButton, JLabel, GridLayout, BorderLayout
• Graphics: coordinate system, setColor(), fillOval()
• Recursion: base case, recursive call
• Searching and sorting: linear/binary search, selection/merge sort
• Complexity: \(O(1), O(lg n), O(n), O(n \ lg n), O(n^2)\)

Sample questions:

1. [5] Consider the following Java code:

   ```java
   if (n >= 0)
       System.out.println("n > 0");
   System.out.println("or n == 0");
   ```

   What is printed by the above code assuming that \(n\) is -1? Why?

2. [5] Consider the following Java code:

   ```java
   class A {
       public int get() { return 1; }
   }
   class B extends A {
       public int get() { return (3*super.get()) + super.get(); }
   }
   ```

   What is printed by System.out.println(new B().get())?


5. [10] Write a Java implementation for a method that returns the smallest integer in an array of unsorted integers. What is the Big-O complexity of this algorithm?