Fall ’10 CIS 212 Final Review

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

You may bring a calculator but shouldn’t need one.

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

Questions will require you to read Java and assembly code (including Swing).

You will not be asked to write Java or assembly code, but may be asked to write pseudocode (i.e., code that unambiguously describes your solution but is not required to compile).

You will not be asked questions about the Java API, such as questions requiring you to know which methods belong to a specific Java class.

Topics:

- All midterm topics
- Assembly language: translating to/from machine language, the Chapter 6 instruction set
- Turing machines: instruction format, reading/writing programs, unsolvable problems
- Encryption: XOR, stream versus block ciphers, symmetric/asymmetric keys, RSA

Sample questions:

1. [10] Consider the following code:

   ```java
   for (int i = 0; i < n; ++i)
       for (int j = 0; j < n; ++j)
           System.out.println(i + " " + j);
   ```

   What is the Big-O upper bound for this function with respect to n? Why?

2. [10] Consider the following assembly code:

   ```assembly
   LOAD     X
   SUBTRACT Y
   OUT      X
   X:       .DATA    7
   Y:       .DATA    5
   ```

   What value is printed when the code is executed?

3. [10] Given p = 3 and q = 7, find the RSA keys (e, n) and (d, n):