Fall ’12 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 (Chapter 6) code.

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).

Topics:

- All midterm topics
- Networks: Sockets, ports, Internet organization, TCP/IP protocol stack
- Turing machines: instruction format, reading/writing programs, unsolvable problems
- Concurrent programming: Threads in Java, AsyncTask in Android
- Encryption: stream versus block ciphers, symmetric/asymmetric keys, RSA

Sample questions:

1. [10] Consider the following Java code:

```java
Thread t = new Thread() {
    public void run() {
        for (int i = 0; i < n; i++)
            System.out.println(i)
    }
};
for (int i = n; i < 2*n; i++)
    System.out.println(i)
t.start()
```

   a. (5) What (if anything) do we know about the order in which the numbers will be printed?

   b. (5) What is the Big-Theta complexity of the above code with respect to n?

2. [10] Write a Turing-machine program which outputs 1 if the input has an odd number of 1s and outputs 0 otherwise:

3. [10] Given p = 5 and q = 7, find the RSA keys (e, n) and (d, n):