COSC 201 Review Questions
Midterm #2
Fall 2013

1.) List and describe the four problems that need to be solved for the RSA encryption scheme?

2.) List the four things that Weiss believes to be essential to recursive solutions.

3.) What is the issue with the following solution to the Fibonacci problem?

```
public int fib(int a){
        if (a == 0 | a == 1) return 1;
        return (fib(a-1) + fib(a-2));
}
```

What is the solution to the issue above?

4.) Give a recursive method to print all permutations of a String s.

5.) Create a PriorityQueue of Strings. Add the following Strings to the queue: "Alan", "COSC 201", "Computer", "Science", "Schaefer", "SMCM". If we printed out this queue in order, what would print?

6.) How do you implement a Stack with a LinkedList?

7.) Describe how to add an element to a LinkedList. Make sure to hit all of the possible scenarios.

8.) Give the code to declare and instantiate a Stack of Strings called myStack. Add the elements "This" "is" "COSC" "201" and then print those elements.

9a.) Create a TreeSet of Integers and add the following integers to that Set:

1, 4, 2, 9, 2, 13, 6, 10

9b.) If I printed the elements of the TreeSet from 9a, what would I see?

10.) Declare and instantiate an Integer Queue in Java. Add the following numbers to the Queue: 1, 4, 22, -4, 3, 1. If we printed the Queue out in order, what would print?

11.) Give the postfix for the following infix notation equation and then evaluate (show all work):

1 + 2 * 3 / 5 ^ 3 ^ 2 + 4 – (6 + 7 * 8 ^ (7 + 8) * 9)

12.) <Decimal to other base conversion question>

13.) Is LinkedList in Java doubly or singly linked?

14.) Name 3 implementations of the List interface.

15.) What's the difference between Iterator and ListIterator?

16.) What is required in order to have a class I've created (Student) be able to be added to a HashSet without fear of accidental duplicates or accidental deletions?