

COSC 201 Review Questions
Midterm #2
Fall 2011

- 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.) What is the difference between TreeSet and HashSet?
- 7.) What's the difference between Iterator and ListIterator?
- 8.) How do you implement a Stack with a LinkedList?
- 9.) Create a Comparator that will order Integers from largest to smallest (instead of natural ordering) and use that in a PriorityQueue of Integers.
- 10.) 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.
- 11.) Create a class Student with two private fields, id (an int) and name(a String). Include a useful constructor as well as methods to allow student to be put into a HashSet. Students should be compared by id.
- 12.) What's the primary difference between a Set and a List?
- 13.) 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?
- 14.) Give the postfix for the following infix notation equation and then evaluate (show all work):

$$A + B * C / D ^ E ^ F + G - (H + I * J ^ (K + L) * M)$$