

COSC 201 Review Questions
Midterm #2
Fall 2010

What are the four problems that need to be solved for the RSA encryption scheme?

Give me an algorithm to solve for the greatest common divisor between two ints.

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?

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

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?

What is the difference between TreeSet and HashSet?

Name three implementations of the List interface.

What's the difference between Iterator and ListIterator?

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

Is LinkedList in Java doubly or singly linked?

How do you implement a Stack with a LinkedList?

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.

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.

What's the primary difference between a Set and a List?