CSDS 233 Fall Session 1

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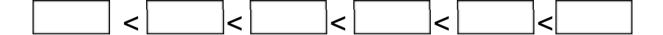
Disclosure: This is a supplement to class, not a replacement. This should not be your only study activity for exams, it should aid you in studying. I do not have the actual exam so questions here will differ from those on the exam.

Session Objectives:

- 1) Be able to develop programs and use classes (ADT) to make objects that store data (review topic . . . also very confusing way of putting this)
- 2) Be able create recursive and understand O their function
- 3) Understand what big O is and determine the big of basic pieces of code

Practice Problems:

1) Compare the runtime of the following 2^n , $\log(n)$, n^2 , k, n, $n\log(n)$, 1



2) Determine the big O of the following

```
public void example1 (int N) {
    for (int i = 0; i < N; i++) {
        System.out.println("do something ");
    }
    for (int i = 0; i < N; i++) {
        System.out.println("do something ");
    }
}</pre>
```

3) Determine the big O of the following public void example2 (int N) { for (int i = 0; i < N; i++) { for (int j = 0; i < N; j++) { System.out.println("do something"); } } } 4) The following is a recursive algorithm circle the base case public boolean example3 (int N) { if (N < 1) { return True; } N = N / 2// Recursion example3(N)

5) What is the value of N at each run for the function example3(4)

}

Simplify the following big O expression

6)
$$9999^2 + n + n \log$$

7)
$$logn + n + 4n$$

8)
$$300n + 30n^2 + 3n^3$$

9)
$$1000 + nlogn + 2^n + 9999^2n$$

10) Determine the big O expression of the following code:

```
public void example4 (int N, int M) {
  for (int i = 0; i < N; i++) {
    for (int j = 0; M >= 0; j++) {
        M = M/2
    }
}
```

}

ADT Coding activity found here: https://replit.com/@jdanninger/CustomerDataActivity

Once you reach the site click fork code and make an account then you should be able to code

This code consists of two files, a main file that has test cases and a Customer.java file. The Customer.java file is incomplete, your goal is to complete it and pass the test cases.

The Customer class needs get and set methods (set method sets a property to a specific value and get method returns a value).

12) Probably wont get to this today. . . its great recursive coding practice

Recursive Coding activity here – https://codingbat.com/java/Recursion-1

- Only doing first 5 problems