

CSDS 233 Fall Session 1
SI Leader: Jakob Danninger

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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 $2^n, \log(n), n^2, k, n, n\log(n), 1$

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- 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 ");  
    }  
}
```

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) $\log n + n + 4n$

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

9) $1000 + n \log n + 2^n + 9999^2 n$

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  
        }  
    }  
}
```

11)

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