

CSCI 132:

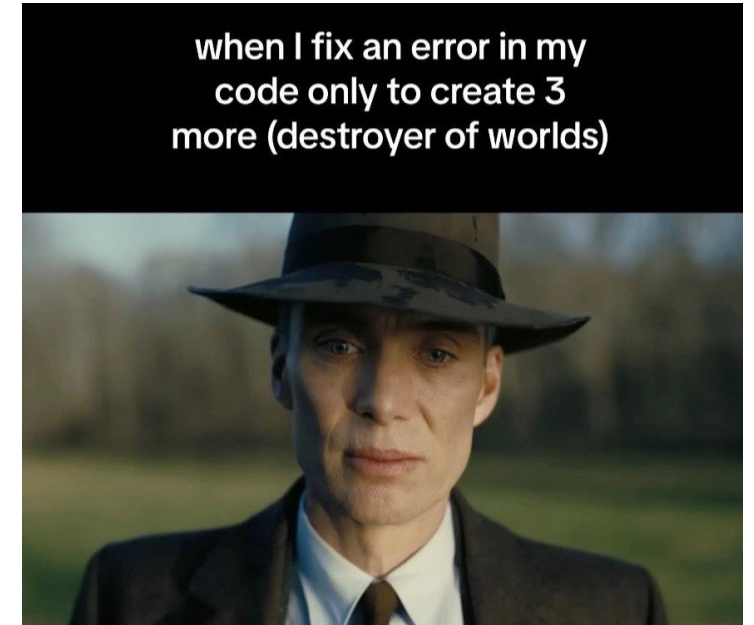
Basic Data Structures and Algorithms

More Java (while loops, practice)

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Announcements

- Lab 2 due **tomorrow** at 11:59 PM
- Program 1 is posted soon
I will talk about it and give some hints on Friday
- I am giving out rubber ducks on Friday
1% extra credit if you take care of it
- I do not publicly post solutions, but you can stop by office hours or email if you want to discuss homework solutions



Lab 2

While loops can be used to iterate if a condition is true.

```
int x = 100;
while(x > 0) {

    System.out.println(x);
    x--;

}
```

1. Check Condition
2. If condition is true, execute body of loop
3. Repeat

```
int x = 100;
while(x > 0) {

    System.out.println(x);
    x++;

}
```

You do have to worry about the possibility of infinite loops....

New

The **do/while** loop will always execute the body of the loop once, and then check the condition

```
int i = 0;
do {
    System.out.println(i);
    i++;
}
while (i < 5);
```

1. Execute body of loop
2. Check condition
3. Repeat

!!! You are guaranteed at least one execution of the loop body

Random Numbers

```
import java.util.Random;

public static void main(String args[]){
    // create instance of Random class
    Random rand = new Random();

    // Generate random integers in range 0 to 999
    int rand_int1 = rand.nextInt(1000);
    int rand_int2 = rand.nextInt(1000);

    // Print random integers
    System.out.println("Random Integers: "+rand_int1);
    System.out.println("Random Integers: "+rand_int2);

    // Generate Random doubles
    double rand_dub1 = rand.nextDouble();
    double rand_dub2 = rand.nextDouble();

    // Print random doubles
    System.out.println("Random Doubles: "+rand_dub1);
    System.out.println("Random Doubles: "+rand_dub2);
}
```

Easiest way to
generate random
numbers is with
`Random.nextInt()`

Practice

Write a Java program that will generate a random number. The user will need to guess the number until they correctly guess it. The program will keep track of the number of guesses made by the user

```
Your Guess?  
2  
Higher  
Your Guess?  
6  
Lower  
Your Guess?  
4  
Higher  
Your Guess?  
5  
You got it! That took 4 guesses.
```

Practice

Write a Java program that will simulate dice being rolled. The Java program should keep track of the frequencies of how much each dice number was rolled (# of 1s rolled, # of 2s rolled, etc) and print it out to the screen like a Histogram

```
Enter # of times to roll dice:
```

```
20
```

```
Enter # of sides of dice:
```

```
6
```

```
0:
```

```
1: **
```

```
2: *****
```

```
3: ****
```

```
4: **
```

```
5: ****
```

```
6: ***
```