

Griffin's OH 3/5/22



**COMS 1004 Introduction to Computer Science and
Programming in Java**

Some Starting Words For Us All

Midterms are upon us and myself and the other TAs know it is a very stressful time for all students. We wish you luck on all midterms you have this semester and please be sure if you are struggling with any concepts or have general questions please come to office hours and ask questions on EDStem. You were given 120 late hours to use on these assignments at the beginning of the semester, there is no reward for hanging on to these hours so please use them to your benefit.

Quick Announcements

Announcements for the week of March 6th 2022

- Programming Project 3 is due on Monday please begin working on it if you have not already done so
- Quiz 3 is on Tuesday March 8th please begin to study for it if you deem it necessary
- The Collaborative Space in Math 207 is open from 1-5pm this Sunday (3/6/22)
- I posted the third set of notes in my files section on courseworks it covers all things binary and hardware related

Topics for the Week

1. Method Overloading
2. Applications of Computer Science: Game Theory
3. How to Debug Code: Exceptions, Syntax etc
4. LIVE ONLY: Answer Questions about the PSET

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Method Overloading

Method Overloading

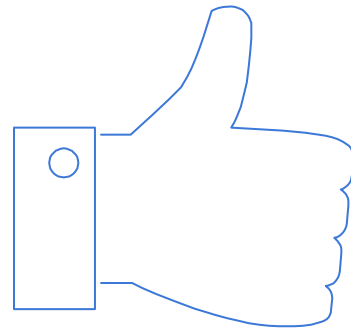
Sometimes in Java we want multiple versions of the same method with slight differences in the parameters we pass in. Say for example we have a constructor that takes in no arguments:

```
public ClassName(){// some code here}
```

We may also want a constructor with a parameter specifying the initial value of one of our instance variables, so we simply can just overload it:

```
public ClassName(int initialValue){ //some code here}
```

```
public class BankAccount {  
  
    private double accountBalance;  
    private String userName;  
  
    //standard no parameter constructor  
    public BankAccount(){  
        userName = "";  
        accountBalance = 0.0;  
    }  
  
    //overloaded BankAccount constructor  
    public BankAccount(double initialBalance, String name){  
        userName = name;  
        accountBalance = initialBalance;  
    }  
}
```



The above is a perfectly acceptable code fragment

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Applications of Computer Science: Game Theory

What is Game Theory?

Game theory is the study of mathematical models of strategic interactions among rational agents.

Famous examples include the Prisoner's Dilemma and Matching Pennies Game

The point of this current Programming Assignment is to apply game theory to your code!

How can Computers Help?

We can program computers to run simulations based off the logic we set in order to determine whether or not there is a Nash equilibrium or dominant strategies for either player.

That is the purpose of part 2 of your program! You are setting up the code in a way in order to run simulations to determine the best strategy for player1 (odd player)

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How to Debug Your Code

Reasons Why I am doing this

It is important for you to learn how to debug your code as going forward I will not be assisting you with standard debugging issues, we are half-through the semester so you need to be able to do this on your own. It is okay to get these errors but it is important to learn the skill in order to effectively.

So I will go through the most common ones and the way to start debugging them

Types of Errors You Will Get

Compiler Errors

1. You forgot a semicolon
2. You didn't put enough brackets
3. You didn't put a return statement in a method with a non-void return type
4. You didn't declare the variable you are referencing

For all of these read the compiler and follow its output, it tells you what's wrong

Runtime Errors

1. `NullPointerException`: the object you are operating on is null or you are making incompatible comparisons on a null value
2. `IndexOutOfBoundsException`: Check to make sure you are not accessing invalid indices on Strings or Arrays
3. `ArithmeticException`: Don't divide by 0

Link to Video Drive and Other Resources

Link to Video Drive:

[Video Drive](#)

Link to My Office Hour Materials:

[Useful Files](#)