

Hack BI

An Introduction to Java

Get Started:

To download JGrasp IDE:

Go to [jgrasp.org](https://spider.eng.auburn.edu/user-cgi/grasp/grasp.pl?dl=download_jgrasp.html) and click the download option on the right sidebar or go to this link

(https://spider.eng.auburn.edu/user-cgi/grasp/grasp.pl?dl=download_jgrasp.html)

To download the JDK:

<https://www.oracle.com/technetwork/java/javase/downloads/index.html>

Purpose: Java is one of several programming languages, but can be very useful and is a good introduction to more structured programming languages. . The purpose of this workshop is to provide the tools necessary for students to create projects, and learn to program.

Goal: To have learned the fundamentals of programming in Java in order to create a project by the end of the hackathon.

Cheat Sheet:

- Eight types of primitives: byte, short, **int** (integer #s), long, float, **double** (decimal #s), **boolean** (true or false), **char** (a single character, denoted by ‘ ’)
- String is an object type that holds text
- Primitives only have values; Objects have fields and methods.
- Example of declaration and initialization of a variable:

```
int num = 5; //how to initialize a primitive
String word = new String("hello"); //how to initialize an Object
String word2 = "hello"; //can initialize a String like a primitive but only Strings
```
- Five arithmetic operators: +, -, / (division), * (multiplication), % (modulo)
- *NOTE:* modulo returns the remainder (like in division), and when you divide one int by another, it will ignore everything after the decimal (called integer division)
- Main method is where everything that needs to happen goes:
//don't forget to always put your program inside of a class

```
public class Sample {
    public static void main(String[] args) {
        System.out.println("hello"); //calls the print method from inside main
        int num = add(3, 4); //calls add method you created and stores its return
    }
}
```

```

        public static int add (int num1, int num2) {
            return num1 + num2;
        }
    }
}

```

→ If you only want something to happen dependent on other things, put it in an if-else statement.

```

public static String check(int first, int second) {
    if(first > second) { return "greater"; }
    else if(first < second) { return "lesser"; }
    else {return "equals"; }
}

```

→ Four boolean operators: && (and), || (or), ! (not)

→ To use user input, you need a Scanner object

- ◆ Put a Scanner import outside of your class

```
import java.util.Scanner;
```

- ◆ Create a Scanner object

```
Scanner keyboard = new Scanner(System.in);
```

- ◆ Use Scanner

```

System.out.println("What is your name?"); //always remember to tell the user
what you're asking of them
String response = keyboard.nextLine();

```

Challenge: Create a Calculator program with a main method that asks the user for a function and numbers and returns the result of the numbers being added or subtracted etc (depending on which function the user chose).

NOTE: if you finish the calculator quickly and want to learn loops, ask for someone's help.

Resources:

StackOverflow: <https://stackoverflow.com> *//a good forum for Java related questions*

Java Documentation: <https://docs.oracle.com/javase/7/docs/api/> *//has all the classes of objects Java has created for you (like String) and all the necessary info on them*

If you have any questions, feel free to email me at caballeroa1@bishopireton.org.