Computer Programming Merit Badge - Java Random Number

Objective: Make a program that generates a random number

In order to get started use this link to access a java compiler.

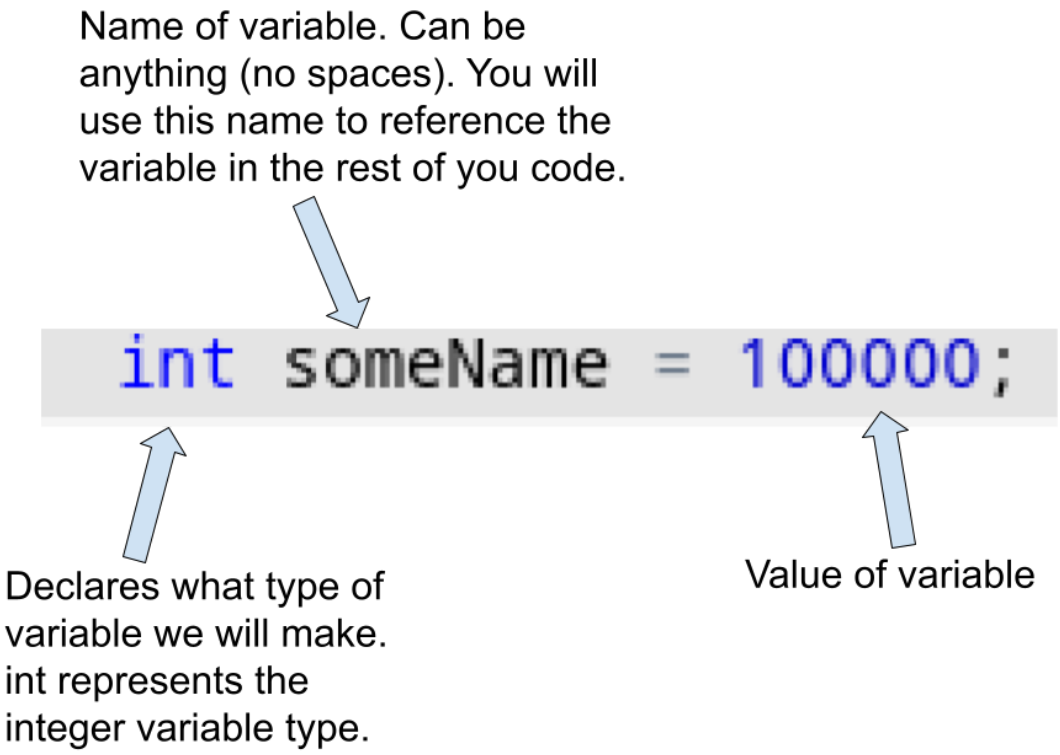
When you open the website you should see some starter code that's shown to the right. Ignore the light green words at the top of the page. These are called comments and don't affect the code. **Warning,** comments are the exception. If you write anything that the computer doesn't recognize as code it will immediately break your program.

```
// Online Java Compiler
// Use this editor to write, compile and run y

class HelloWorld {
    public static void main(String[] args) {
        System.out.println("Hello, World!");
    }
}
```

On lines 4 & 5 are the things that actually run the program. We won't delve into what they actually mean. The important thing is that we want all our code inside of the squiggly brackets so it gets run. Delete the code on line 6 for now.

The first step is to create an **int variable**. An int variable represents some integer, a number with no decimal points (numbers like 10 or 9 not 0.934). Something to note is that all functions in java end in a semicolon(;).



Once you have your first variable we will try printing it. The method shown below is the **print method**. It writes out words that we can see when we run the code. Any words you want printed have to be in quotation marks (“ ”) inside the parentheses. In order to print a variable’s value, just write the variable name inside the parentheses of the print method.

```
System.out.println("look at me I'm a sentance!");
```

Output:
look at me I’m a sentance!

```
int someName = 100000;

System.out.println(someName);
```

Output:
100000

The next step is to generate a random number. We will use the **Math.random()** method to generate a random number. The Math.random() normally generates an unusable number, so we must make the modification shown to the right. You can calculate what numbers will be generated by adding range and min together the minusing one. Your numbers will be from **min to min+range+1**.

```
//min is the smallest number generated
//range is the the amount of values generated
int someName = (int)(Math.random()*range)+min;
```

Examples:

```
//Generates a random number from 4-8
int someName = (int)(Math.random()*5)+4;
```

```
//generates a random number from 1-3
int someName = (int)(Math.random()*3)+1;
```

Think about what number these will generate.

```
int someName = (int)(Math.random()*100);
```

```
int someName = (int)(Math.random()*10)+10;
```

Use this to set your variable to a random number from 1 to 5 when you run the program.

Bonus: Random Number Guesser

In order to make a Guesser we need an **if statement**. If statements run some code if a condition is met.

```
if (condition) {
    code inside here is run if the condition is met
}
```

We will check if our guess is equivalent to our randomly generated number by comparing our two variables. If they do equal each other the computer should print out some statement. Make a new variable called guess and set it equal to your guess. Then compare it to your randomly generated number in an if statement to see if their equal

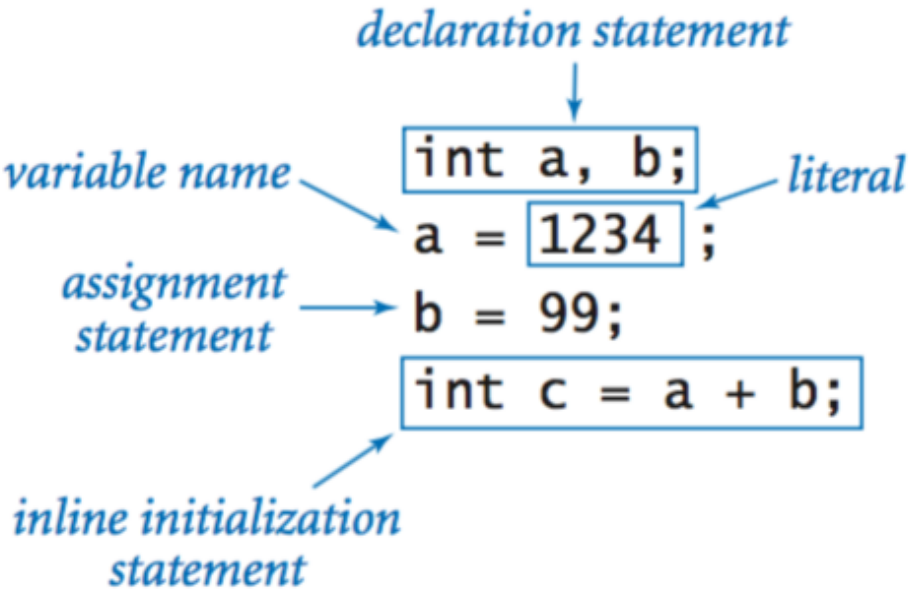
```
if (guess == randomNumber) {
    System.out.println("Correct!")
}
```

Java Cheat Sheet

We will be focusing on the int variables.

type	*set of values*	*common operators*	*sample literal values*
`int`	integers	`+ - * / %`	`99 12 2147483647`
`double`	floating-point numbers	`+ - * /`	`3.14 2.5 6.022e23`
`boolean`	boolean values	`&& || !`	`true false`
`char`	characters		`'A' '1' '%' '\n'`
`String`	sequences of characters	`+`	`"AB" "Hello" "2.5"`

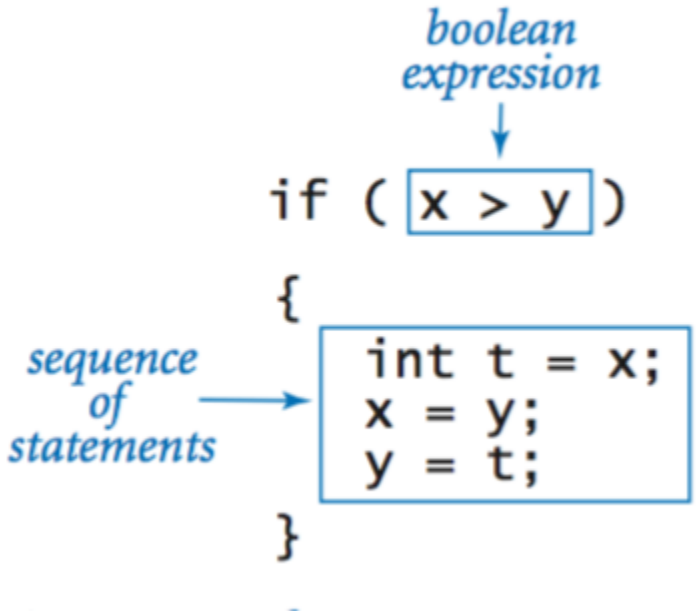
Basic functions with integers (ignore the words)



Printing in java

`void System.out.print(String s)`	*print s*
`void System.out.println(String s)`	*print s, followed by a newline*
`void System.out.println()`	*print a newline*

If statement



Math random function

(int)(Math.random()*range)+min