Statements, Expressions and Blocks

A byte size lesson in Java programming.

What is a statement?

- Instructions that tell the programming language what to do.
- In Java, statements are a single line of code that should end with a ';'
- You should already be familiar with the examples below.

```
int score;

System.out.println("Hello, world!");
```

What is an expression?

- An expression a piece of code that contains a series of variables, operators and values that can evaluate into a single value.

- So far, our expressions have been really simple statements, using a single operator at most after the = operator.

```
int score = 80;
int a = 5; a += 5;
int a, b, c; a = 2; b = 4; c = a + b;
```

Expression with multiple operators

- Let us see a more complicated expression first with variables, operators, and numerical values. What is the value of result?

```
double a = 2.2;
double b = 3.4;
double result = a + b – 1.3;
```

Let's test your understanding!

- Which is the right operator to use to get the below answers

```
int a = 12; int b = 5; int c = 2; int d;
d = a  *  b  /  c;
System.out.println("d should be 30!");
```

Not just mathematical expressions!

```
boolean a = (6 > 3) || (5 < 2);
```
true

What is a block?

- A block is group of statements that is enclosed in curly braces {}

```
{   // start of block
  System.out.println("Hi, there");
  int b = 7;
  int a = 5 + (2 * b);
} // end of block
```

Shh…

- Technically a block can have no statements…

```
public static void main(String[] args) { // start of block
    // awfully quiet here… creepy…
} // end of block
```

Looking back at our first program

- BlueJ assigns a specific colour to each block. Do you recognise this program?

```java
/**
 * The first program that we write in Java
 *
 * @author Erika Camilleri
 * @version 0.1
 */
public class HelloWorld
{
    public static void main(String args[]) {
        System.out.println("Hello, world!");
    }
}
```

Let's put it all together now!

- In the following, identify an expression, a statement, and a block. Hint: an expression can be a statement but it does not have to be one.

```
if (10 > 5) {
    x = 5;
}
```

Expression

```
10 > 5
```

Statement

```
x = 5;
```

Block

```
{ x = 5; }
```