

## The for loop

The for loop is another commonly used type of loop in Java. Although a `for` loop does not allow us to write any more complex programs than a `while` loop, it makes Java code more compact. Ultimately it's a matter of preference which type of loop you use, so long as the code accomplishes what you intend. The general form of the for loop is the following:

```
for (expr1; expr2; expr3)
{
    // body of loop
}
```

The first statement of the loop contains three expressions (inside the parentheses), which control the iterations of the loop. Let's start with an example before trying to understand exactly what of these expressions are. Since a for loop is equivalent to a while loop, we'll include two code segments that print out 0 to 10:

In general, the expressions in the for loop have the following meaning:

```
for (int i = 0; i <= 10; i++)
{
    System.out.println(i);
}

int i = 0;
while (i <= 10)
{
    System.out.println(i);
    i++;
}
```

`expr1`: variable declaration or declarations. It's executed once in the beginning of the loop.

`expr2`: logical expression. The logical condition is evaluated in the beginning of every iteration. If it's true, the statements in the body of the loop are executed. Otherwise, the first statement **after** the loop executes.

`expr3`: a statement or statements that **execute at the end of every loop iteration**.

The for loop allows for much versatility. For instance, the expressions are optional (but not the semicolons). Here's an example:

```
for (int i = 0; ; )
{
    System.out.println(i);
}
```

Notice that `expr2` and `expr3` are omitted but not the semicolons. This code segment will print out 0 infinitely since the logical expression is lacking (it's always true) and the value of `i` is never updated.

It is also possible to declare more than one variable in `expr1` and update several variables in `expr3`. An example: