

The *for* loop

Most loops are of one of the following two types:

- Those that are repeated until a flag changes state
- Those that are repeated a number of times

An example of the first type of loop is the following:

```
int finished = false;  
while (!finished) {  
    // do something here  
}
```

An example of the second type of loop is the following:

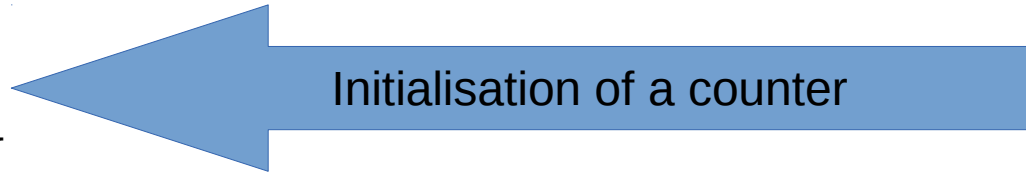
```
int count = 0;
while (count < 5) {
    println("Counted up to " + count);
    count++;
}
```

There are three parts in this loop:

```
int count = 0;  
while (count < 5) {  
    println("Counted up to " + count);  
    count++;  
}
```

There are three parts in this loop:

```
int count = 0;  
while (count < 5) {  
    println("Counted up to " + count);  
    count++;  
}
```



There are three parts in this loop:

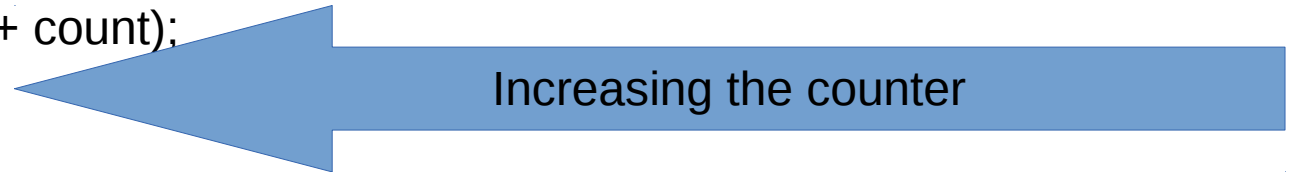
```
int count = 0;  
while (count < 5) {  
    println("Counted up to " + count);  
    count++;  
}
```



Checking the counter has not passed a threshold

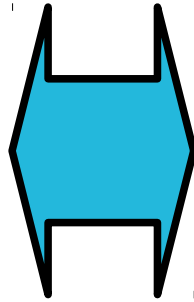
There are three parts in this loop:

```
int count = 0;  
while (count < 5) {  
    println("Counted up to " + count);  
    count++;  
}
```



This kind of loops can be written as *for* loops:

```
int count = 0;
while (count < 5) {
    println("Counted up to " + count);
    count++;
}
```



```
for (count = 0; count < 5; count++) {
    println("Counted up to " + count);
}
```

Initialisation

```
int count = 0;  
while (count < 5) {  
    println("Counted up to " + count);  
    count++;  
}
```

```
for (count = 0; count < 5; count++) {  
    println("Counted up to " + count);  
}
```

Check

```
int count = 0;  
while (count < 5) {  
    println("Counted up to " + count);  
    count++;  
}
```

```
for (count = 0; count < 5; count++) {  
    println("Counted up to " + count);  
}
```

Increase

```
int count = 0;  
while (count < 5) {  
    println("Counted up to " + count);  
    count++;  
}
```

```
for (count = 0; count < 5; count++) {  
    println("Counted up to " + count);  
}
```

while loops and *for* loops are equivalent

- Everything you can do with one, you can do with the other

However, it is good practice to use *for* loops when you are repeating something a number of times, and to use *while* loops for everything else

- A *for* loop is a shorter and clearer way of doing it

One last comment about variable names

for loops are usually written using very short variable names like *i*, *j*, *k*...

```
// Count up to 10
for (i = 0; i < 10; i++) {
    println("Counted up to " + i);
}
```

```
// print a position-matrix 5x5
for (i = 0; i < 5; i++) {
    for (j = 0; j < 5; j++) {
        print("(" + i + "," + j + ")");
    }
    println();
}
```