

# Loops

## Java Reference

### while loops

A while loop repeats while a condition is true. Change something inside, or it loops forever.

```
public class Main {
    public static void main(String[] args) {
        int n = 1;
        while (n <= 3) {
            System.out.println(n);
            n++;
        }
    }
}
```

### for loops

A for loop packs the start, the condition, and the step into one line. Best when you know the count.

```
public class Main {
    public static void main(String[] args) {
        for (int i = 0; i < 5; i++) {
            System.out.print(i + " ");
        }
        System.out.println(); // 0 1 2 3 4
    }
}
```

### Accumulation

The accumulator 累加器 pattern: start a variable before the loop, then update it each turn.

```
public class Main {
    public static void main(String[] args) {
        int total = 0;
        for (int i = 1; i <= 5; i++) {
            total += i;
        }
        System.out.println(total); // 15
    }
}
```

## Nested loops

A loop inside a loop is a nested loop 嵌套循环. The inner loop runs fully on each turn of the outer one.

```
public class Main {
    public static void main(String[] args) {
        for (int r = 0; r < 3; r++) {
            for (int c = 0; c < 3; c++) {
                System.out.print("*");
            }
            System.out.println();
        }
    }
}
```