

Lesson 3: While Loops

While loops

while loops are similar to if statements. They are bits of programming logic with a **{codeBlock}** following them, and they allow you to do complicated things more easily.

while loops allow you to do **many repetitive things without writing lots of code**. As you might imagine, it executes the contents of its code block **while a certain condition is true**.

understanding a while loop example:

Lets look at an example, and see how it works.

```
int ellipseNumber = 0;
size(550,200);
while(ellipseNumber <6 ){
  ellipse(ellipseNumber * 100, 100, 100,100);
  ellipseNumber = ellipseNumber + 1; //key line
}
```

- What happens?
- Change the value of `ellipseNumber`. What happens?
- Change the 6 in the condition: `(ellipseNumber <6)` what happens?
- Change `ellipseNumber = ellipseNumber + 1;` to:
`ellipseNumber = ellipseNumber + 2;` What happens?

So we can summarize the while loop below:

```
while(//condition in here is true) {
  //execute the following {codeBlock}
}
```

Tasks:

- Change the above example so that **10** circles are shown, instead of 6.
- Make a new program that makes **8 squares**, going down the screen - rather than across.
 - Make the colour of each square **random** (different colours for each square).
 - Hint need a `fill` in the **{codeBlock}**
 - Make the squares go diagonally across the screen rather than just down.
- Make 20 lines that go across the screen.
 - Make the width of the lines random, like a barcode.



While loops in while loops?

Use multiple while loops to make a grid of items.

```
int hozEllipseNumber = 0;
int vertEllipseNumber = 0;
size(550, 550);
while(hozEllipseNumber <6 ) {
    while(vertEllipseNumber <6 ) {
        ellipse(hozEllipseNumber*100, vertEllipseNumber*100, 100, 100);
        vertEllipseNumber = vertEllipseNumber + 1;
    }
    vertEllipseNumber = 0;    //key line
    hozEllipseNumber = hozEllipseNumber + 1;
}
```

Task:

- Moving ellipses - remember our lesson earlier in the course, where we moved an ellipse across the screen? Use a while loop to make **5 balls all move across the screen together**.