CONTROL FLOW: FOR STATEMENTS

If you have done the exercise with the traffic lights, you will have found that you need to write a lot of code to set half the LEDs to one colour and the other half to another – we have to set them individually, one at a time. Fortunately, there’s a shortcut called the for statement which is used to execute some code a fixed number of times.

If we want to make the first 8 LEDs flash RED the code would be:

```c
void loop() {
    int i;

    for (i = 0; i < 8; i++)
        EngduinoLEDs.setLED(i, RED);

    delay(1000);
    EngduinoLEDs.setAll(OFF);
    delay(1000);
}
```

There are several parts to this. The first is the statement:

```c
    int i;
```

This declares a variable i. You can think of a variable as a box to put things into with a special name. Our box is called i, but you can call it what you like so long as it’s unique and you’re consistent.

The loop is then:

```c
    for (i = 0; i < 8; i++)
        EngduinoLEDs.setLED(i, RED);
```

What this means is:

a) Set the value of i (the number in the box called i) to be 0
b) check to see if the value of i is less than 8. If it is not, then go to step f). If i is less than 8, then
c) set LED with the number we have in the box labelled i to be RED
d) add one to i
e) go back to step b) and carry on.
f) Carry on with the rest of the program - execute whatever is next in the code after this for statement. In this case that’s delay(1000)

Just as for if statements, it is possible to group more than one statement together:

```c
for (i = 0; i < 8; i++) {
    EngduinoLEDs.setLED(i, RED);
    Serial.print(i);
    Serial.println(" switched on");
}
```