**Loops**

How do we draw something over and over, write something over and over, etc. without writing a lot of very repetitive code?

* **Purpose**: to execute code many times, without the need of copying and pasting
* Can accomplish this using:
  + While loops
  + For loops
  + Do while loops
  + Nested for loops

**While Loops**

var count = 0; // initializes counter

while (count < 10) { // conditional expression

// loop body

count += 1; // updates counter every time loop goes through

}

**For Loops**

for (var i = 0; i < 10; i++) { // initializes counter, conditional expression, increment/decrement

// loop body

}

**Do While Loops \***

var count = 0; // initializes counter

do {

// loop body

count += 1; // updates counter every time loop goes through

} while (count < 10); // conditional expression

\* Do While loop will execute the loop body code AT LEAST once always!!! Even if it doesn’t meet the conditional expression.

**Nested For Loops**

for (var i = 0; i < 10; i++) { // initializes counter, conditional expression, increment/decrement

// loop body

for (var i = 0; i < 10; i++) {

// loop body

}

}

**Example:**

var x = 80;

for (var i = 0; i < 3; i++) {

var y = 55;

for (var j = 0; j < 8; j++) {

text(j, x, y);

y+= 30;

}

x += 20;

}

As you can see, both loops include a counter, a conditional expression, and something that increments/decrements the counter. The while loop does all of this separately and the for loop does it all in one line.

**Counter**

This keeps track of how many times the loop has gone through. To avoid an infinite loop (loop that goes on forever), the counter must change value (either by adding on to it, or subtracting from it). This allows the counter to reach the end of the loop at some point.

**Conditional Expression**

This is the limit of how many times the loop can execute. In the examples above, the limit is 10. So while the counter’s value is less than 10, the loop can execute the code in the loop body.

**Loop Body**

This is the code that you want to repeat many times over.

**Practice**

1. Write “My name is \_\_\_\_\_\_\_” 10 times, each time a bit below the previous one.
2. Draw a circle moving across the screen.
3. Use a mouseClicked function along with if statements. Have 2 circles drawn on both the bottom half of the screen, and the top (at the right edge of the screen). If the top half of the screen is clicked, draw the top circle moving across the screen. If the bottom half of the screen is clicked, draw the bottom circle moving across the screen.
4. Build off of the last program. If you have already moved the circle to the left side of the screen, make it move back with a second click.
5. Draw a small rectangle in the top left corner of the screen, and use a mouseClicked function to make the rectangle expand across the whole screen when it’s clicked, completely covering the screen.

[**https://codebeautify.org/htmlviewer/#**](https://codebeautify.org/htmlviewer/#)