

# Loops, Variables, and Counting:

## Types of Loops:

### JavaScript Loops:

[https://www.w3schools.com/js/js\\_loop\\_while.asp](https://www.w3schools.com/js/js_loop_while.asp)

- While loops
- For loops
- Do while

[https://www.kirupa.com/html5/loops\\_in\\_javascript.htm](https://www.kirupa.com/html5/loops_in_javascript.htm)

### Scratch Loops:

<https://www.youtube.com/watch?v=m57Gmc7wFIM>

## Loop Project: JavaScript AND Scratch

Make a Do While loop that counts to 10 & exits.

Make a For Loop that counts to zero and quits.

## Loops

In programming, a **loop** can induce multiple executions of statements. In Scratch, any block whose label begins with "forever" or "repeat" is a looping construct.

One such block is:



This construct allows us, for instance, to instruct a sprite to meow every other second:



Another block allows you to loop a specific number of times:



And another block allows you to loop until some condition is true:



Sometimes, you want execute some statement multiple times, each time varying your behavior ever so slightly. We thus turn our attention to [variables](#).

## Variables

In programming, a **variable** is a placeholder for some value, much like  $x$  and  $y$  are popular variables in algebra. In Scratch, variables are represented with blocks shaped like elongated circles, uniquely labeled by you. Variables, generally speaking, can be **local** or **global**. In Scratch, a local variable can be used by just one sprite; a global variable can be used by all of your sprites.

Variables allow us, for instance, to instruct a sprite to count up from 1:



A variable that only takes on a value of true (*i.e.*, 1) or false (*i.e.*, 0), incidentally, is called a **Boolean variable**.

With statements, Boolean expressions, conditions, loops, and variables now under your belt as building blocks, we can now explore two higher-level programming constructs, starting with [threads](#).