



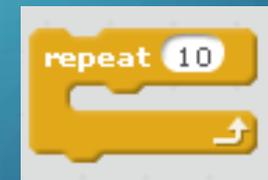
SCRATCH: ITERATION / REPETITION / LOOPS

BY

MR. DAVE CLAUSEN

ITERATION (REPETITION) - REPEAT COMMAND

- Iteration is computer programming jargon for repeating a section or group of lines of code. It is also called referred to as repetition.
- Each time the code is executed (repeated) once is called one iteration.
- The first type of repeat command in scratch is the same as we learned in LOGO. Repeat the section of code a specified number of times.
- In this example, whatever code is contained inside this repeat command is repeated 10 times.
- This example will draw a decagon.



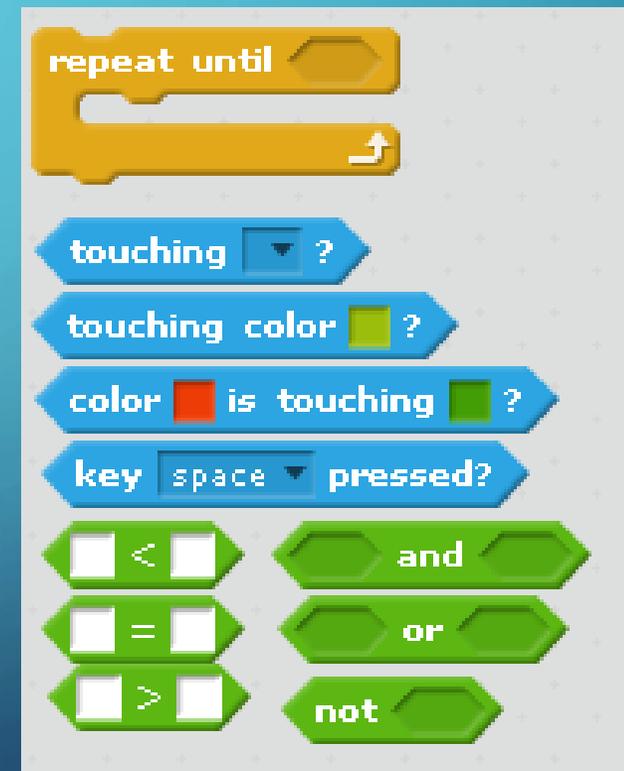
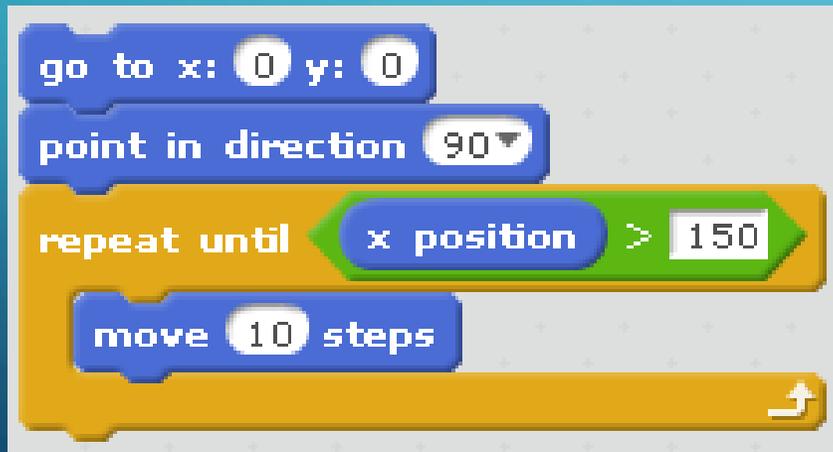
ITERATION (REPETITION) - REPEAT UNTIL COMMAND

- Sometimes you don't want to repeat code a predetermined number of times.
- Instead you want to repeat **until** or **while** some condition is TRUE.
- This can be accomplished using a "Repeat Until" block.
- The "hexagon" shape after the word "until" means we need some type of condition to determine when the "loop" will stop.
- What type of blocks can be used as conditions in the **Repeat Until** loop?



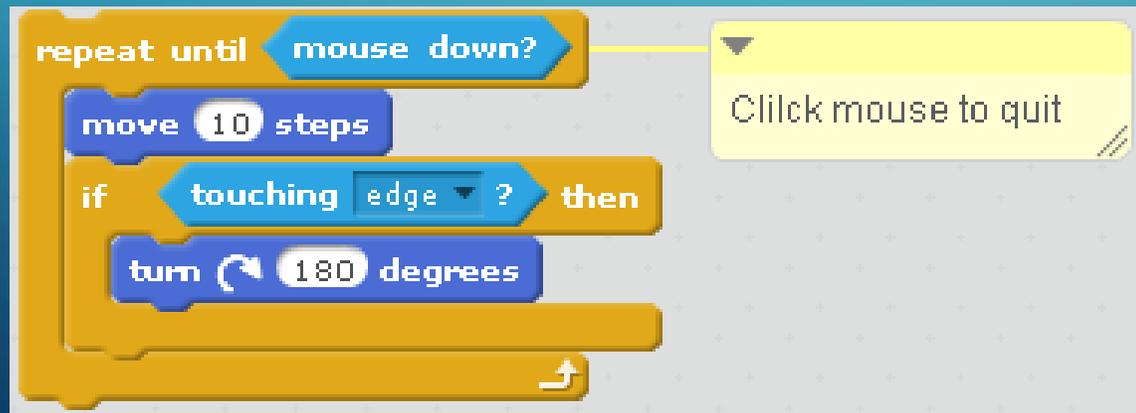
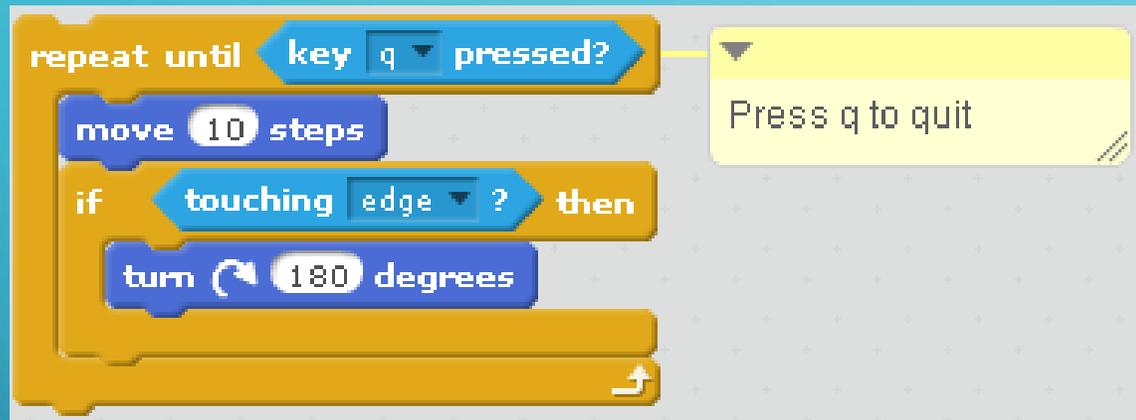
CONDITIONALS FOR REPEAT UNTIL

- We can find hexagonal shaped **conditions** under the **Sensing (light blue)** group and the **Operators (green)** group.
- One of the easiest tasks we can do is to move the sprite **until** it reaches a certain position (see below).



CONDITIONALS FOR REPEAT UNTIL CONTINUED

- We can make something repeat until a key is pressed. In this example, “q” to quit. The second example will stop when the mouse is clicked.



REPEAT FOREVER

- Avoid Repeat Forever whenever possible. Infinite loops are not a good idea.
- Typically this type of loop requires an “if” statement to “break” out of the loop.
- In the example below, it requires more lines of code to use a Repeat Forever loop than its equivalent Repeat Until loop.

The image shows two Scratch code snippets side-by-side. The left snippet uses a 'forever' loop block. Inside the loop, there are three blocks: 'move 10 steps', an 'if touching edge?' block with a 'then' block containing 'turn 180 degrees', and another 'if key q pressed?' block with a 'then' block containing 'stop all'. The right snippet uses a 'repeat until' loop block. The condition for the loop is 'key q pressed?'. Inside the loop, there are three blocks: 'move 10 steps', an 'if touching edge?' block with a 'then' block containing 'turn 180 degrees', and an empty 'then' block. The 'repeat until' loop is shorter than the 'forever' loop because it does not require a 'stop all' block to break out of the loop.