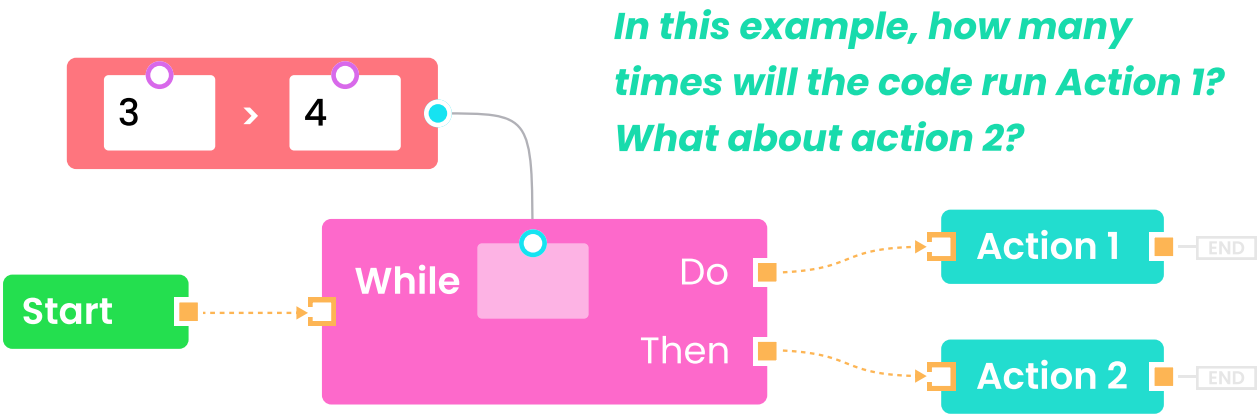
FLOW BLOCKS: WHILE LOOPS

WHILE BLOCK

A while loop is a piece of code that will continue to re-run itself while a specific condition is TRUE.

We can create while loops using the WHILE flow block. This block continually re-runs the code connected to DO (Action 1) while the input condition is TRUE. It will continue repeating this code forever until the input condition becomes FALSE. When the condition does become FALSE, it will then run the code connected to THEN (Action 2).



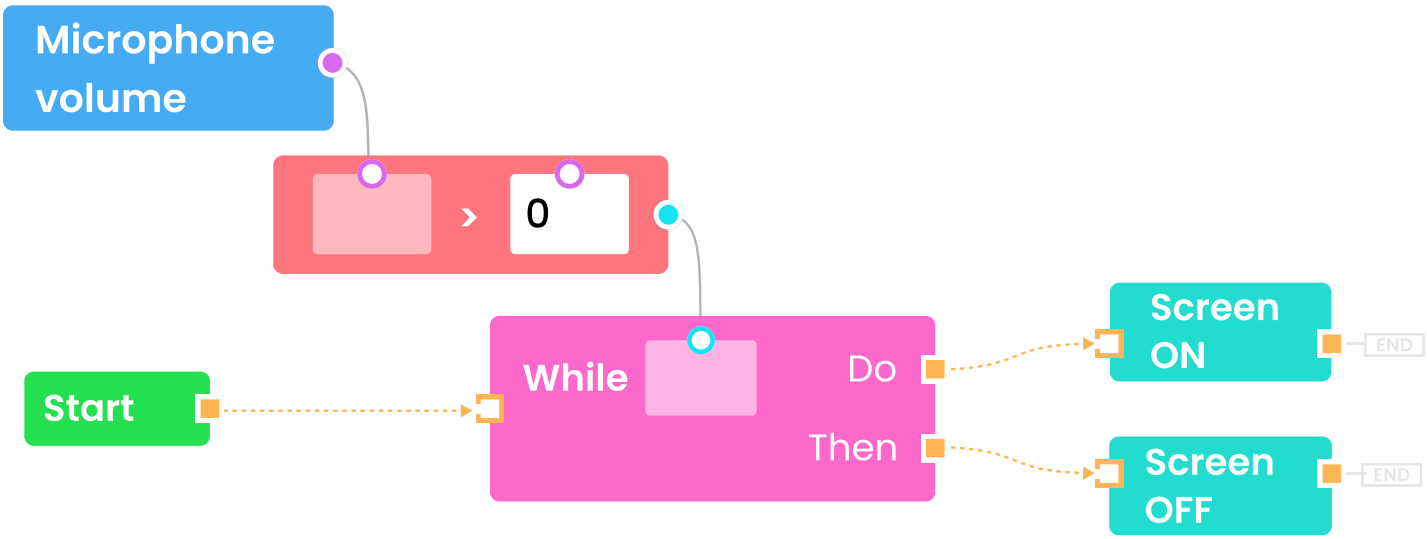
If the condition is FALSE to begin with, then Action 1 is never run. If the condition is TRUE to begin with, but never changes, then Action 1 will be repeated infinitely. This means that the condition must switch to FALSE at some point or the code will never stop running!

While loops are useful because they allow us to repeat a piece of code an undefined number of times.

Let's say that you wanted to write a piece of code that would keep the screen of your mobile phone on while you were talking.

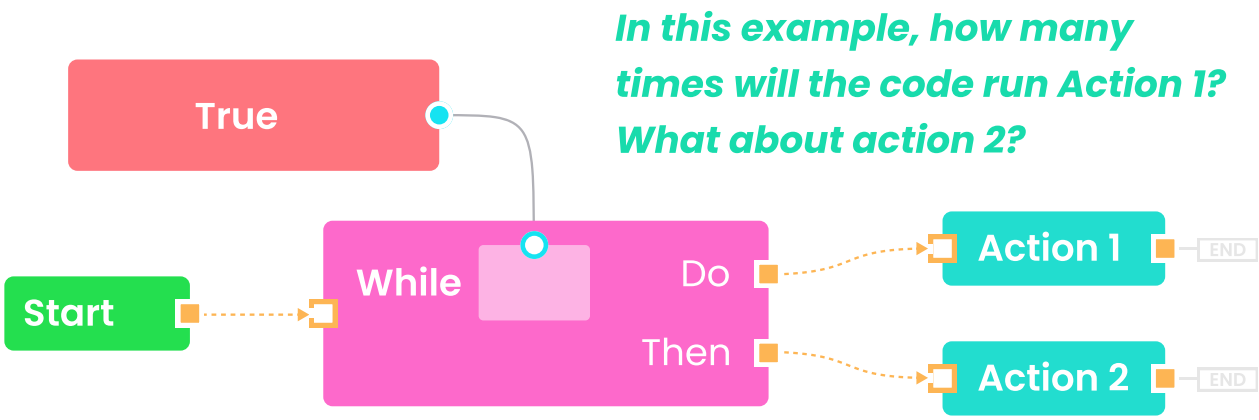
Because you don't know beforehand how long you will be talking (it will likely change every time), we can't just set the screen to stay on for X seconds.

Instead, we could continually check the output of the mobile phone's microphone.



While the volume of the sound detected by the microphone is greater than 0, keep the screen on. Then, when the output becomes 0, turn it off.

If we want to repeat a piece of code forever, we could connect a TRUE value directly to the WHILE block condition, like so.



This might be useful in our simulations, because once the task has successfully been completed, the robot will stop running all of its current code.

For example, let's suppose that we wanted our robot to keep performing a single action fifty times to complete a task. We could either connect fifty action blocks together (boooring), or we could add a single action block to an infinite while loop. Once the task has been successfully completed, the code will stop running anyway.

Although, if we have to stop performing actions to complete the task, we might instead need to add a condition to the while block that is always true until we somehow detect that the task is complete.