

Introduction to Coding

Variables and Operators

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Topics list

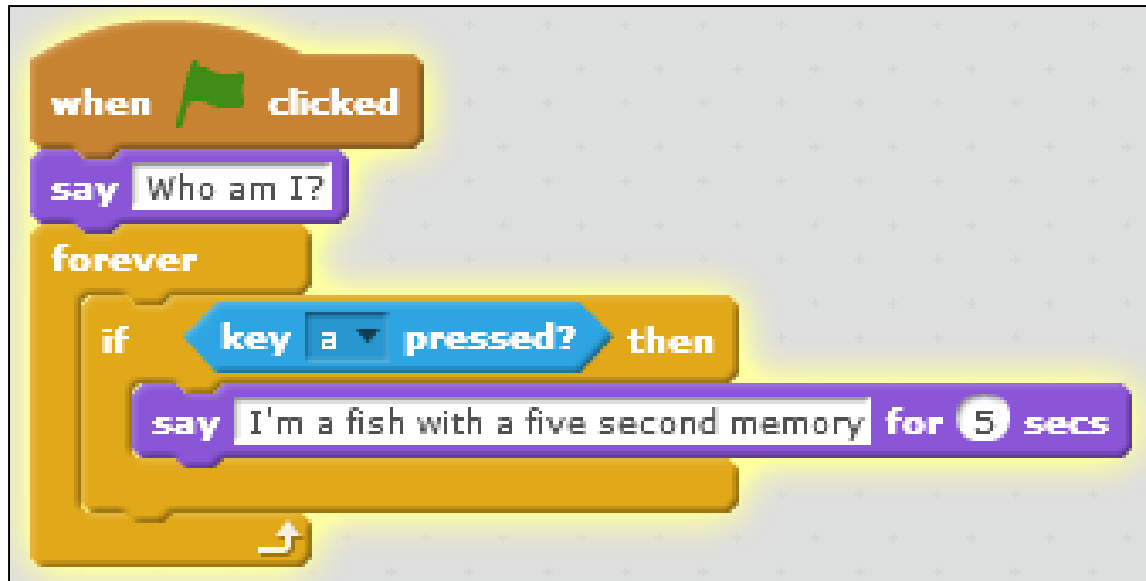
- Variables
- Operators

Topics list

- Variables
- Operators

Variables

- What if we wanted to keep a count of how many times they key 'a' was pressed?



- We need to store this information somewhere.
- This is where VARIABLES come in.

Variables

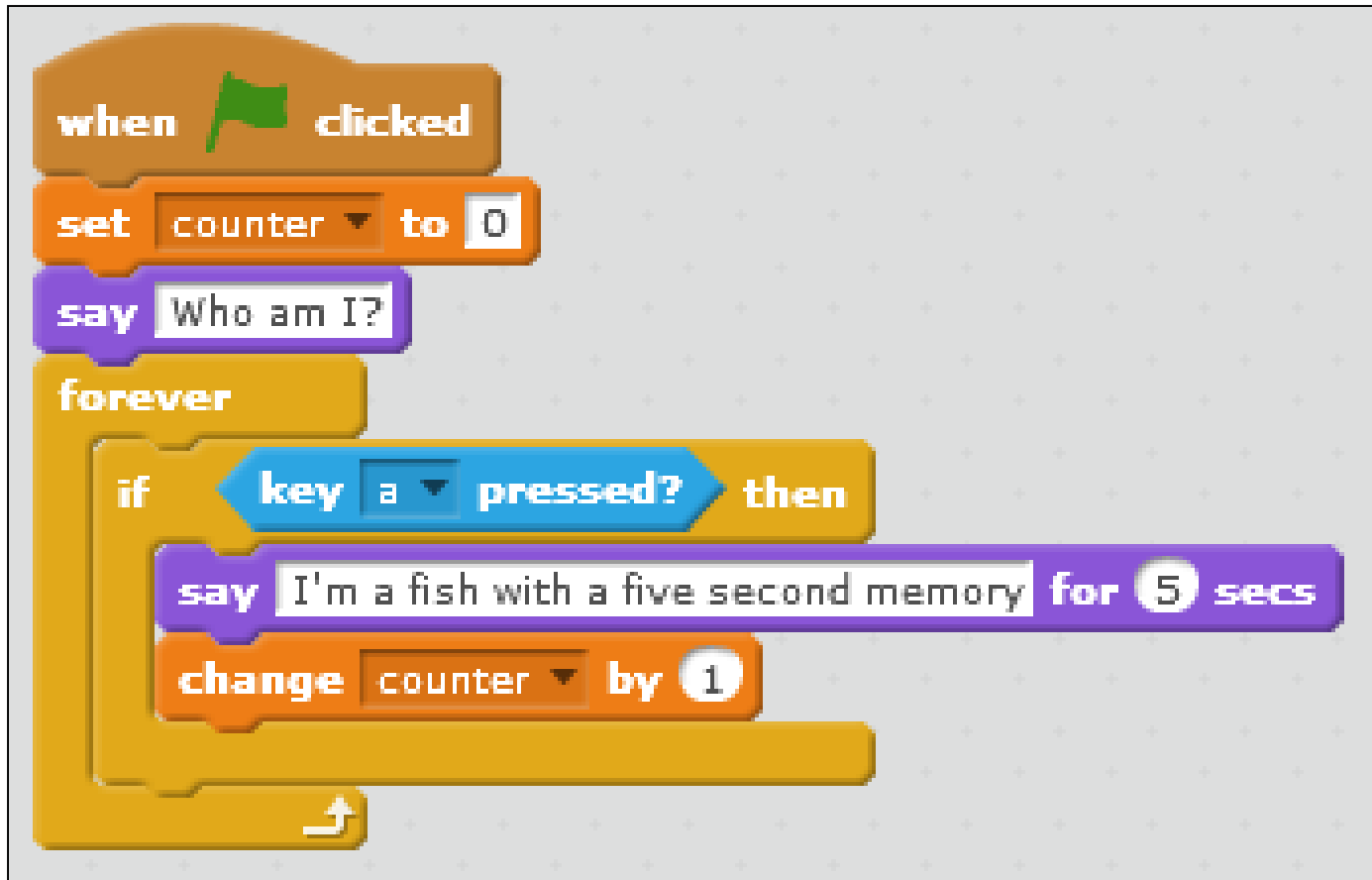
- In a program we use variables to keep track of values:
 - e.g., the number of times the key ‘a’ was pressed.
- A variable is an item of information whose value can change over time:
 - the value can vary, hence variable.
- A variable has a:
 - name
 - type
 - value

Variables - example



Variable	Details
name	Counter
type	stores whole numbers e.g. 1, 2, 3, etc.
value	<p>When our program starts, the number of times the key 'a' is pressed is zero i.e. the counter variable is set to zero.</p> <p>Each time the key 'a' is pressed, the counter variable is increased by 1 (note the iteration/repetition here).</p>

*By using the **counter** variable, we can keep track of how many times the key 'a' was pressed.*

Using Variables: SomethingFishy4



Using Variables

Sets the variable to specified value	 An orange Scratch block with a notch on the left. It contains the text 'set', a pull-down menu showing 'counter', the text 'to', and a text input field containing the number '0'.
Changes the variable by specified amount	 An orange Scratch block with a notch on the left. It contains the text 'change', a pull-down menu showing 'counter', the text 'by', and a text input field containing the number '1'.

If you have more than one variable, use the pull-down menu to select the variable name.

Topics list

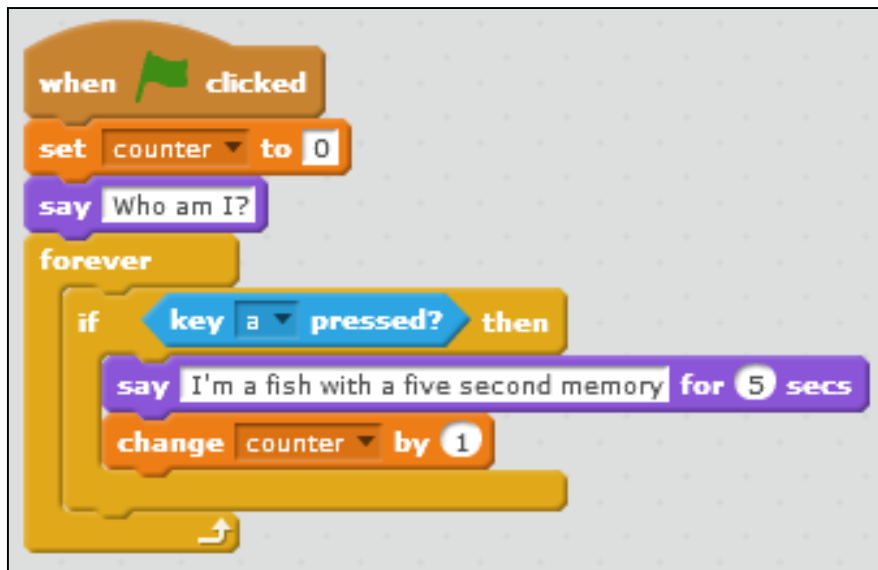
- Variables

- Operators

Operators

Consider the following processing:

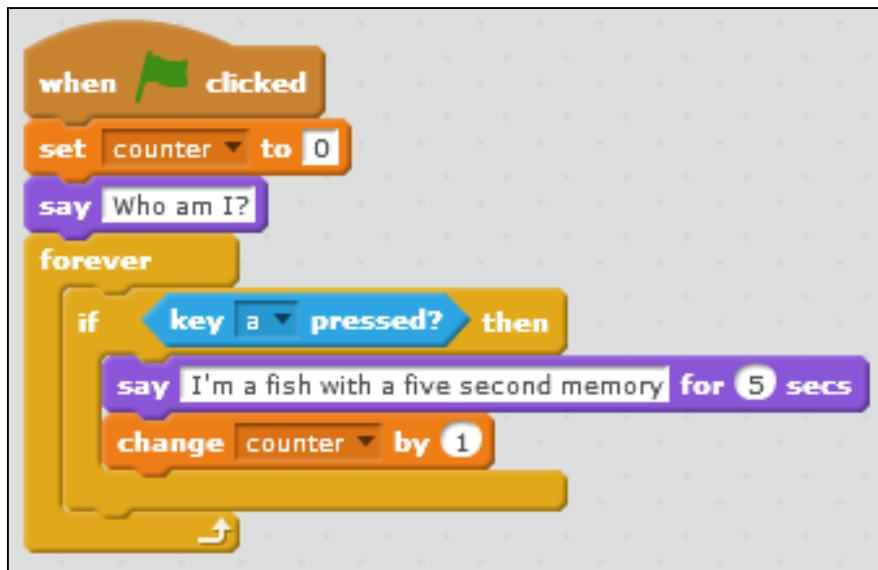
- Only tell the user 3 times that “I’m a fish with a five second memory”.
- If they ask a 4th time (i.e. they press the ‘a’ key a 4th time), they should be informed that they have already been told 3 times. The program should stop running.



Operators

Consider the following processing:

- Only tell the user 3 times that “I’m a fish with a five second memory”.
- If they ask a 4th time (press the ‘a’ key a 4th time), they should be informed that they have already been told 3 times. The program should stop running.

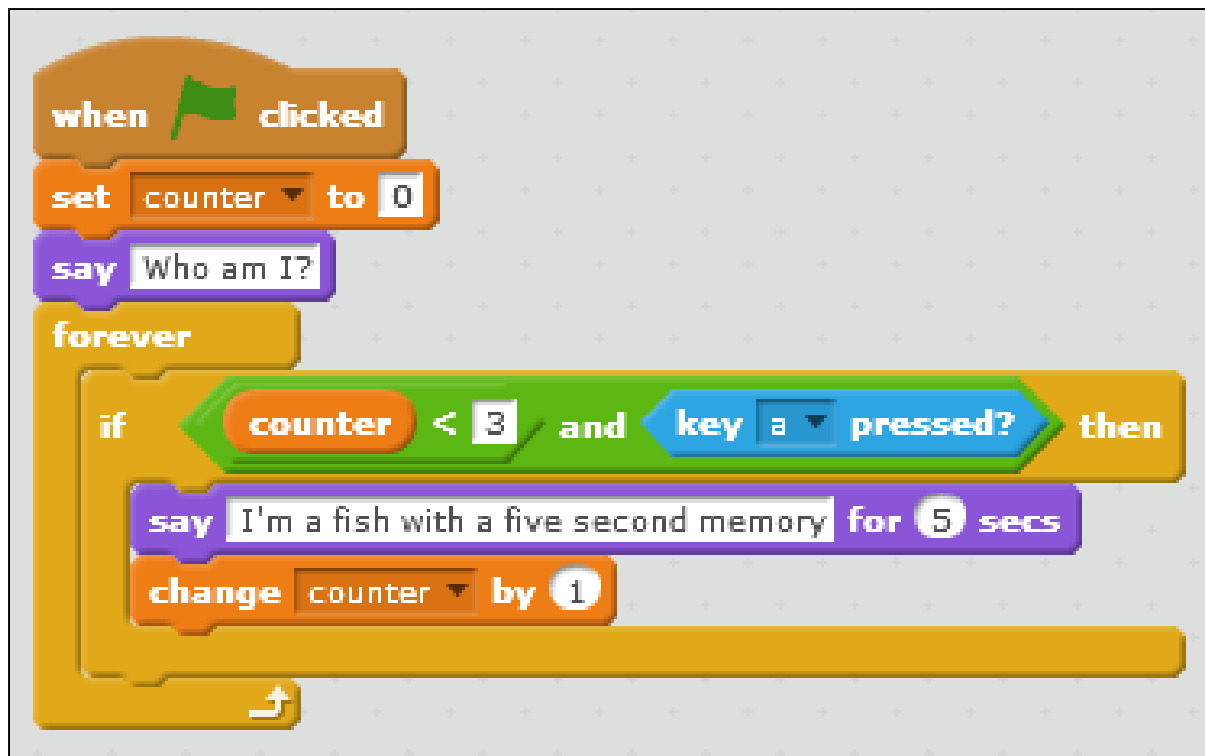


To do this, we need to check what values are stored the **counter** variable. This is where **OPERATORS** come in.

Using Operators: SomethingFishy5

Implementing the first rule...

- Only tell the user 3 times that “I’m a fish with a five second memory”.



```
when green flag clicked
  set counter to 0
  say Who am I?
  forever loop
    if counter < 3 and key a pressed? then
      say I'm a fish with a five second memory for 5 secs
      change counter by 1
```

The image shows a Scratch script on a grey grid background. It starts with a 'when green flag clicked' block. Below it is a 'set counter to 0' block. Then a 'say Who am I?' block. A 'forever' loop block contains an 'if counter < 3 and key a pressed?' block. Inside the 'if' block, there is a 'say I'm a fish with a five second memory for 5 secs' block and a 'change counter by 1' block. The 'forever' loop block has a small arrow icon at the bottom left, indicating it repeats.

Recap: Conditions




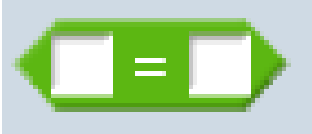

- A condition in programming is something that is either **true** or **false**.

Example:

- Reports true if key 'a' is pressed.
- Reports false if any other key is pressed.



Using Operators


Logical Operators	Reports true if both conditions are true	
	Reports true if either condition is true	
Equality / Relational Operators	Reports true if first value is less than second	
	Reports true if two values are equal	
	Reports true if first value is greater than second	

Using Operators: SomethingFishy5

Implementing the second rule:

If the user asks a 4th time (i.e. presses the 'a' key a 4th time), they should be informed that they have already been told 3 times.

The program should stop running.



The image shows a Scratch script for a character named 'SomethingFishy5'. The script is triggered when the green flag is clicked. It starts by setting a 'counter' variable to 0 and saying 'Who am I?'. A 'forever' loop contains two conditional blocks. The first block checks if the counter is less than 3 and if the 'a' key is pressed; if true, it says 'I'm a fish with a five second memory for 2 secs' and increments the counter by 1. The second block checks if the counter is equal to 3 and if the 'a' key is pressed; if true, it says 'You have been told 3 times who you are!' and then stops the script.

```
when green flag clicked
  set counter to 0
  say Who am I?
  forever loop
    if counter < 3 and key a pressed? then
      say I'm a fish with a five second memory for 2 secs
      change counter by 1
    if counter = 3 and key a pressed? then
      say You have been told 3 times who you are!
      stop this script
```

Character: SomethingFishy5
x: -35
y: -5

Questions?

