Introduction to Scratch

Variables and Operators

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Topics list

- Variables
- Operators

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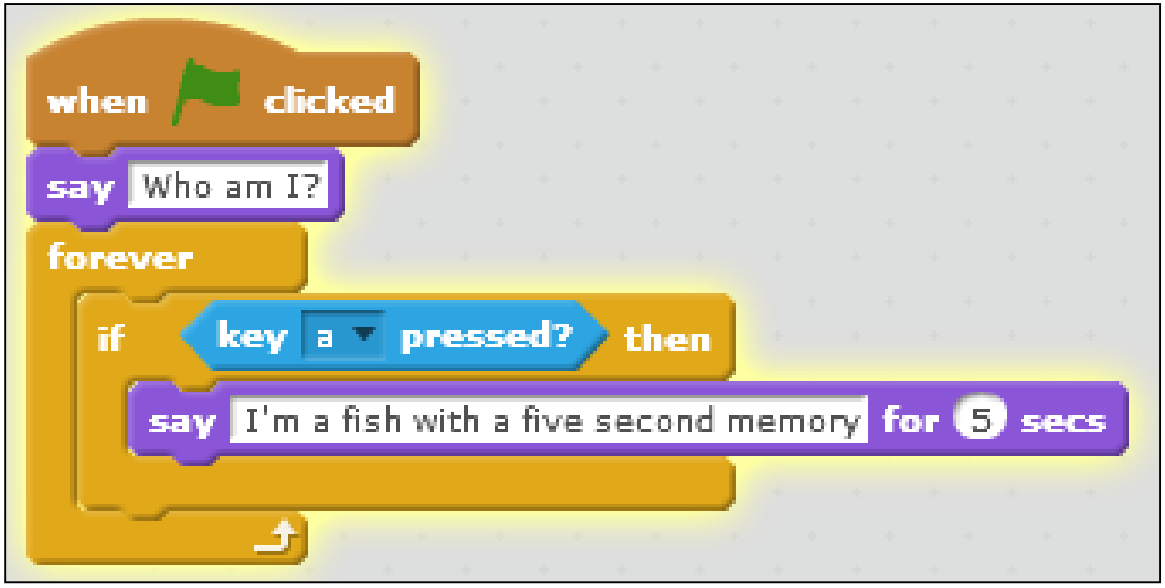
Variables

- 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

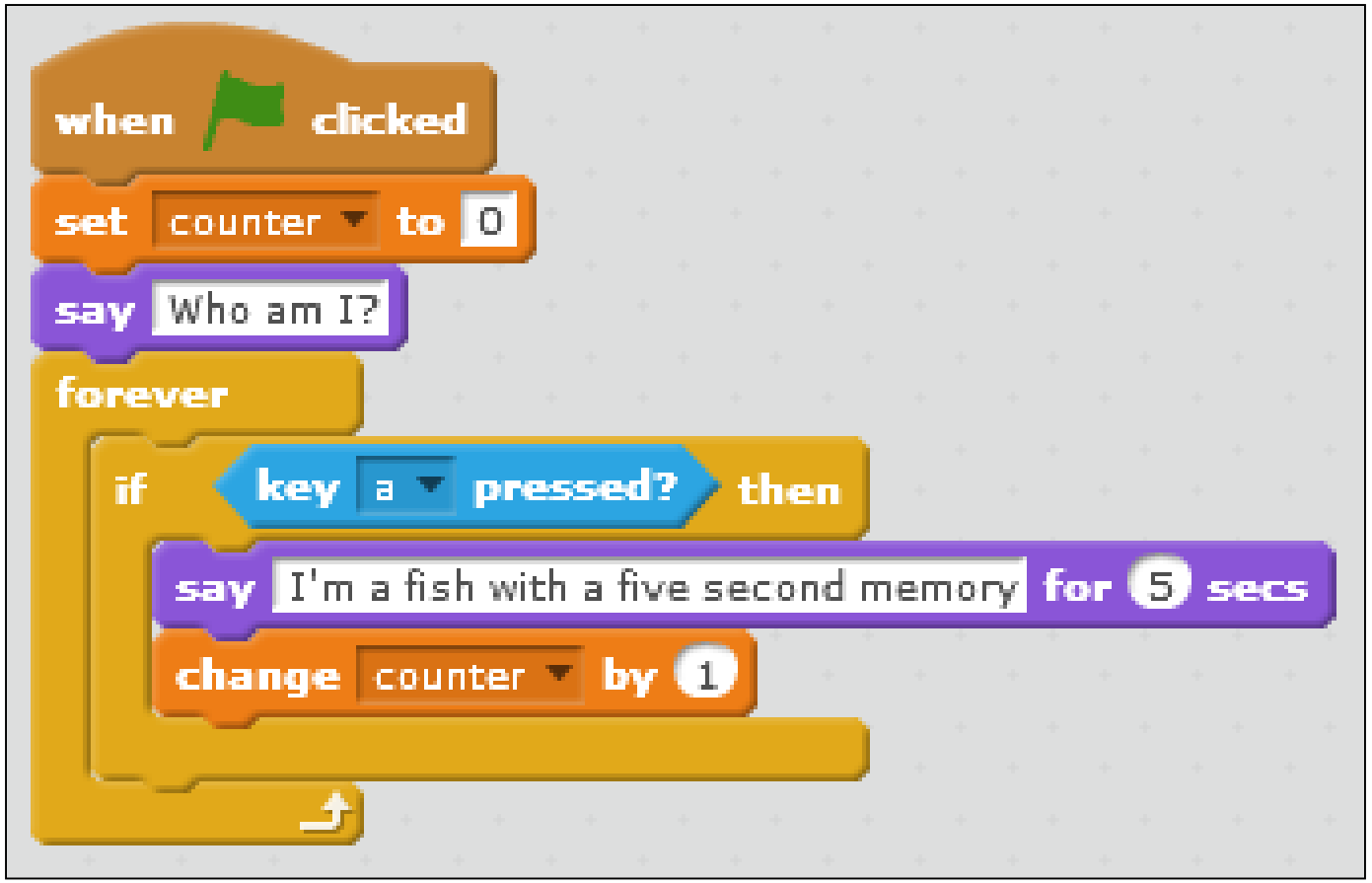
- In a program we use variables to keep track of values:
  - e.g., the number of times the key ‘a’ was pressed.
- A variable is an item of information whose value can change over time:
  - the value can vary, hence variable.
- A variable has a:
  - name (also called an identifier)
  - type
  - value

Variables - example

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

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	
Changes the variable by specified amount	

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

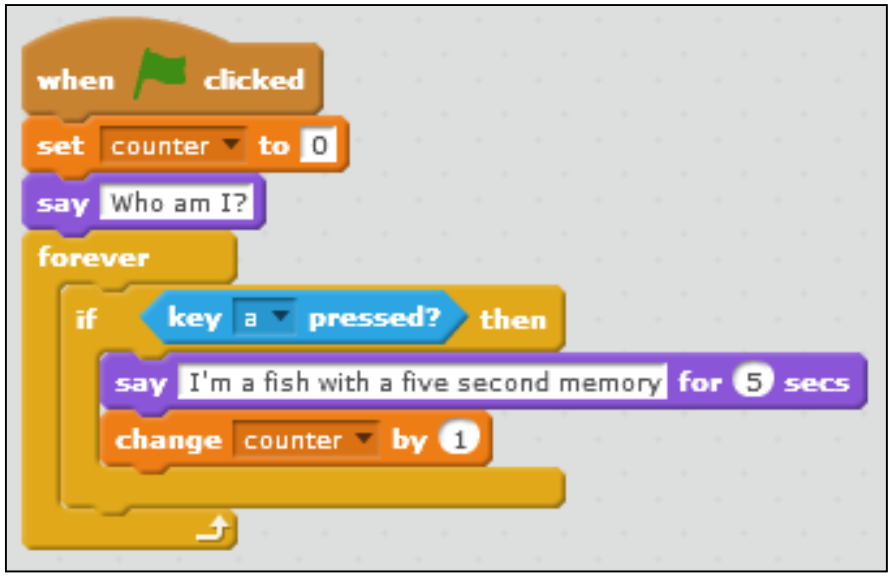
Topics list

- 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 (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

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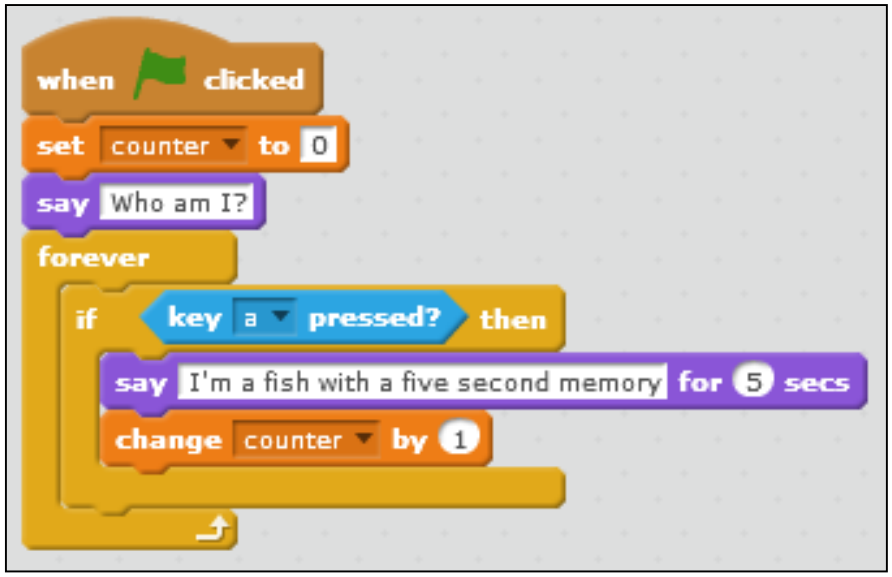
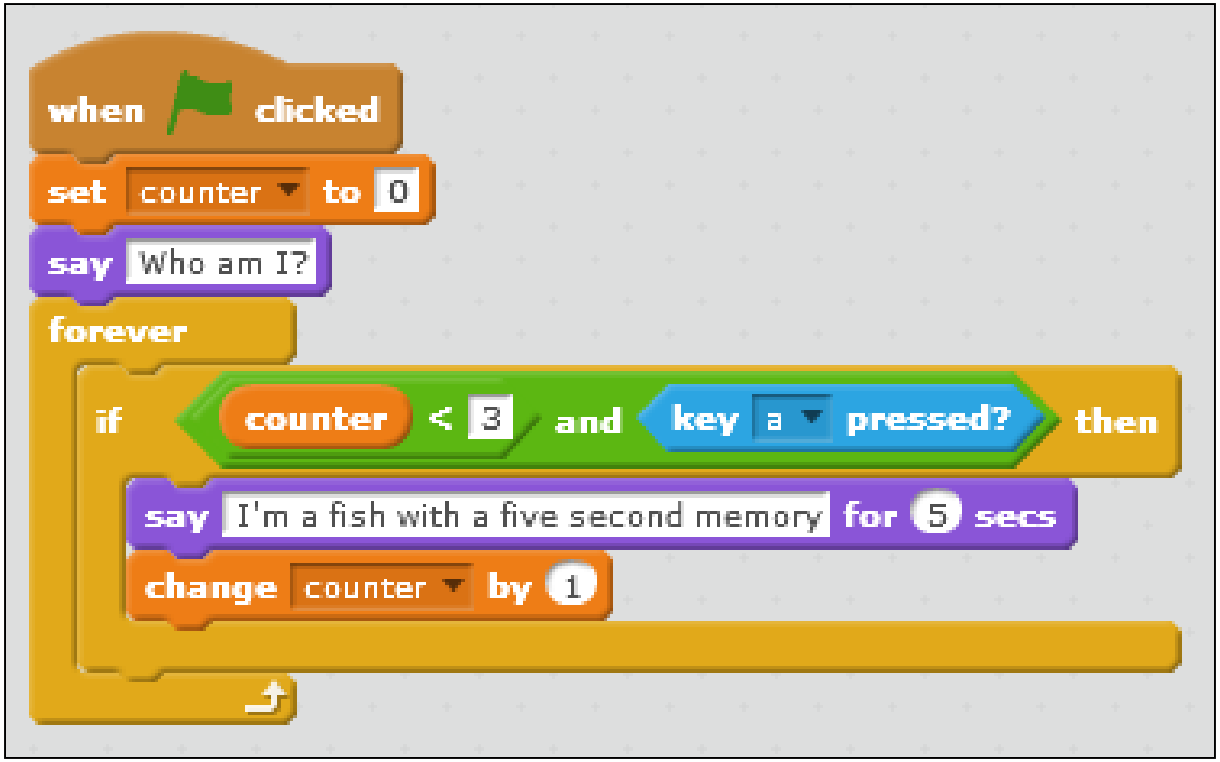


To do this, we need to check what values are stored the **counter** variable. This is where **OPERATORS** come in.

Using Operators: SomethingFishy5

Implementing the first rule…

- **Only tell the user 3 times that "I'm a fish with a five second memory".**

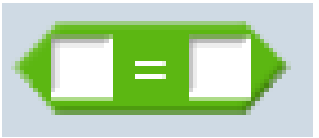


Recap: Conditions

- 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

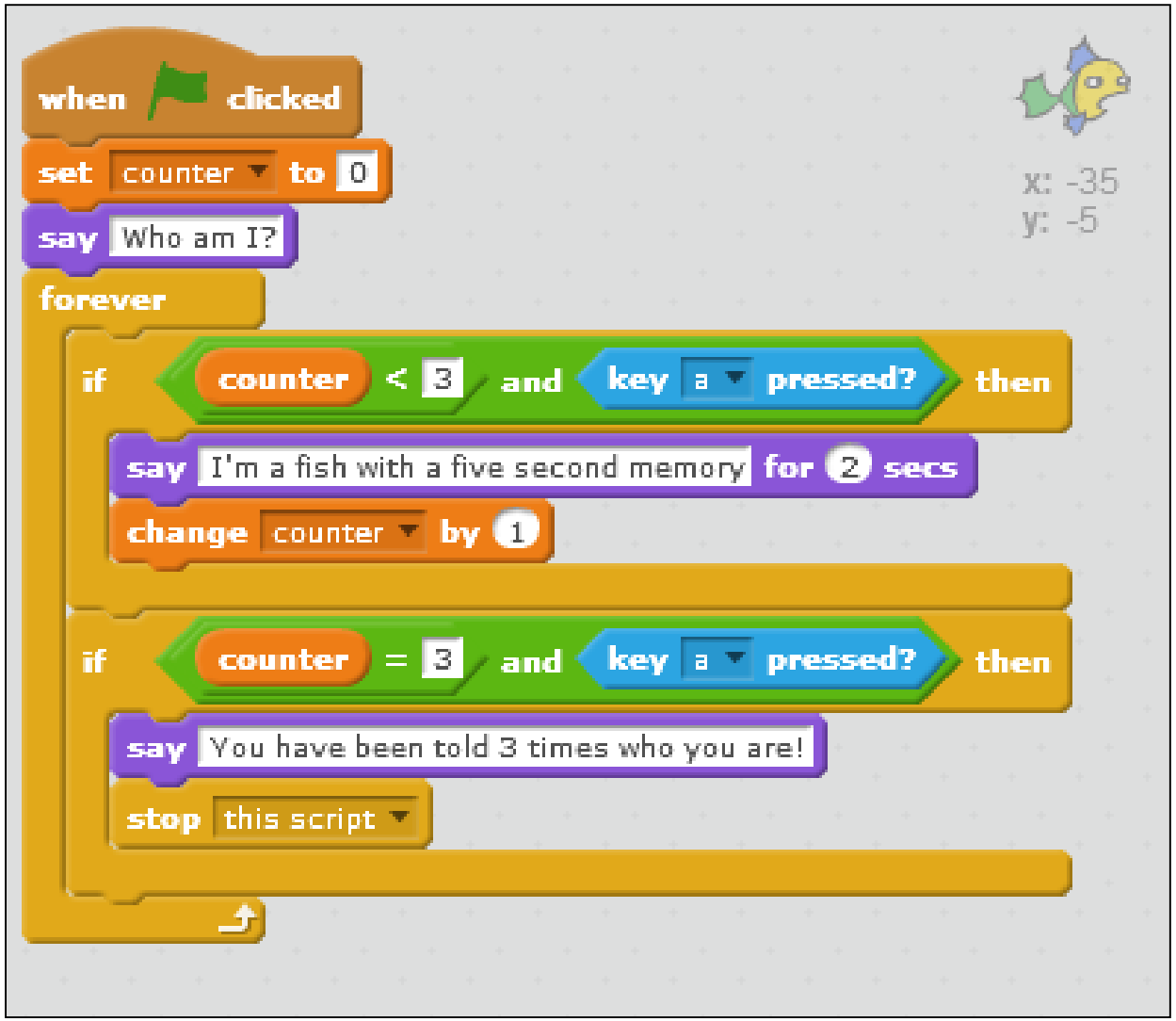
Logical Operators	Reports true if both conditions are true	
	Reports true if either condition is true	
Equality / Relational Operators	Reports true if first value is less than second	
	Reports true if two values are equal	
	Reports true if first value is greater than second	

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.



Questions?