

Scratching Deeper

Nested if statements and methods

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Topics list

- Recap: Flow of Control
- Recap: Variables and Operators
- Nested if statements
- Methods

Topics list

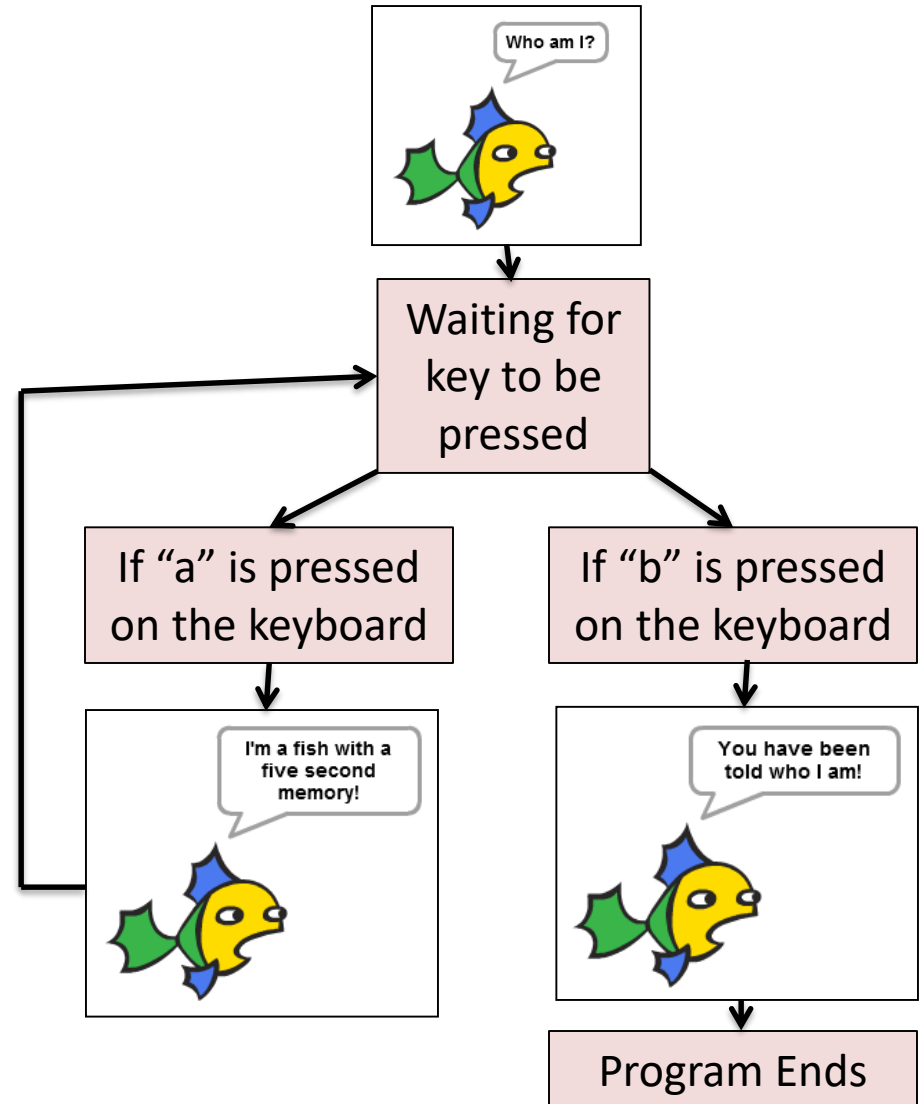
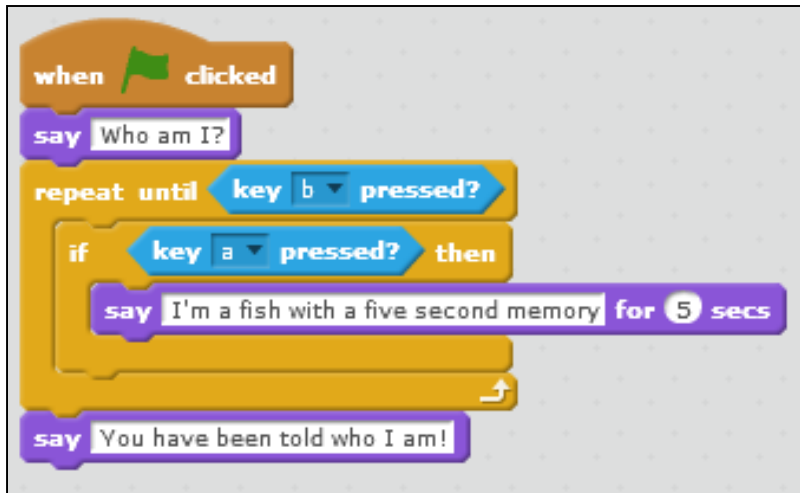
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Recap: Flow of Control in a Program

- Each program you write will typically have:

Sequence	Things that will be done in a particular order
Selection	Things that will be done conditionally
Iteration	Things that will be done repetitively

Recap: SomethingFishy3



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Recap: Variables

- Programs use variables to keep track of values that can change over time.

Variable	Example
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>

Recap: Conditions




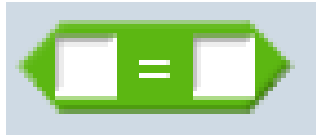

- A condition in programming is something that is either **true** or **false**.

Example:

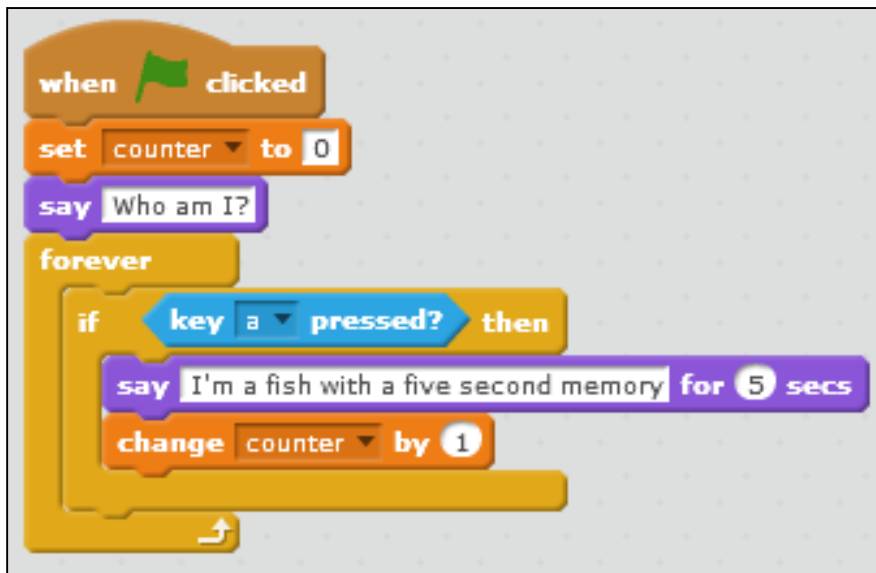
- Reports true if key 'a' is pressed.
- Reports false if any other key is pressed.



Recap: 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	

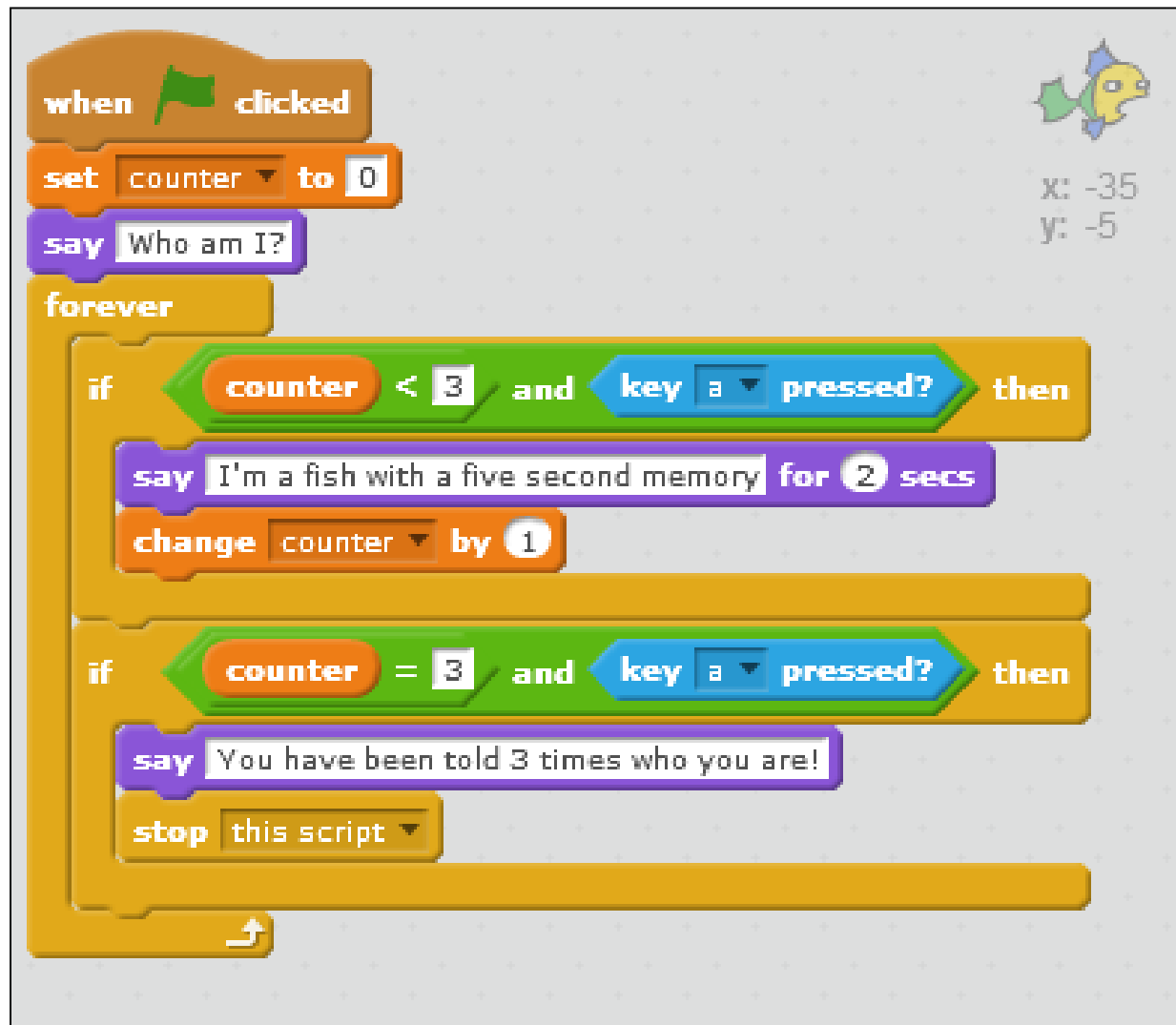
Recap: SomethingFishy4



We want to add 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.

Recap: SomethingFishy5

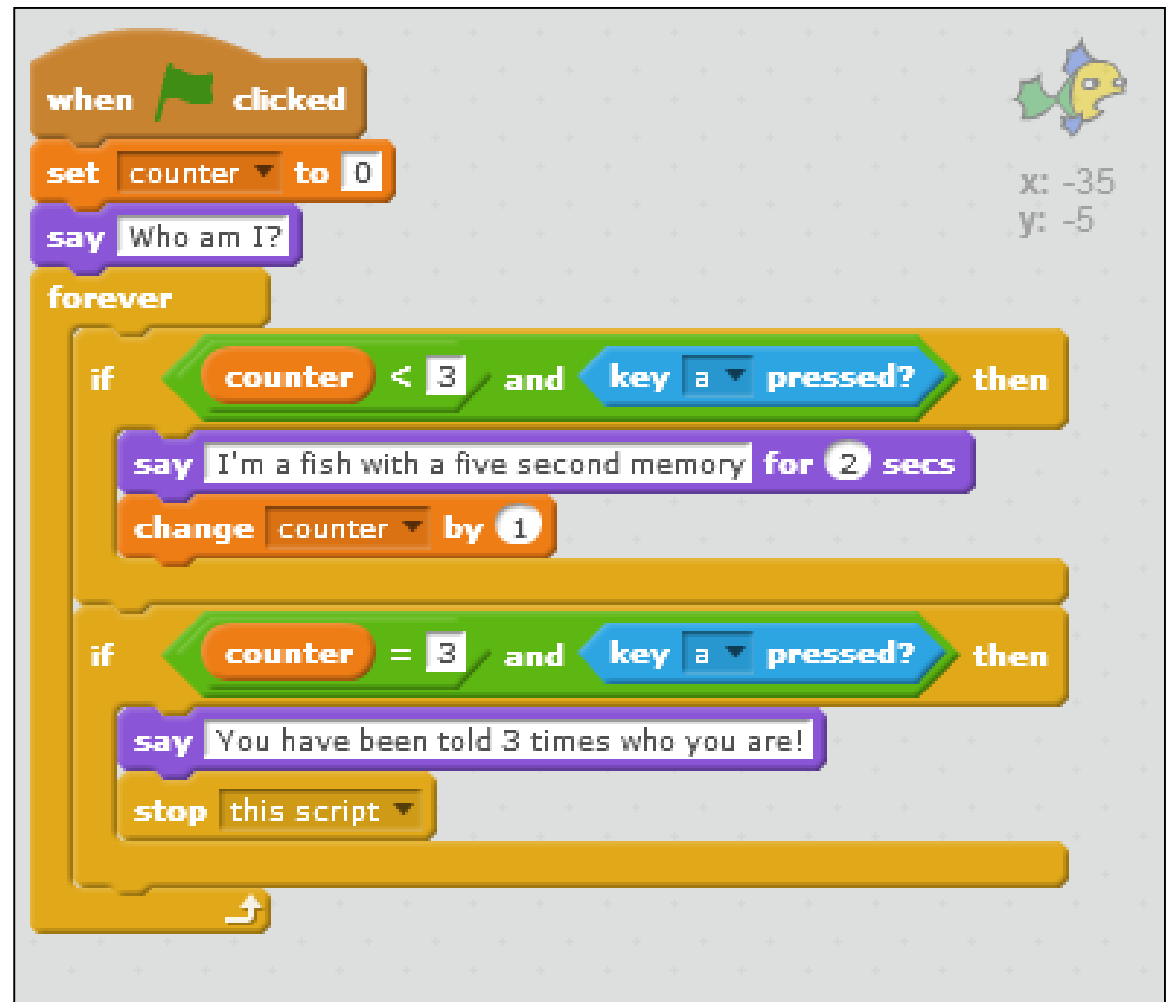


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SomethingFishy5

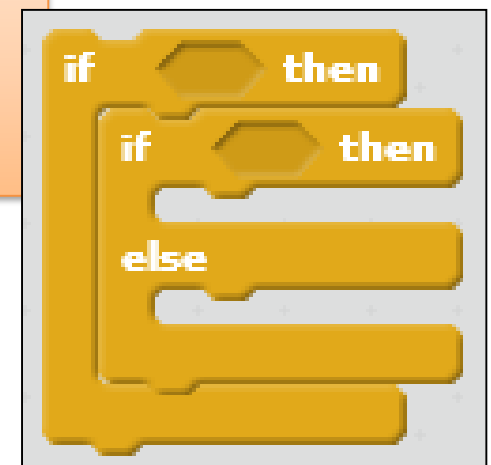
Could we structure this code differently, but keep the same functionality?



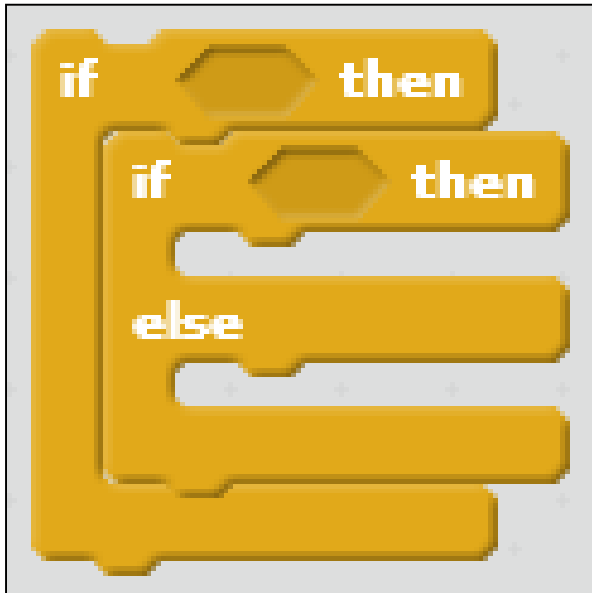
SomethingFishy5



Could we rewrite
this code using a
structure like this?



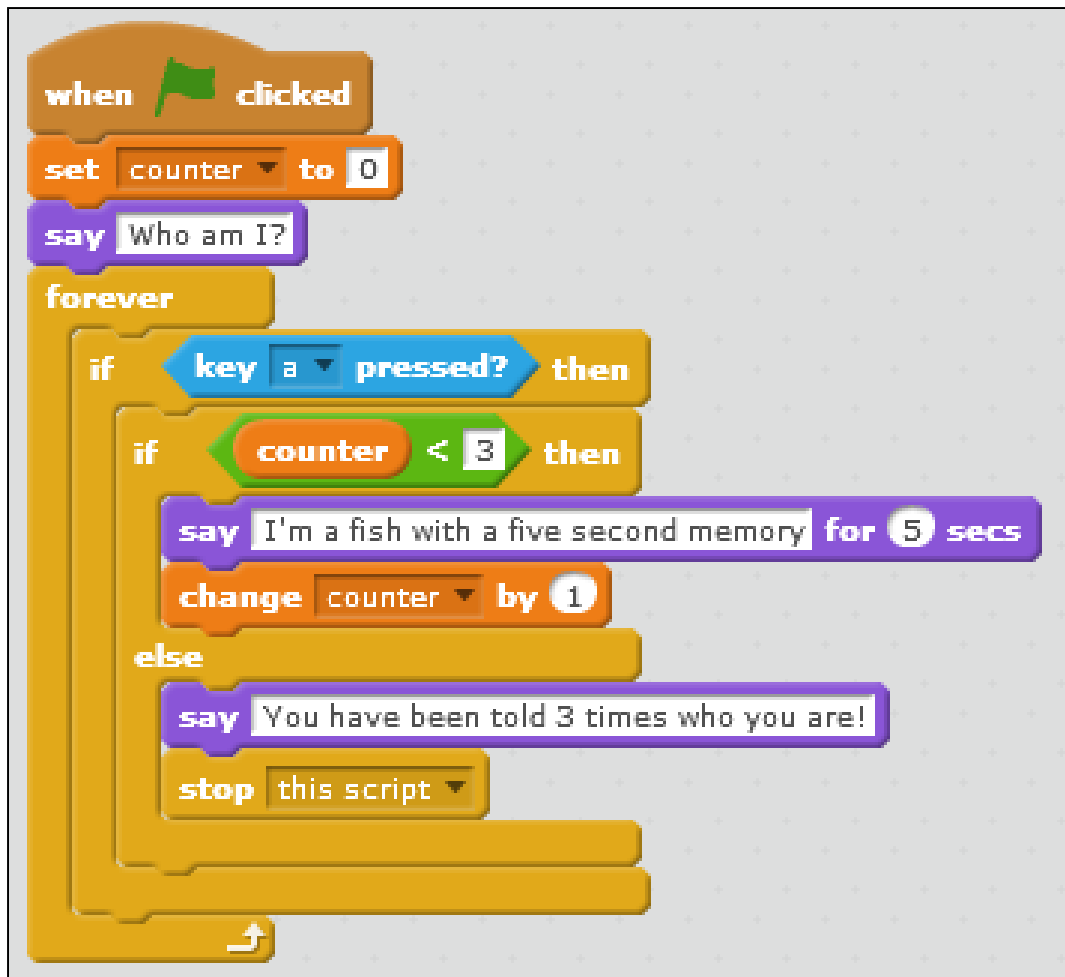
Nested if statements



You are allowed to nest an if statement inside another if statement.

The **inner** if statement is only executed if the condition on the **outer** if statement is true.

SomethingFishy5, Version 2



Rewritten
using nested
if statements

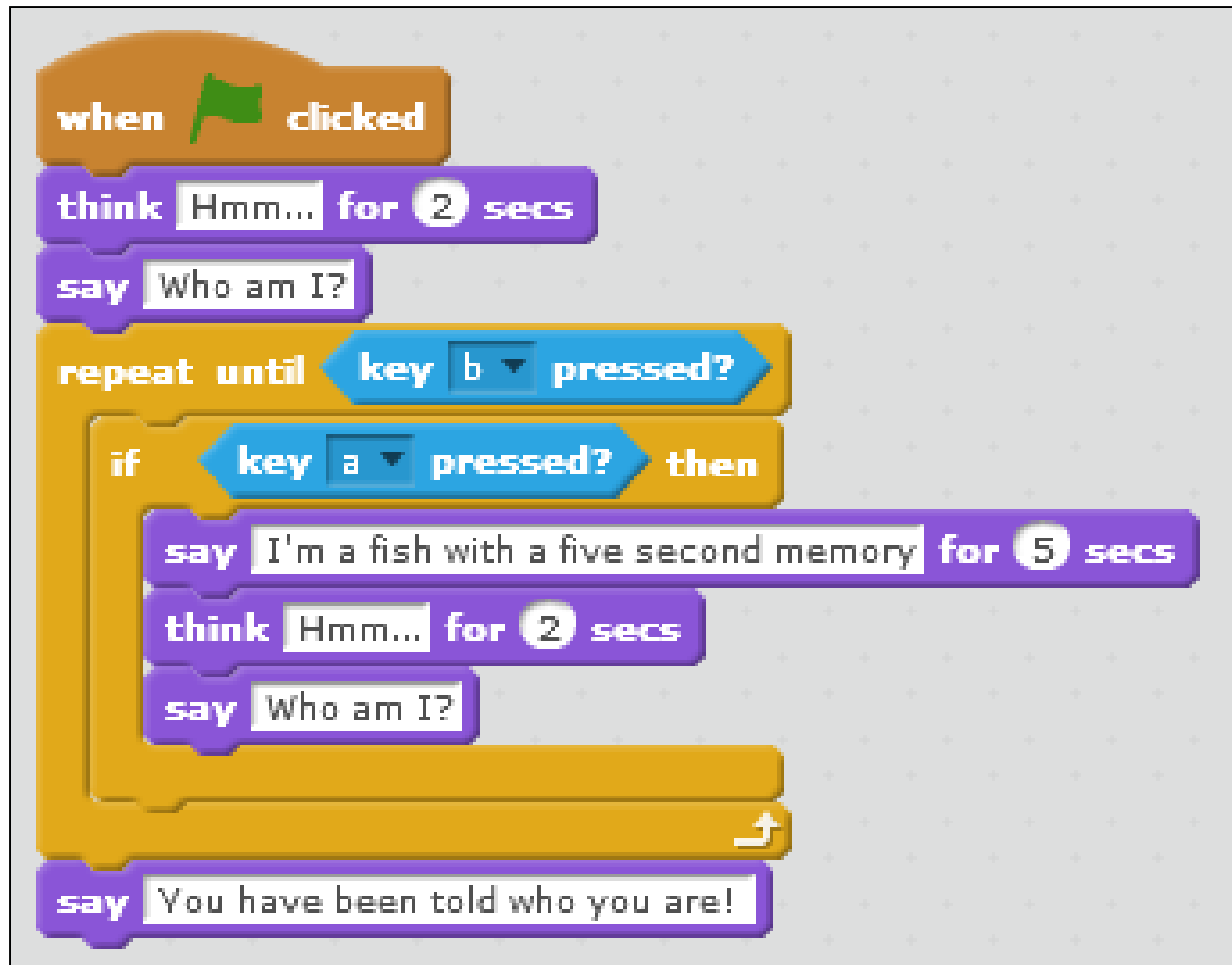
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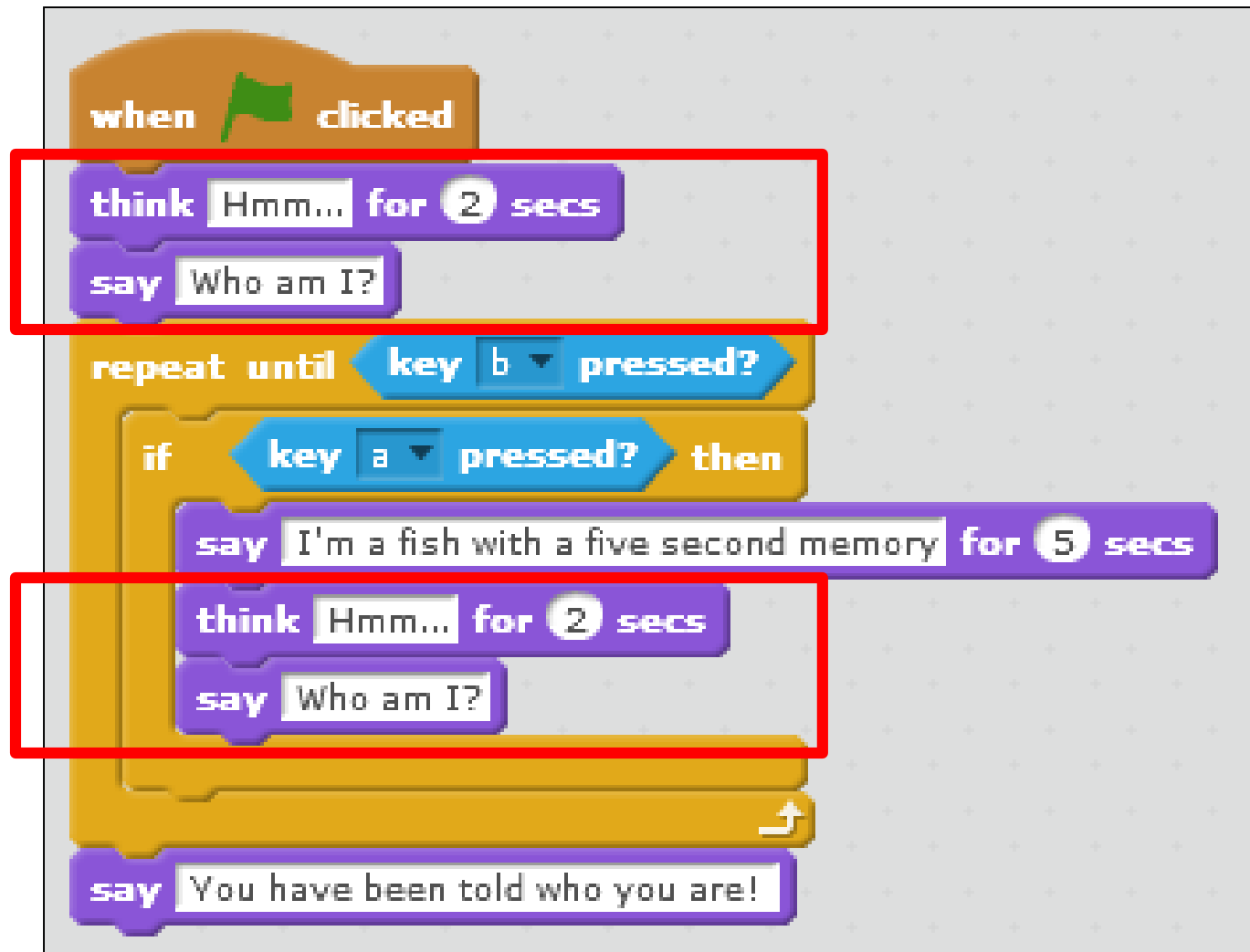
Methods

- A method in programming is “is a collection of statements that are grouped together to perform an operation”.
- When you call a method, the program transfers control to the method and its statements are run.
- When a method is finished running, control is returned back to where the method was called from.

Consider this example

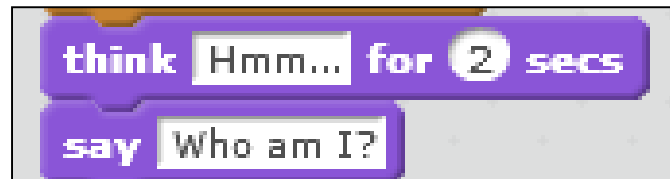


We have code duplication



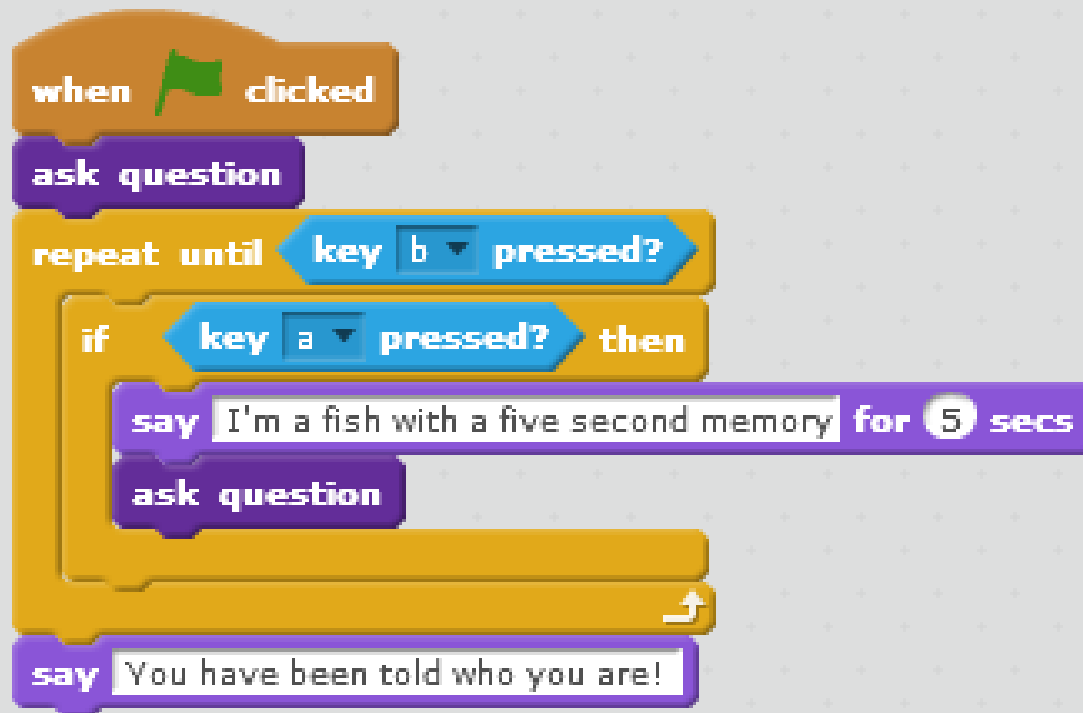
Methods and Code Duplication

- We can use methods to cut down on code duplication.
- In our example, we will move this duplicated code into one method:



- And where the code used to be, we will call the method instead.

SomethingFishy6



A note on Methods

- Methods are called:
 - **Blocks** in Scratch.
 - **Functions** in Processing (using this soon).
 - **Methods** in Java (using this soon).
 - **Procedures / Methods** in Visual Basic.
 - etc...
- They are all the same concept, they just have different names!

Questions?

