Scratching Deeper

Methods and Parameter Passing

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Topics list

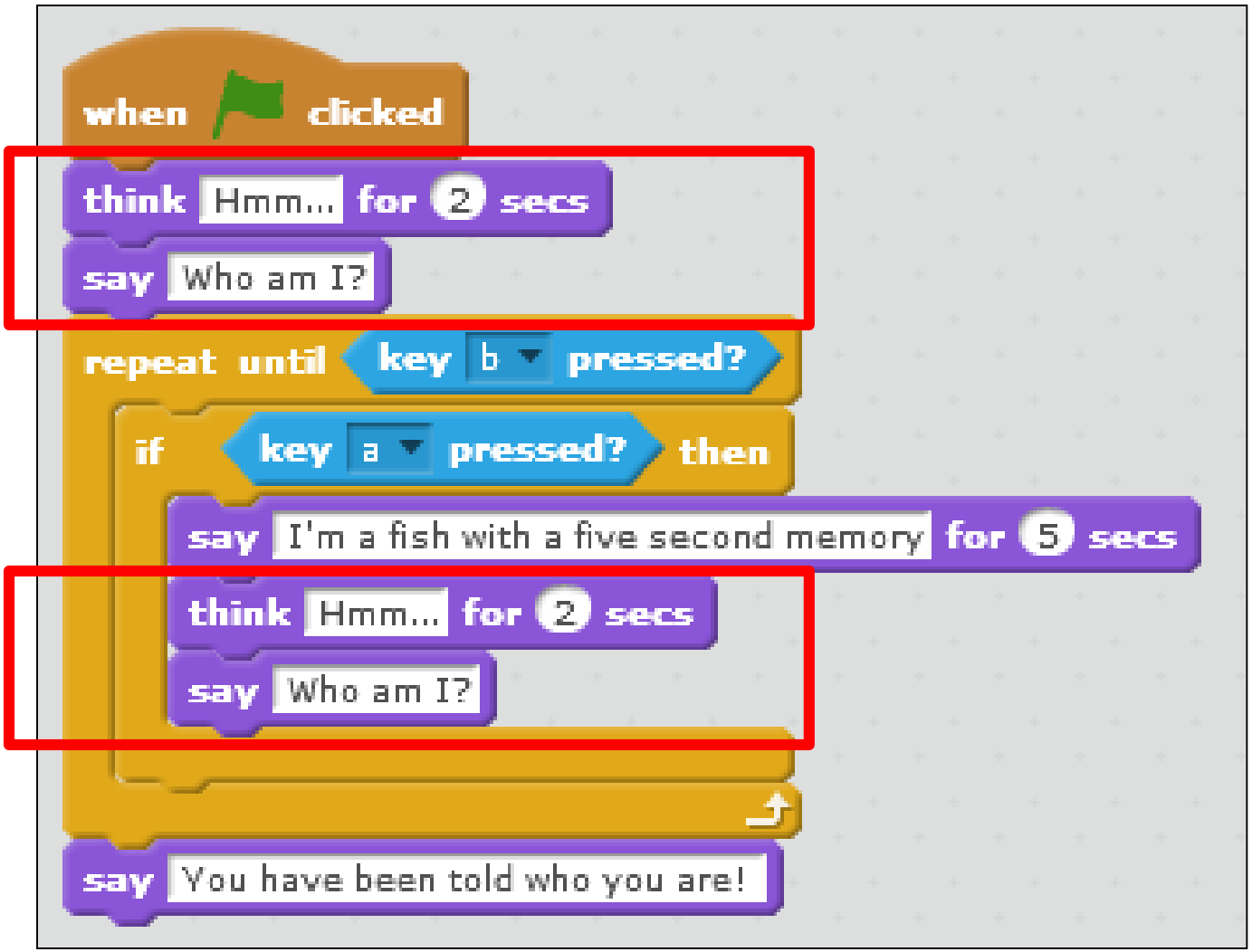
- Recap: Methods
- Passing Parameters into Methods.
- An Example from Scratch website.

Recap: Methods

- Methods are “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.

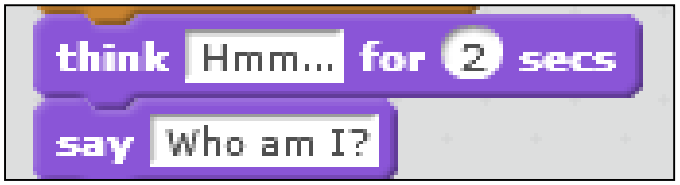
http://www.tutorialspoint.com/java/java_methods.htm

Recap: 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.

Recap: SomethingFishy6

Topics list

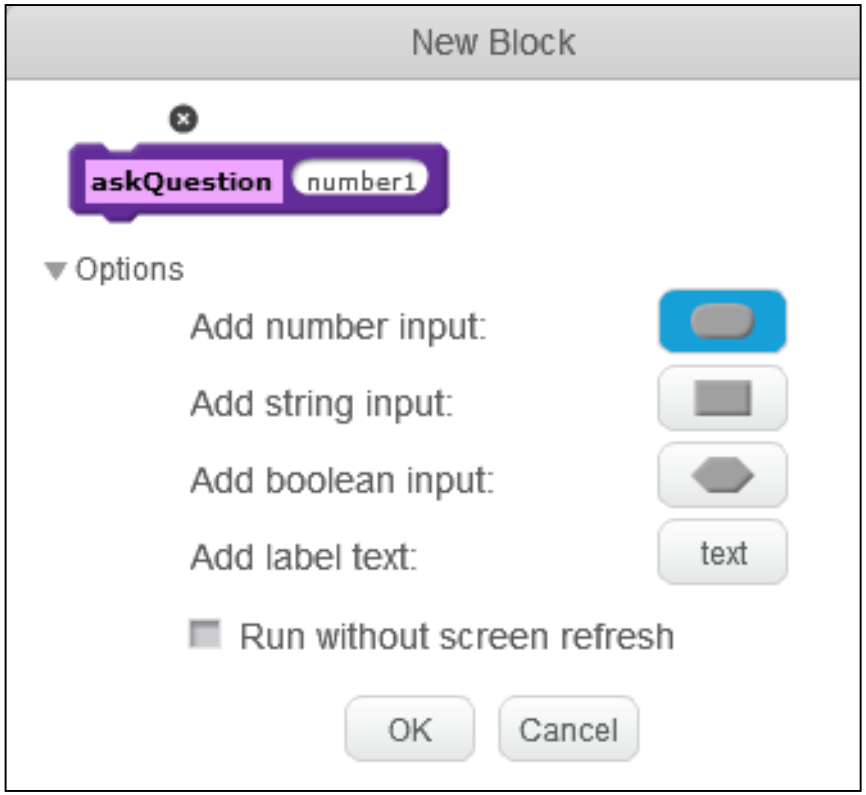
- Recap: Methods
- Passing Parameters into Methods.
- An Example from Scratch website.

Passing information into a method

- When called, our method will execute its two statements.
- The method always *“thinks”* for 2 seconds.
- But what if we wanted to *“think”* for a variable amount of time?

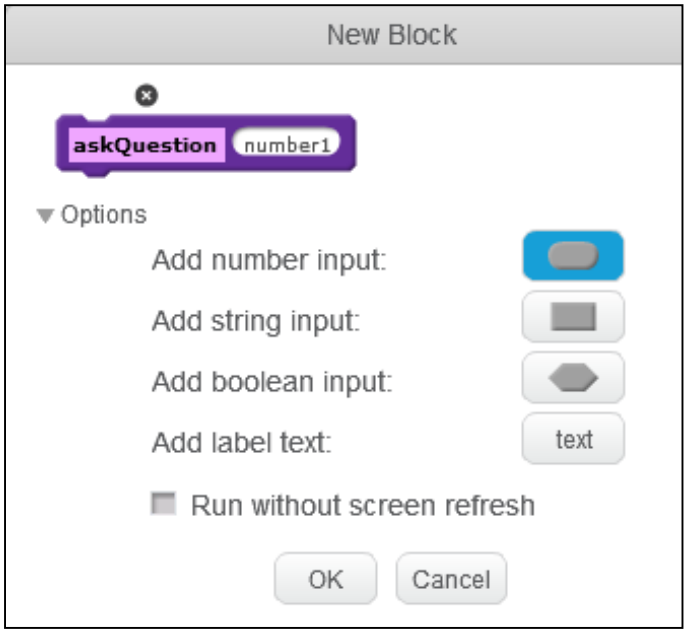
Passing information into a method

- We can pass information, of different types, into a method.
- When creating a **New Block** in Scratch, click on the **Add number input** option.



Passing information into a method

- A variable called **number1** is added to the method name.



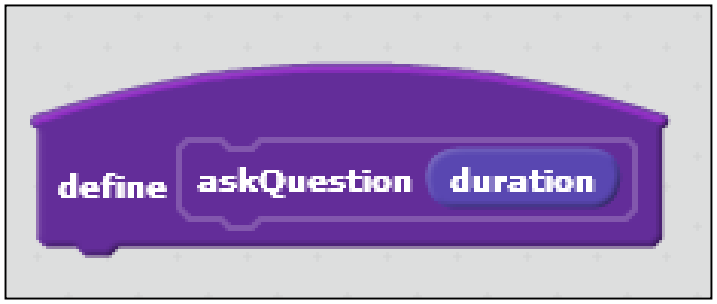
- We can rename this to any name we wish e.g. **duration**.

Passing information into a method

Old version of the method

New version of the method (so far)

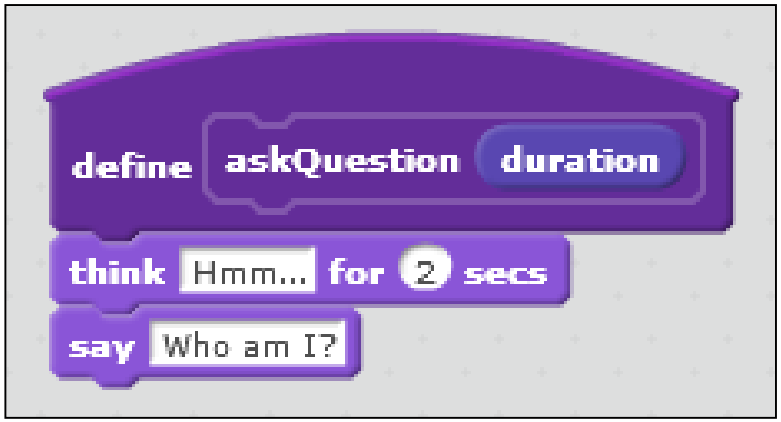
A duration is passed into the method.



Passing information into a method

Old version of the method

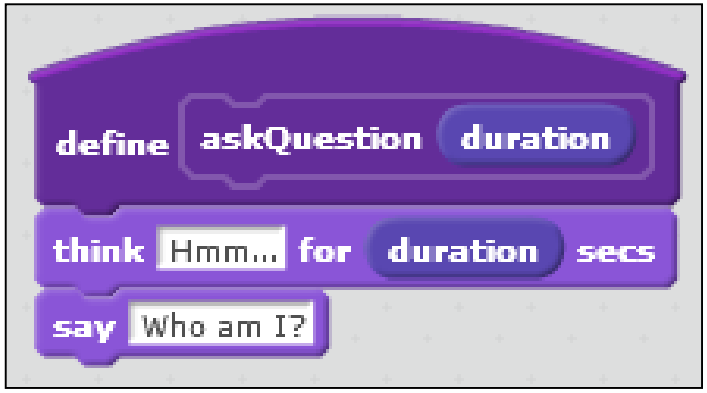
Adding the two statements to the new version of the method, we have:



Passing information into a method

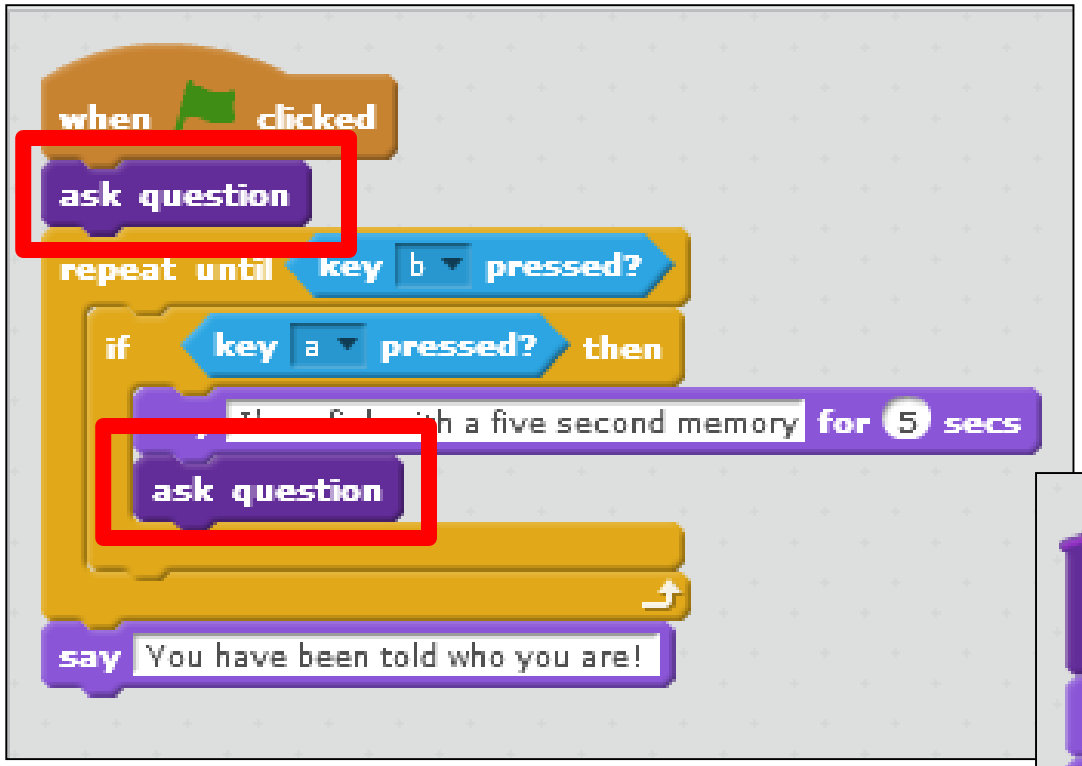
Old version of the method

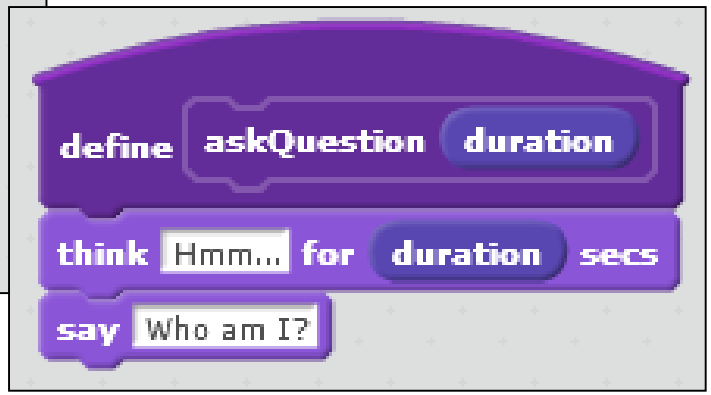
Instead of "thinking" for 2 seconds, our fish will now think for the duration.



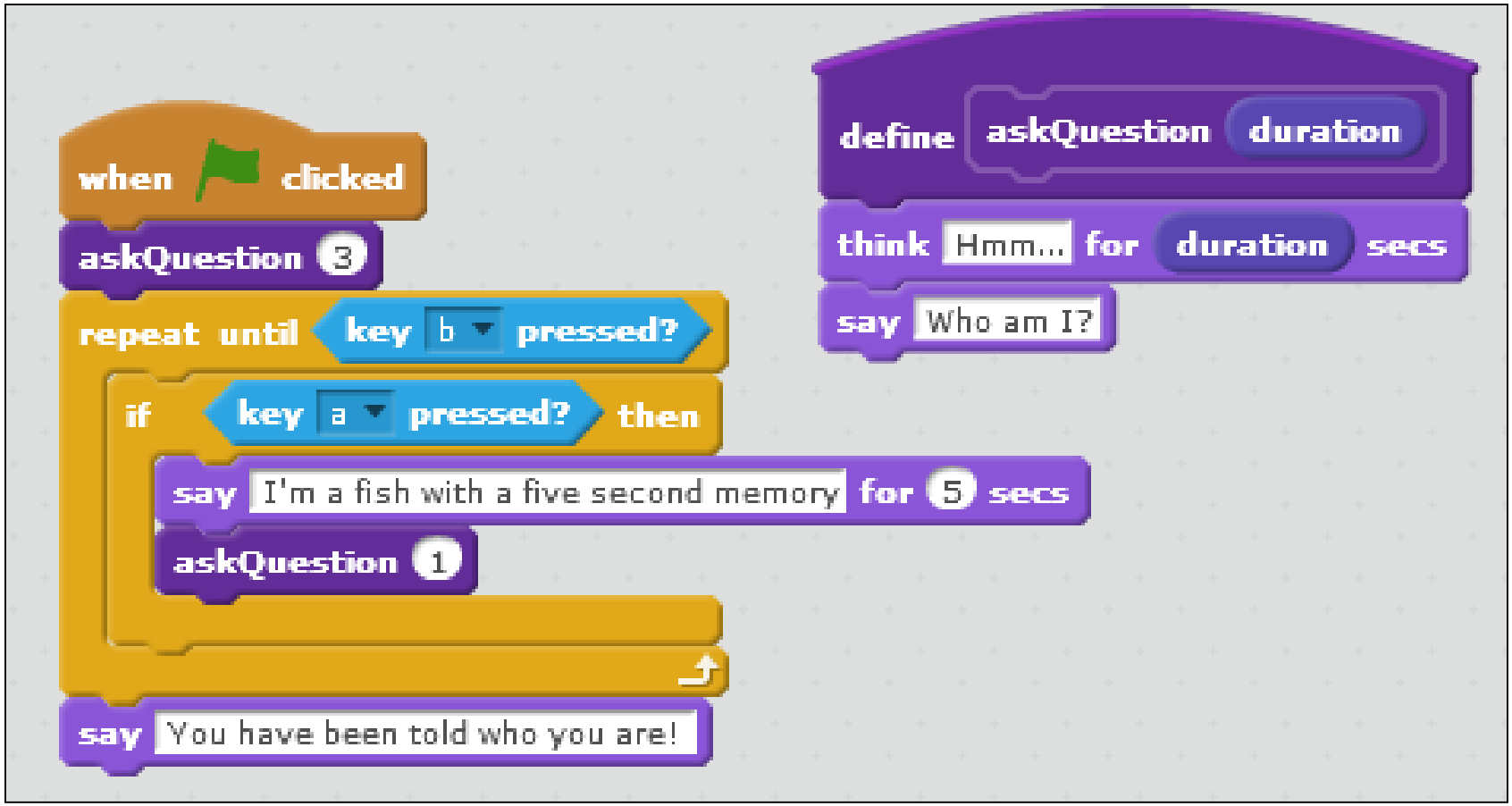
Passing information into a method

- Now that our method is rewritten, we now have to refactor our code to use it:





SomethingFishy7



Topics list

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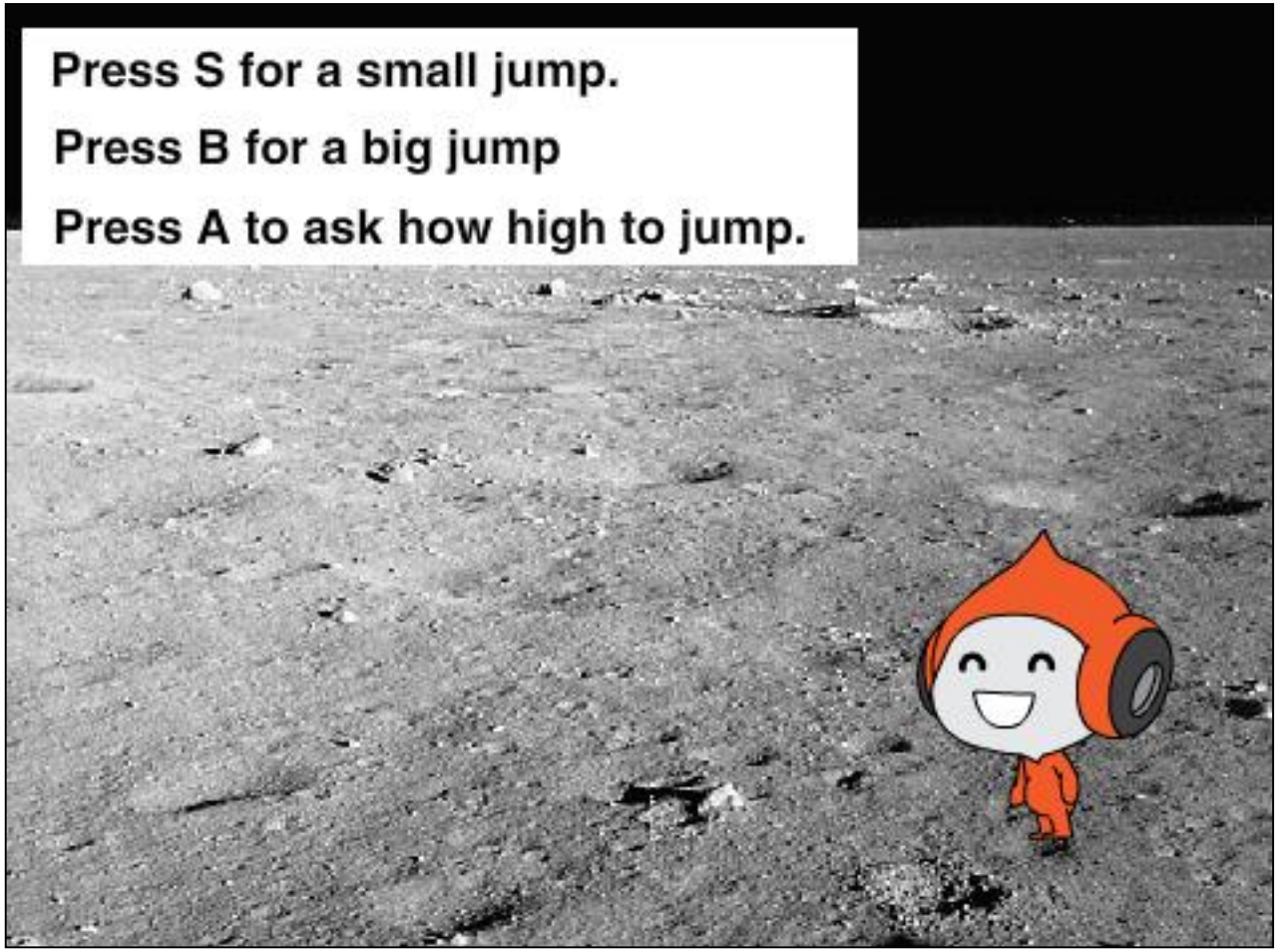
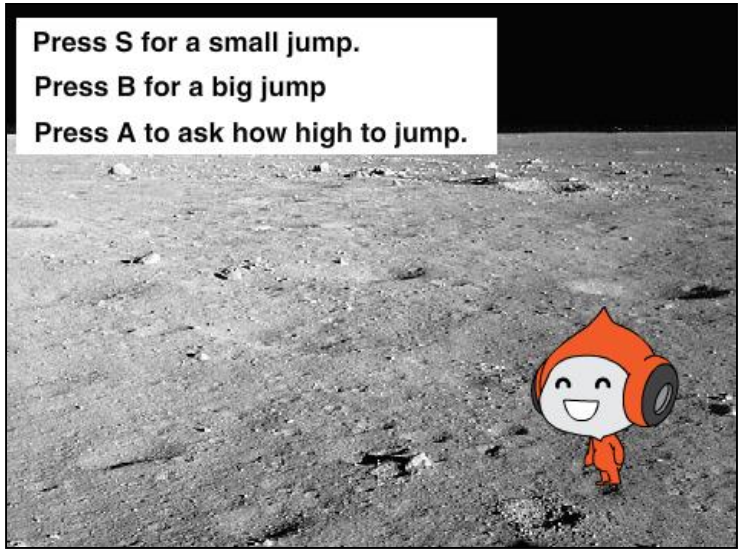
- Passing Parameters into Methods.
- An Example from Scratch website.

PicoExample



https://scratch.mit.edu/projects/10001385/#editor

PicoExample

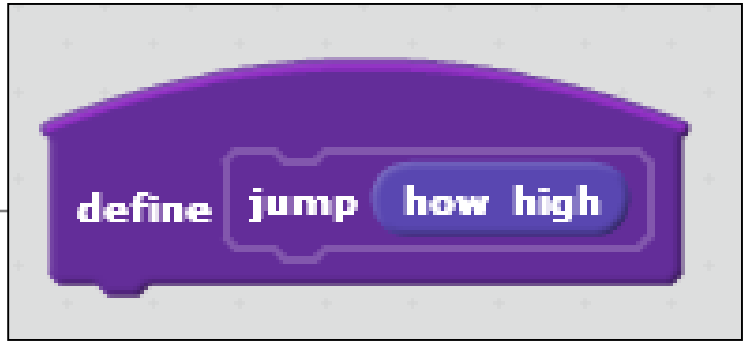


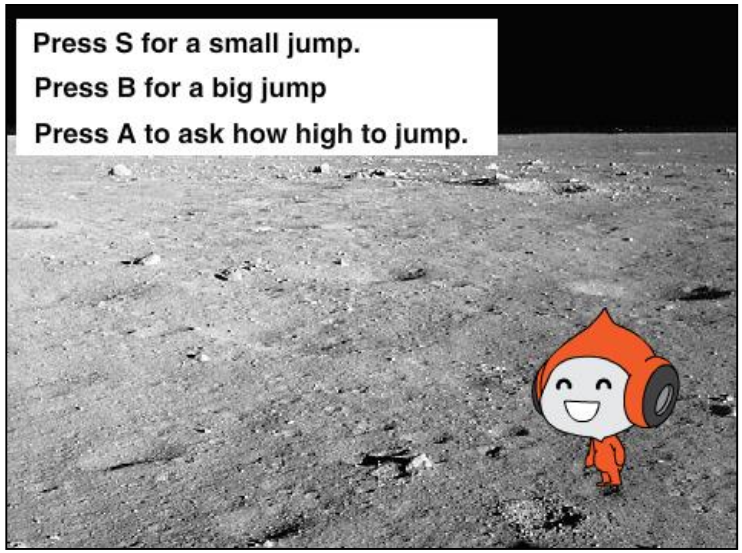
Regardless of which key is pressed (S, B or A), Pico will jump up a given amount of pixels and return to his starting point.

We could write this part of the program as a method.

The method could be called jump and the number of pixels to jump could be passed as a parameter.

PicoExample

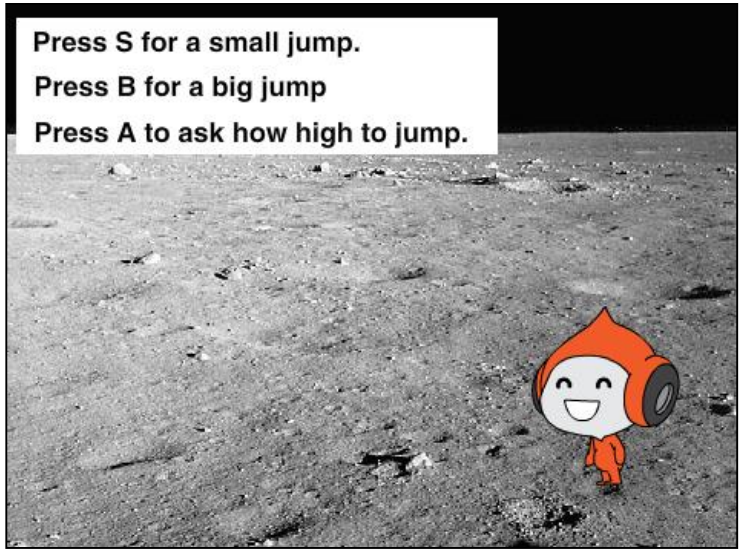


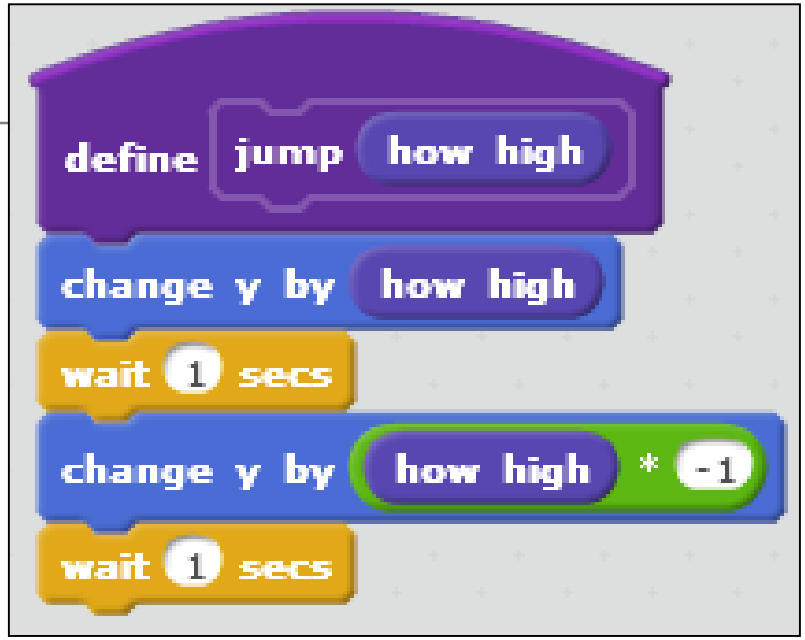


The processing in the method should:

1. Change the y value for Pico by the value passed in as a parameter i.e. how high.
2. Change the y value for Pico by the negative of the value passed in as a parameter i.e. return to his starting point.

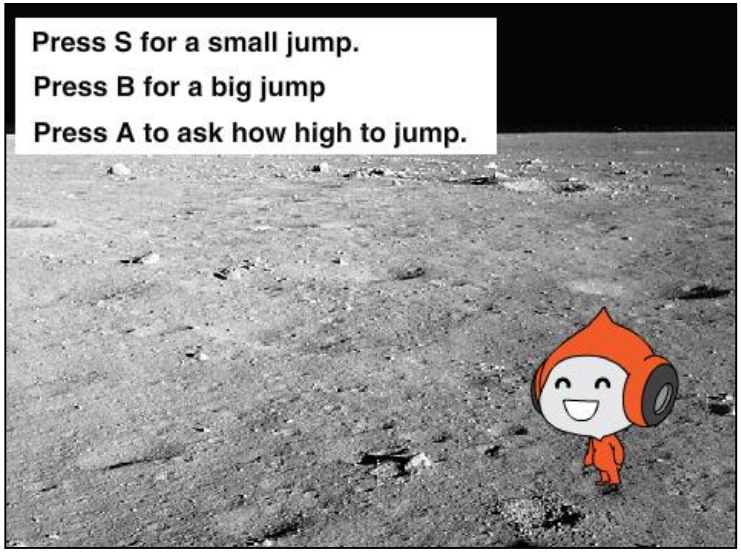
PicoExample

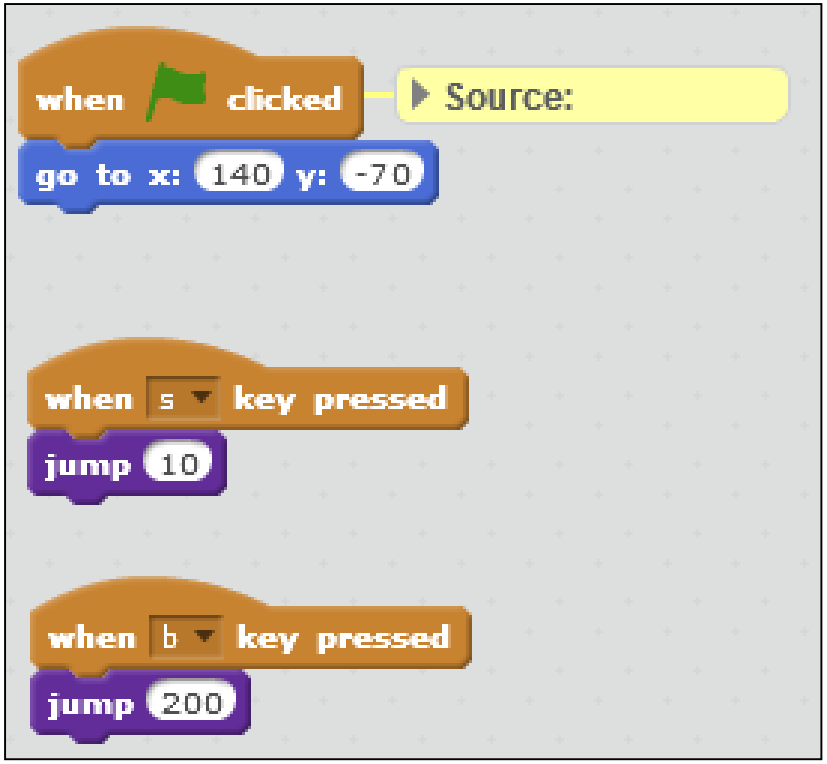


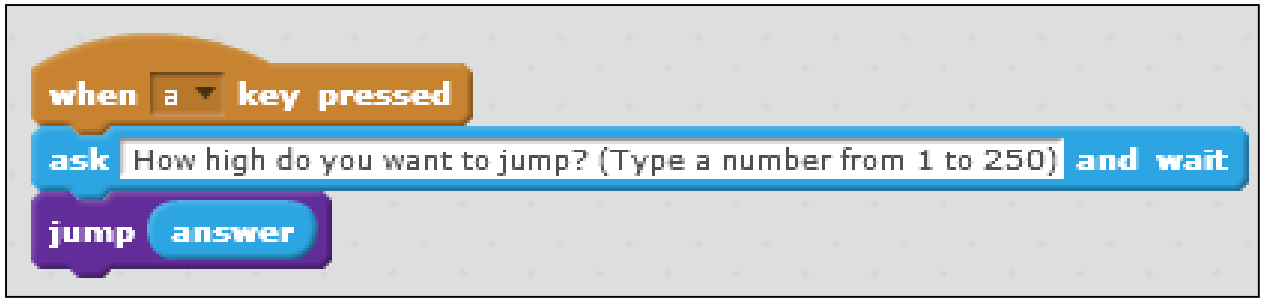


Now that the jump method is written, the next step is to call it based on the key pressed.

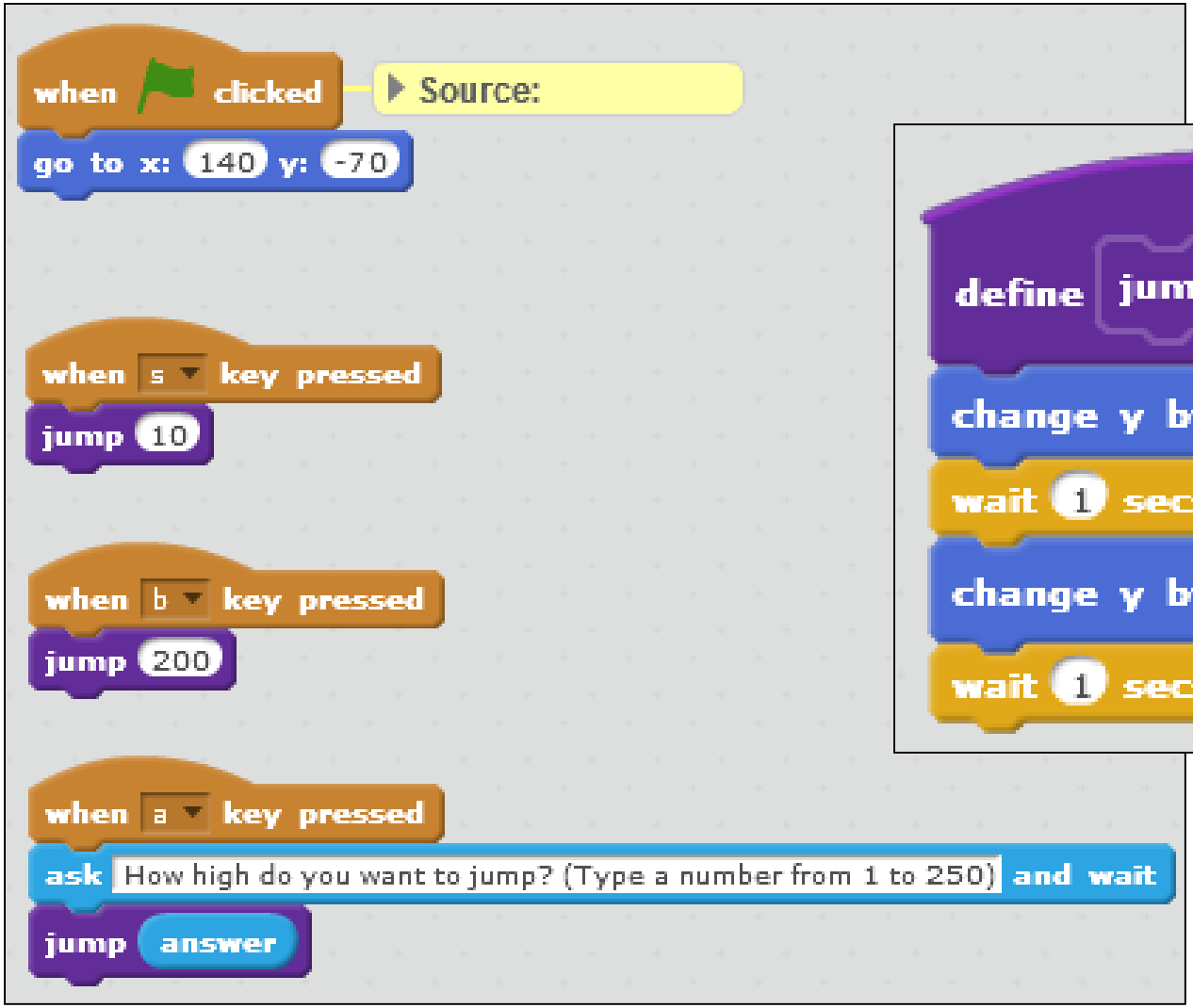
PicoExample

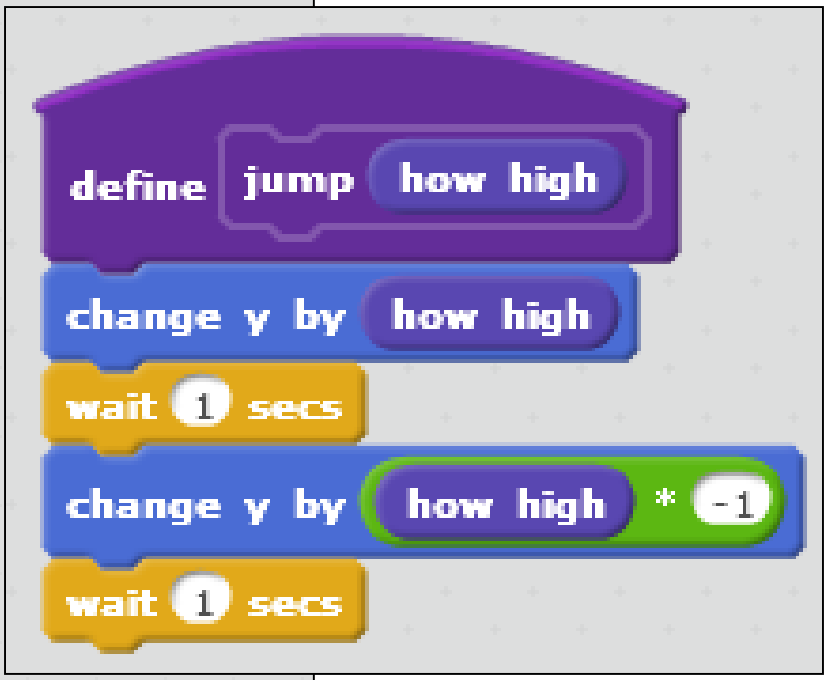






PicoExample – Complete Code





Questions?