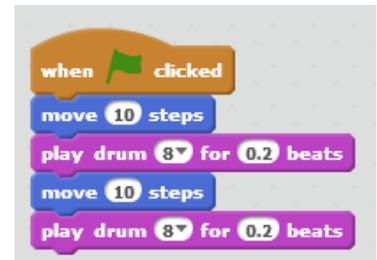


Use **sequence**, **selection**, and **repetition** in programs; work with **variables** and various forms of **input** and **output**. Design, write and **debug** programs.

Sequence

A set of programming blocks that make actions happen one after another.

When you have two sprites in your Scratch project they can each have a sequence of programming blocks to make them do something. This is **parallel** programming.



Selection

Choose an action for a particular circumstance. Think of this as asking a question and, depending on the answer, the program chooses between two or more courses of action. If ... then ... else programming blocks will be used. <https://www.youtube.com/watch?v=CFy3qGw94N0>



Nesting

Sensing blocks  can be nested within the selection.



Repetition

A sequence of instructions is repeated (or looped) a certain number of times, or until a condition is met or a particular result achieved. <https://www.youtube.com/watch?v=yRe1c2qvZDA>

Repeat loop



Forever loop



Conditional loop



Variable

A variable is a 'box' to store data. The data can be a number or text to use in a programme.

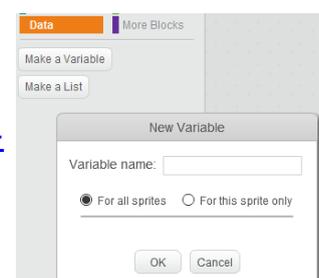


You can create a **variable** that is a **number** which will be used in a programme, eg score and speed in a game. <https://www.youtube.com/watch?v=uXq379XkhVw>

You can create a **variable** that is **text** controlling behaviour in a programme, eg a dog either walks or stands still

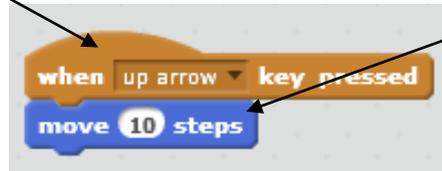
https://www.youtube.com/watch?v=ADPcdk6kK_0&feature=c4-overview-vl&list=PL52A985570691BDED

Don't forget to decide whether it is a global variable (working with all sprites) or a local variable (working with one sprite).

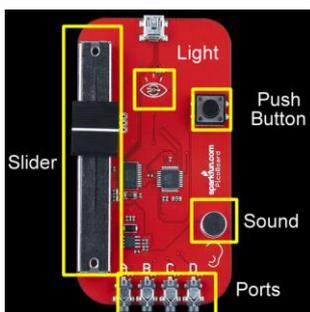
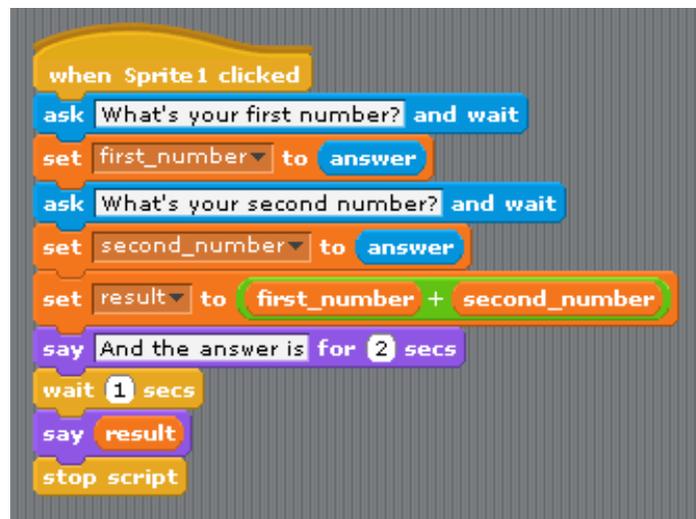


Input and output

Input can be as simple as pressing a key to make something happen. The **output** is the action that results eg the input of pressing the up arrow key will make a sprite move forwards.



The **input** can be a number that will be entered as a variable and used for a calculation. The **output** could be the answer to a maths problem. The programming blocks use the number inputted to calculate the answer. You might use two inputs to achieve an output eg adding two numbers.



The **input** could be a light or sound sensor, a slider or push button on a Picoboard; a tilt or movement sensor from a Lego WeDo kit.

The **output** that results depends on the programming in the project.



Debug

Discover why a program is not working.

http://scratched.media.mit.edu/sites/default/files/2011.11.30%20Webinar%20-%20Debugging%20Demystified_0.pdf

Can you **debug** these? <http://scratch.mit.edu/studios/208596/>

For additional information see Naace and CAS Joint Guidance

<http://www.naace.co.uk/curriculum/guidance/jointnaacecasguidance> (KS2 pages 15 and 16)