

Year 5 Computing – Programming: Selection in Physical Computing

What I should already know

- Programming is when we make and input a set of instructions for computers to follow.
- We use algorithms to sequence movements, actions and sounds in order to program effective animations.
- We use algorithms which we can plan, model and test, to create accurate and imaginative shapes and patterns.

What I will learn by the end of this unit

- We can use algorithms in order to create accurate and imaginative robotic actions.
- Input refers to the data which is entered into a computer or device.
- Output Device refers to the device which receives data from a computer or device.

Programming Blocks

-Flow Blocks:



Start Block

Must be used at the beginning of a program string. Press on it to make the program start.



Wait for

Use this to tell the program to wait for something to happen.



Repeat Block

Use this block to repeat actions. Blocks placed inside will be looped.

-Input Blocks:

Any Distance Change



Inputs the Motion Sensor mode "Any Distance Change" in a block.

-Output: Motor Blocks:



Motor This Way Block

Sets the motor to turn the axle in the direction shown.



Motor That Way Block

Sets the motor to turn the axle in the direction shown.



Motor Power Block

Sets the motor power to the desired speed and starts the motor.



Motor On For Block

Starts the motor for a chosen amount of time.

Number Input



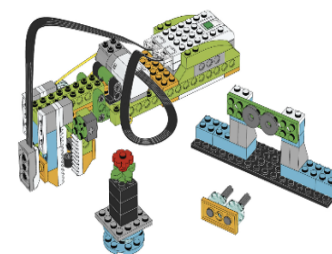
Inputs a numeric value to a block.

Connection and Lego Kit

-Bluetooth Connection: Bluetooth enables a secure way to connect and exchange information between devices such as mobile phones, telephones, laptops, personal computers, printers, digital cameras, tablets, voice controlled devices and video game consoles. This connection is needed to exchange information from the App to the Lego model.



Grabbing Objects:



Space Exploration:

Select your own solution from these three:



Drive

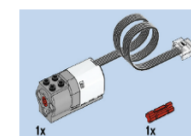


Grab

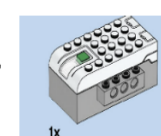


Sweep

The motor connects to the SmartHub. The SmartHub connects the device to the computer or tablet using a Bluetooth signal.



Motor



SmartHub

Sequencing and Algorithms

-A sequence is a pattern or process in which one thing follows another.

-We design algorithms (sets of instructions for performing a task) to help us program the sequence that we require to achieve our desired outcomes.



-Programming is the process of keying in the code recognized by the computer (using your algorithm).

Trialing and Debugging

-Programmers do not put their computer programs straight to work. They trial them first to find any errors:

- Sequence errors: An instruction in the sequence is wrong or in the wrong place.
- Keying errors: Typing in the wrong code.
- Logical errors: Mistakes in plan/thinking.

-If your algorithm does not work correctly the first time, remember to debug it.

Disciplinary Skills

- Design, write and debug programs that accomplish specific goals.
- Solve problems by decomposing them into smaller parts.
- Use sequence, selection and repetition in programs.
- Work with variables.
- Use logical reasoning to explain how simple algorithms work and to detect and correct errors in algorithms and programs.
- Understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration.

Key Vocabulary

components	connect	infinite loop
output devices	motor	condition
input	action	selection