COMPUTING: PROGRAMMING- Selection in Physical Computing

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KNOWLEDGE ORGANISER

Overview

Selection in Physical Computing

- Programming is when we make and input a set of instructions for computers to follow.

-Lego WeDo 2.0 is an App which enables Lego models to be programmed in order to create movements using robotics.

-We use algorithms (a set of instructions to perform a task) which we can plan, model and test, in order to create accurate and imaginative robotic actions.

- Input- The data which is entered into a computer or device.

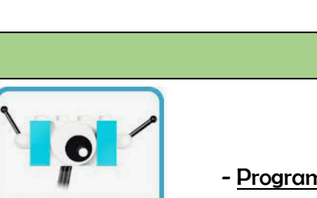
Output Device- The device which receives data from a computer or device.



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:



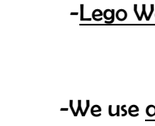
Space Exploration:

Select your own solution from these three:



Drive Grab Sweep

Motor



SmartHub

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

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.

-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.

-Input Blocks:

Any Distance Change



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

Number Input



Inputs a numeric value to a block.

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 w
-Keying errors: Typing in the
-Logical errors: Mistakes in pl



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

Important Vocabulary

Components Connect Infinite Loop Output Devices Motor Condition Input Action Selection