Year 6

COMPUTING: Using Microbits

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Overview

Using Micro:bits

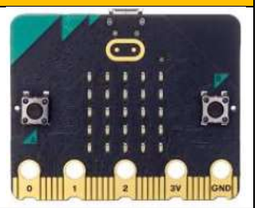
- Programming is when we make a set of instructions for computers to follow.

-Micro:bits are small computers that perform different actions based on programs written on computer software. Programs are then downloaded to the micro:bit.

-Micro:bits have a range of input sensors that can be used as input triggers for different codes to run.

-Output devices on Micro:bits (e.g. LED displays) can be programmed to display words, pictures and numbers.

The Basics of Micro:bits



-What is a Micro:bit? A micro:bit is a pocket-sized computer. We can write programs on our computers which can then be transferred to micro:bits to run.
-Micro:bits have an LED light display, buttons, sensors and many input/output features that we can program.

The Parts of a Micro:bit - Front

1. A and B buttons: make things happen.

2. LED Display: shows words, pictures, numbers.

3. Light Sensor: Measures the light that falls onto the micro:bit.

4.Input and Output Pins: Connects the micro:bit to other devices.

The Parts of a Micro:bit - Rear

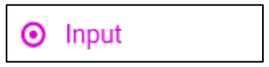
5. Temperature Sensor
6. Compass
7. Accelerometer – Detects movement
8. Radio Communication – to communicate with other micro:bits and devices.

9. USB Port – Connects device to computer. 10. Reset Button
11. Battery Socket – to power away from the computer.
12. Processor – The 'brain' of the device.

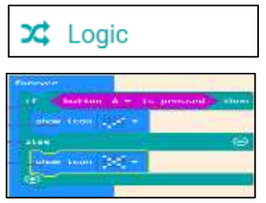
Using Micro:bit Software

-Software Interface: Just like other programming software, the micro:bit interface has programming blocks and a programming area. The emulator gives a simulation for testing code.

-Basic Blocks: Can be used to do things like display images, text and pictures on the LED display. They should be placed into the 'on start' or 'forever' blocks.



-Input Blocks: Enables the user to create 'triggers' using different parts of the micro:bit device, e.g. 'on button … pressed.'



-Logic Blocks: Allow conditions to be set. E.g. 'If, then, else' blocks allow us to set actions for when certain conditions are met (true), and alternative actions for when they are not met (false).

-Math Blocks: Includes numbers and sums in programs. The 'pick random number' block can allow different codes to run dependent on the random number generated.

Transferring to Micro:bit

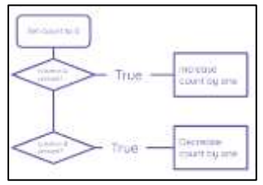
Micro:bit can be connected to the computer using a USB cable.

1. Select 'download'
2. Locate the file in the downloads folder.
3. Copy the file from the MICROBIT drive.
4. Run the program on the micro:bit.

-Micro:bit will only run code that has been downloaded. If code is changed in the editor, it will need to be downloaded again in order to run on the micro:bit.

Sensing Inputs

-There are a number of input sensors on micro:bits, including the buttons, light sensor, accelerometer, compass, temperature sensor and GPIO pins.



-We can create algorithms that enable different codes to run depending upon what is detected by different sensors.
-Remember to trial your programs and to debug them if there are sequence, keying, or logical errors.

Important Vocabulary

Programming	Micro:bit	LED	Sensor	Random	Condition	Accelerometer	Sequence	Emulator	Motion