

Unit: 5.10

Using External Devices - micro:bit

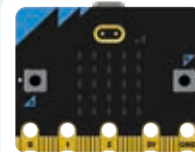
Key Learning

- To use inputs from the accelerometer to execute programs.
- To incorporate conditional logic in programs using IF/THEN coding structures.
- To use the sensors of the micro:bit to set the values of variables and trigger action in the programs.
- To use the micro:bit to create simulations.
- To create devices that give input to the micro:bit via the pins.

Key Resources



2Dos



micro:bits



Free code
micro:bit

Key Vocabulary

Accelerometer

A sensor that detects movement.

Crocodile clip

Wires used to connect external devices to the pins on a micro:bit.

Data

A collection of information, especially facts or numbers, obtained by observation, questions or measurement to be analysed and used to help decision-making.

Gestures

A type of input where the micro:bit is moved in different ways such as tilting, dropping, shaking.

IF/THEN

Logic commands that help the computer make decisions or choices based on conditions.

Input

Information going into a device. On a micro:bit, this includes button presses, sensor readings and messages via the micro:bit pins

LED

Light emitting diode - the micro:bit display is made of 25 LEDs.

Logic

How computers make decisions based on whether things are true or false.

Output

Information that comes out of the computer such as sound or lights shown on the LED display.

Pins

Small connection areas on the micro:bit used to communicate with external devices.

Selection

A conditional decision command. When selection is used, a program will choose which bit of code to run depending on a condition.

Sensor

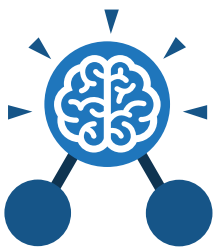
An input that senses things in the real world, such as movement, temperature, and light levels.

Simulation

A model that represents a real or imaginary situation. Simulations can be used to explore options and to test predictions.

Variable

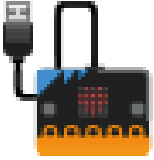
A named area in computer memory. A variable has a name and a value. The program can change this variable value. Variables are used in programming to keep track of things that can change while a program is running. This data can be accessed and updated while a program is running.



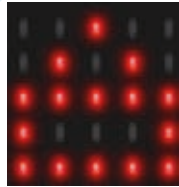
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Key Images



USB transfer



LED screen



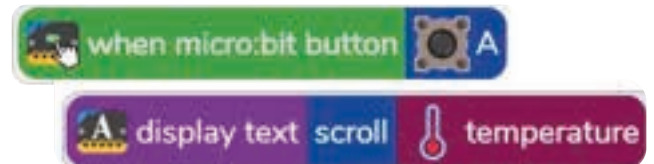
Run simulator



Respond to a gesture, using a variable and selection.



Use of the pins, a variable and scrolling text.



Use of the pins, a variable and scrolling text.

Key Questions

What sensors does a microbit have?

Accelerometer: This measures forces in three dimensions, to determine the micro:bit's orientation. This can be used for science experiments, games, and alarms.

Compass: This detects magnetic fields, to determine the micro:bit's direction and movement.

Light sensor: The micro:bit's LEDs can act as an input device to measure the amount of light falling on them.

How can the microbit respond to external signals such as the touch of foil?

The pins can be used to create electrical circuits and physically connect the micro:bit to external things. Pins 0, 1 and 2 are GPIO pins (general purpose input and output) they can be connected to crocodile clips, foil, headphones and other equipment. The 3V pin can power accessories.

How can sensors, code and outputs work together?

When using micro:bit, a user can program the device to sense the environment around it.

When particular environmental conditions are met, such as the accelerometer detecting movement, code written can then trigger an output response, such as displaying a message on the LED screen.