

Year 5 Programming

Prior Learning (Y4):

Learners will create programs by planning, modifying, and testing commands to create shapes and patterns. They will use Logo, a text-based programming language.

Key Vocabulary

Vocabulary to use from KS1 and LKS2: Algorithm, program, command, debug, logical reasoning, sequence, repetition, decompose, count-controlled loops, infinite loops

Selection	Is when a computer performs instructions if a particular condition is met or not
Conditions	is a statement that can be either true or false. Programmers can use conditions to trigger actions.

Key Unit Specific Vocabulary:

Crumbles; Microcontroller; Sparkle; Output, Component; Count-controlled loops; Input; Design

Key Questions:

- How to control a simple circuit attached to a computer?
- How do I design a conditional loop?
- How do I use an 'if...then...' statement to direct the flow of my program?
- What real-world examples are there of conditions starting with an action?
- How do I create a program that controls a physical computing project?

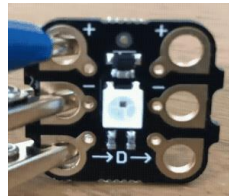


A push switch can be used as an input for a Crumble controller, and can be used in condition statements

Current Learning (Y5):

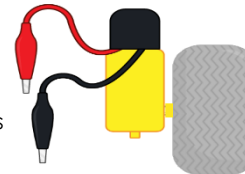
Learners will be introduced to a microcontroller (Crumble controller) and learn how to connect and program it to control components. Learners will be introduced to conditions as a means of controlling the flow of actions in a program. Learners will make use of their knowledge of repetition and conditions when introduced to the concept of selection (through the 'if...then...' structure) and write algorithms and programs that utilise this concept. Throughout this unit, learners will apply the stages of programming design.

What is in a Crumble Kit?

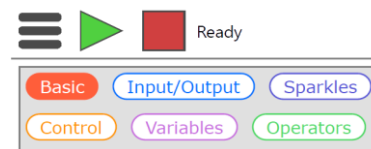


A sparkle is a multi-colour LED designed to work with the Crumble. The crocodile clip leads connect the Sparkle to the Crumble. These connections provide power to light the LED and data for its colour

A motor can be connected to a Crumble as an output component. The Motor can spin forwards, backwards, spin at different speeds and stop.



When programming Crumbles, we use a Crumble Block- based programming software. The software is very similar to Scratch.



```

program start
set sparkle 0 to [red]
wait 0.5 seconds
turn sparkle 0 off
wait 0.5 seconds
set sparkle 0 to [red]
wait 0.5 seconds
    
```

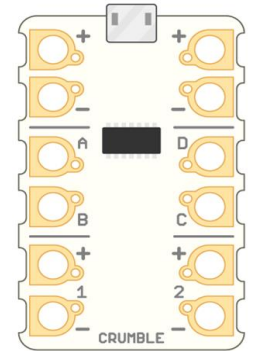
Future Learning (Y6):

Learners are given the opportunity to use selection and repetition, while also utilising a physical device — the micro:bit. The unit begins with a simple program for learners to build in and test in the programming environment, before transferring it to their micro:bit. Learners then take on three new projects in Lessons 2, 3, and 4, with each lesson adding more depth.

Crumbles

A microcontroller is a small device that can be programmed to control components that are connected to it.

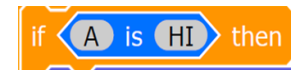
A Crumble is an example of a microcontroller. They can control outputs and respond to inputs.



Conditional Loops



Do Until Conditional loop



If... then Conditional Loop