Eversley Primary School– Knowledge Organiser

Computing	Programming A – Selection in Physical Computing	Year 5	Spring 1

Key Knowledge

To control a simple circuit connected to a computer	• I can create a simple circuit and connect it to a microcontroller • I can program a microcontroller to make an LED switch on • I can explain what an infinite loop does
To write a program that includes count-controlled loops	• I can connect more than one output component to a microcontroller • I can use a count-controlled loop to control outputs • I can design sequences that use count-controlled loops
To explain that a loop can stop when a condition is met	• I can explain that a condition is either true or false • I can design a conditional loop • I can program a microcontroller to respond to an input
To explain that a loop can be used to repeatedly check whether a condition has been met	• I can explain that a condition being met can start an action • I can identify a condition and an action in my project • I can use selection (an 'if…then…' statement) to direct the flow of a program
To design a physical project that includes selection	• I can identify a real-world example of a condition starting an action • I can describe what my project will do • I can create a detailed drawing of my project
To create a program that controls a physical computing project	• I can write an algorithm that describes what my model will do • I can use selection to produce an intended outcome • I can test and debug my project

Possible experiences

- Copy and complete the set of instructions to guide someone connecting a Crumble controller to its components – try to use crumble vocabulary such as Crumble controller, battery box, Sparkle, crocodile clip, USB lead, computer & switch.
- Visit the Science Museum's Dojo, to borrow a Microbit or similar coding output devices and investigate. [CoderDojo useful links | Science Museum]

Statutory requirements

- Design, write, and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- Use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
- Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems, and content that accomplish given goals, including collecting, analysing, evaluating, and presenting data and information

Key vocabulary

Spelling	Definition
Circuit	When items are connected together to create a circuit, which **electricity** can flow through.
Output Component	When a computer has finished processing **input**, it is sent back out of the computer ready to be used. This is through an **Output Component** (device).
Count Controlled Loop	A count controlled loop is created by **repeating an instruction** a set number of times.
Selection	A computer program is a list of instructions written in a way that a computer can understand, so the choices need to be part of the program. We call this part of programming, 'selection'.

Crumble controller

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

The microcontroller that you will be using is a Crumble controller. You will program a Crumble to control outputs and respond to inputs.