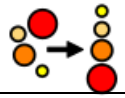
Year 5 Computing– Crumbles

Vocabulary

Microcontroller	A small device can be programmed to control devices that are connected	
Input	Something that program into the computer	
Output	Something the computer does as a result of the input	
Loop	Instructions that happen again and again	
Count-controlled loop	A loop that repeats a set number of times (e.g. 5 times)	
Condition	A rule that can be true or false (e.g. if the switch is pressed)	
Selection	Making a choice in a program	
Algorithm	A step by step set of precise instructions	
Sequence	A pattern or process in which one thing follows another	
Debug	To find and fix errors	

Knowledge

Physical computing:

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

Programming is the process of keying in the code recognised by the computer (using your algorithm).

Microcontrollers are devices that can be programmed to control **output** devices that are connected to them.
We use algorithms which we can plan, model, trial and **debug**, in order to create accurate command sequences, involving multiple **output** devices (e.g. LEDs and motors).

Microcontrollers:

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

The Crumble controller can be used to control many things, e.g. LEDs and motors.

The USB port connects the microcontroller to a computer.

LEDs:

One type of LED light, controlled by a Crumble controller, is called a sparkle.

Motors:

Motors are another type of **output** device. A motor can start, stop, spin forwards, spin backwards, and go at different speeds.

Sequencing and algorithms:

A **sequence** is a pattern or process in which one thing follows another.

We design **algorithms** to help us program the sequence that we require to achieve our desired outcomes.

Quizzing

Ask your partner the questions below. Can they find the correct answer on the right-hand side?

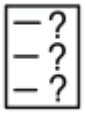
Which loop repeats a set number of times?	Sparkle
What is the small programmable computer we use called?	Loop
Give one example of an input you could use with a Crumble	Condition
What should you do if your Sparkle does not light up?	Motor
What is the special light that can change colour called?	Sequence
What part spins or moves when the Crumble tells it to?	Count-controlled loop
What is a rule that can be true or false?	Crumble controller
What do we call the order that instructions happen?	Debug the code
What do we call instructions that repeat again and again?	A switch, button or a sensor

Quiz at home

Ask your adult to look at the KO.

Quiz them using the vocabulary and knowledge section or the quiz questions.

- Can they beat your score?
- Can they score more than 5? 10?
- Compete with your adult in the elimination quiz. Take it in turn to ask each other questions. The first person to get a question wrong is out.



BIG Questions

1. What is the difference between an input or an output?
2. Why might a loop be more useful than repeating the same block many times?
3. Why is debugging an important part of working with Crumbles?
4. How does using physical devices (motors and Sparkles) help you understand programming better?
5. Why do we need to give computers very clear instructions?

Beat the adult

Your teacher can give **10 facts** in **1 minute** about this topic.

How many can you give to your partner?

Word scramble

Unscramble the key vocabulary from this topic below. You can create your own at the bottom.

nupti	
otuput	
oolp	
coinintod	
iolenestc	
aloithmrg	
nuseecqe	
bgued	
otrom	

Fill in the gaps

1. A button or switch is an example of an _____

2. A _____ is a block of code that repeats instructions.

3. An _____ is a step-by-step set of precise instructions.

A _____ can spin or turn when connected to the Crumble

Loop

Input

Motor

Algorithm

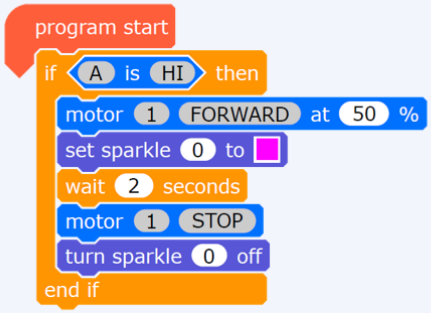
Skills

Creative tasks

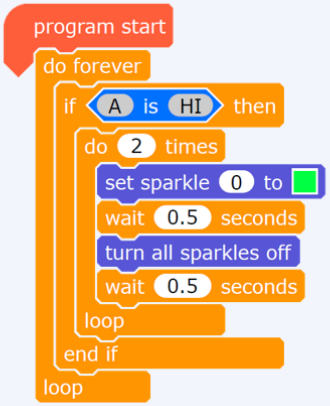
Explain a process. Draw a simple diagram showing input → process → output.

Testing algorithms

Program 1



Program 2



Which program controls more than one output device?

How do you know?

_____

_____

_____

_____