

Year 4

DT

**Electrical Systems:
Simple Programming and Control**

Knowledge
Organiser

How to wire a crumble

```

    program start
    do forever
    set D HI
    wait 1 seconds
    set D LO
    wait 1 seconds
    loop
  
```

A battery box (including three 1.5v AA zinc carbon batteries) connects to the Crumble's Power In pads. Switch the battery box off when not in use.

A USB cable connects the Crumble to a computer.

The +ve (red) lead is connected to the +ve side of the LED and the -ve (black) lead to the -ve side of the LED. The +ve lead connects to output A, B, C or D on the Crumble and the -ve lead connects to the -ve Power Out pad.

Health and Safety

Electricity can be dangerous. Listen to instructions carefully to stay safe.

Always connect crocodile clips carefully to one terminal only. Do not let them touch another terminal.

Always connect components the correct way round.

Vocabulary

Series circuit	an electrical circuit in which the whole current flows through each component.
Fault	any problem in a circuit which causes a disruption to the current
Connection	any structure that allows electricity to flow through it
Toggle switch	a switch that uses a toggle or lever to activate
Push-to-make switch	a switch that is 'on' when pressure is applied
Push-to-break switch	a switch that allows a circuit to normally be 'on' and turns off when pressure is applied.
Light emitting diode (LED)	an output device that glows when electricity is passed through it.
Insulator	a material which an electrical current cannot flow through
Conductor	a material which an electrical current can flow through
Program	a sequence of instructions that can be used to control electrical components.
System	a set of related parts or components that together achieve a desired outcome.
Input device	components that are used to control an electrical circuit e.g. switches.
Output device	components that produce an outcome e.g. bulbs, motors and buzzers.
Process	how a computer program controls one or more output devices
User	the person in mind when designing a product
Purpose	the reason for making a product
Function	what a product does
Prototype	an original model on which later stages or forms are based or developed
Design Criteria	the precise goals that a project must achieve in order to be successful
Innovative	produced through or resulting in innovation; new and inventive
Appealing	attractive or pleasant to look at
Design Brief	the statement a client gives to a designer outlining what they want their product to be like