Christmas Tree

·CONTROL·
FREAK™
Powered by Crumble

Aims

- Through this activity students will learn to use sparkles. They should be able to make them flash. As they progress there are several variations and ways to make it more challenging (see bottom of page).

Basic Code

To make all sparkles flash on and off

```
program start
do forever
    set all sparkles to [yellow]
    wait 200 milliseconds
    turn all sparkles off
    wait 200 milliseconds
loop
```

Resources

- Crumble board
- Sparkles x 4
- Battery pack
- Wires x 17
- USB cable
- Paper/card
- Digital switch (intermediate)

Construction Tips

Use card as a backing and stick sparkles onto the front, making small holes in for the clips to poke through and 'hold' the sparkles. Stick your design on top!

Suggested Uses

- Create a classroom Christmas tree for advent. Each student creates their own sequence for flashing lights and gets to see their display for a day of advent.

Challenge Questions

- Is it possible to make the colours fade into a particular sequence – say a rainbow?
- How can you add an analogue sensor instead of a digital switch?
- Can you add a motor? What would you make spin?

Basic Code

To make sparkles flash different colours with one staying on

```
program start
do forever
    set sparkle 0 to [yellow]
    set sparkle 1 to [blue]
    wait 100 milliseconds
    turn sparkle 1 off
    set sparkle 2 to [red]
    wait 100 milliseconds
    turn sparkle 2 off
    set sparkle 3 to [cyan]
    wait 100 milliseconds
    turn sparkle 3 off
loop
```

Intermediate Code

To make sparkles fade into different colours

```
program start
let (t) = 0
let (u) = 255
do forever
    do 255 times
        set all sparkles to (u) (0) (t)
        wait 10 milliseconds
        increase (t) by 1
        decrease (u) by 1
    loop
    do 255 times
        set all sparkles to (u) (0) (t)
        wait 10 milliseconds
        increase (u) by 1
        decrease (t) by 1
    loop
loop
```

Intermediate Code

Incorporate a digital switch so the lights stop when it is pressed and held

```
program start
wait until (A) is (HI)
do forever
    do until (A) is (HI)
        set all sparkles to [red]
        wait 100 milliseconds
        turn all sparkles off
        wait 100 milliseconds
    loop
    turn all sparkles off
loop
```

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