Workshop 1, Exercise 1

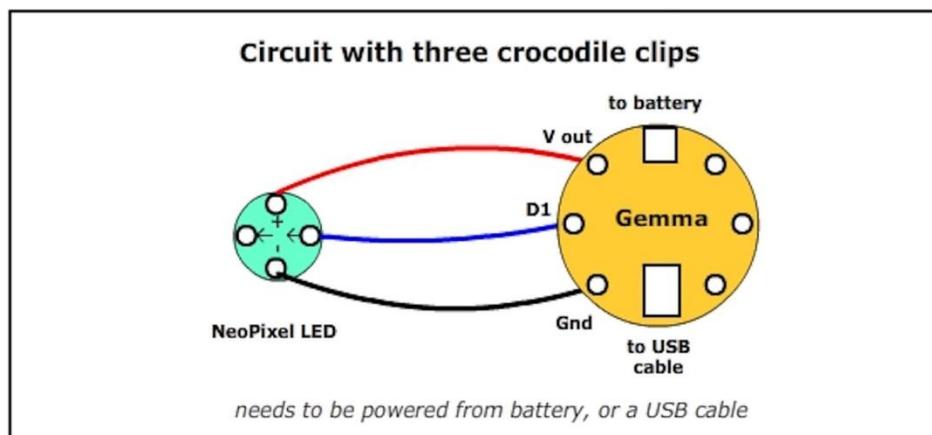## Connect NeoPixels with Gemma

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In this exercise you use crocodile clips to create a circuit that will flash three NeoPixel LED lights in the pattern pre-programmed into Gemma.

Step 1. Get the parts. Check you have all of the parts you need.

- an Adafruit Gemma microcontroller
- three NeoPixel LEDs (your pack may have four)
- nine crocodile clips, ideally of three different colours (3 x 3)
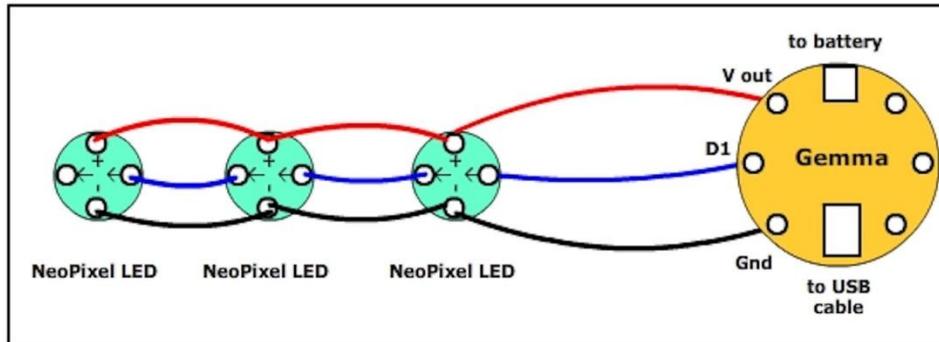- a battery holder for coin cell batteries
- two coin cells

Step 2. A one NeoPixel circuit. Connect a battery and one NeoPixel LED to Gemma. See the picture and notes below for help.

Note the following:

- start by putting the Coin Cell batteries into the holder, being careful that each one goes the correct way up (see the markings for + and -).

- connect the battery holder to Gemma (you may have to turn the switch on the battery holder on). Once you can see a light on Gemma, turn the switch off again.

- connect three different colour crocodile clips between the Gemma and a NeoPixel LED, by following the diagram above.

- when you are sure that the crocodile clips are attached accurately, turn the switch on. Wait 15 seconds for the Gemma to load. If the pre-programmed code is working, the NeoPixel LED light should flash. What are the colours, and what time period does each come on for?

Step 3. A two and then a three NeoPixel circuit. Connect two more NeoPixel LEDs to Gemma, one at a time, remembering to test at each stage.

Note that you have to chain the data lines of the NeoPixels so that the arrows flow. Remember to turn off the switch for the power when adding your crocodile clips, or you may blow up the circuit!

Check with the person running the workshop whether they want you to do the following activity. They will know how much time you have left.

Activity. Write down a description of how the LED lights are being flashed, calling them LED 0, LED 1, and LED 2 (i.e. start counting at 0). E.g. Time period 1. LED 0 is blue, LED 1 is green etc.

Show your flowchart and your working three light circuit to the person running the workshop. They will tell you which Worksheet to do next.