

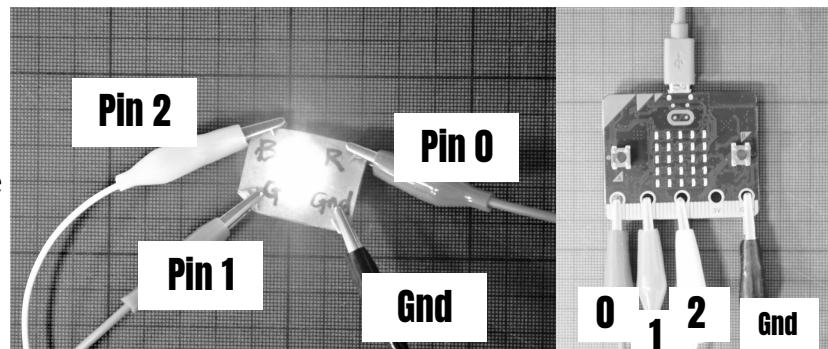
How to change the colours using a micro:bit

You will learn: how to mix colours of light using a single LED board and a micro:bit.

You will need: A home-made chameleon board, a micro:bit, four crocodile clips, a USB cable and laptop/device for programming, a bit of white paper or a ping pong ball with a hole in it.

Make your connections

Connect up the LED board and your micro:bit as in the photos. Ground to Ground, Red to Pin 0, Green to Pin 1, Blue to Pin 2.



Writing the code

Using the block coding on makecode.com, or the makecode app, **start a new micro:bit project.**



We need three bits of code to run at the same time - one to control each colour. **You will find the red blocks in the "Pins" part of the menu, and the blue blocks in "Basic".**

We have shown you the first block above. **Make a new set for each pin.**

Once you have your three bits of code, you will find that if you **click on the value in the white box, you can change it by typing**, or by dragging the slider left and right.

Remember to download your code!

If you are not sure how to do this, there is a guide at microbit.org/guide/quick/

Using the code

Tasks:

1. What happens when all of the pins are set to full power?
2. What happens when all of the pins are turned off?
3. Using just on (1023) and off (0) - can you find the secondary colours of light? The secondary colours of light are magenta (pinky purple), yellow, and cyan (light blue).
4. Once you have found magenta, try making violet (a bluey purple).
5. Try different values for the red, green and blue, and see what your bulb shows.
6. Here are some colours from the internet, with their names and numbers to show how much of each colour light to mix in.

Fill in the colours once you see what they look like.

name	shade (ish)	pin 0	pin 1	pin 2
evening sea		173	377	297
carrot orange		951	465	92
dark violet		465	64	662
ruby		899	88	357
prim		899	818	842
pacific blue		0	542	838
lime		56	846	0