

## Hack your bedroom – Constellation wall art

Transform a blank canvas into a twinkling constellation for your wall using the BBC micro:bit and some white LEDs.

Everything is housed in the back of the box canvas, allowing you to easily mount it on your wall.



### Step 1: Gather the materials

#### Components

- 1 x BBC micro:bit
- 1 x micro USB cable
- 10 x 3mm white LEDs
- 1 x box canvas 10" by 10"
- Insulated single core wire 1m (Having these in multiple colours would help ease confusion.)
- Four crocodile clips with wires attached
- Blue paint
- Masking fluid or white paint (Optional)
- 1 x breadboard (Optional)
- 2AAA battery holder for the BBC micro:bit
- 2 x AAA batteries

#### Equipment

- Soldering iron
- Lead-free solder
- Solder sponge
- Wire stripper
- Large paint brush
- Small paint brush
- Sewing needle

### Step 2: Create your constellation

Paint the entire front of your canvas blue using the blue paint.

Sketch out the desired constellation onto the canvas, and paint the masking fluid or white paint over the top.

### **Step 3: Create the circuit**

Figure out where you want your 'stars' to be – here is where you want to position your LEDs.

Using a sewing needle, poke some holes into the canvas where you want the legs of your LEDs to go.

Strip the ends of the insulated single core wires to make sure there's enough metal to solder. You can use different coloured wires for the positive and negative rails.

Poke the LED legs through the canvas and solder the wires onto their legs. You can trim the shorter legs to be even shorter to allow you to correctly identify them.

Solder all the wires from the shorter legs together to form the ground/negative rail.

Group your LEDs into three groups. For each group of LEDs, solder all the wires from the longer legs together to form the positive/power rails for that group.

Attach the positive/power rails for each group to a different pin on the BBC micro:bit – Pin 0, 1 and 2. If you want to use your BBC micro:bit for other projects as well, solder the rails onto crocodile clips before using the crocodile clips to attach the rails to the pins of the BBC micro:bit.

Attach the ground/negative rail to the GND pin on the BBC micro:bit.

Your circuit is now complete.

### **Step 4: Download the code**

Connect the BBC micro:bit to your computer using the USB cable.

Download the hex file from our Live Lessons website and drag it onto your BBC micro:bit. If you're familiar with Python, you can also download the Python file and edit it to change the way your LEDs twinkle.

### **Test and play**

Disconnect the USB cable from the BBC micro:bit and plug in your battery pack (with the batteries in it). Your constellation should now begin twinkling.