Hack your bedroom – Desktop smart light

Construct a simple lamp for your desk that turns on automatically after it goes dark.

Step 1: Gather the materials

Components

- 1 x BBC micro:bit
- 1 x micro USB cable
- 1 x BBC micro:bit breakout board
- 1x Neopixel LED
- 1 x Light Dependent Resistor (LDR)
- 5 x male-female jumper wires
- 2AAA battery holder for the BBC micro:bit
- 2 x AAA batteries

Equipment

- Soldering iron
- Lead-free solder
- Solder sponge

Step 2: Create your lampshade

You can create your own lampshade using just a piece of paper. You can download a PDF template from our website and cut it out, or design and create your own.

Step 3: Create the circuit

Solder the male ends of three male-female jumper wires to the first three legs of your LED. Bend the fourth out of the way as it isn't needed for this project.

Attach the female end of the wire that's connected to the first leg of your LED to pin0 on your BBC micro:bit using the breakout board.

Attach the female end of the wire that's connected to the second leg of your LED to 3V on your BBC micro:bit using the breakout board.

Attach the female end of the wire that's connected to the third leg of your LED to GND on your BBC micro:bit using the breakout board.

Solder the male ends of two male-female jumper wires to each leg of your LDR. Attach the female end of one wire to pin1 on your BBC micro:bit using the breakout board. Attach the other wire to 3V.

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 colours of your light and how it flashes.

Test and play

Disconnect the BBC micro:bit from your computer and plug in the battery pack (with the batteries inside).

Place the lampshade you've created over your light, allowing the LDR to poke out from under it so it can sense the light level in your room.

You've now created a desktop lamp that turns on automatically when the room is dark.