

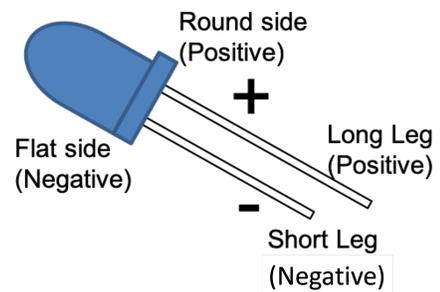
Using the Micro:Bit Base kit for DCPS Enchanted Cities.

The Base kit can be used to make Smart buildings for DCPS Enchanted Cities. In this quick lesson we will add lights to a building and make them turn on when it gets dark. As the class gains experience with MakeCode, they can use a variety of events to trigger the lights going on and off including sound (CLAP on), shaking, button pressed, etc. The class can also add other effects like sound and motion. For instance, use the motor to automatically open a door.

Get to know the components.

The Microbit – watch this video <https://microbit.org/get-started/first-steps/introduction/>

LEDs – The lights. An LED or Light Emitting Diode only pass electricity one way. For an LED to work it needs to be placed in the correct direction. The LED has two legs a long leg and a short leg. The longer leg goes to the positive side and the short leg goes to ground (GND).



Note: the positive side has a rounded bump as well. The negative side is flat.

Two different styles.

With leads (wires) – Has a resistor and wires already attached. Easier to use with the building projects.

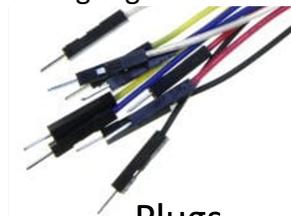
Without leads – Looks like the one shown above in blue.



Resistor – used to limit the current to the LED so it does not overheat. A resistor is built into the version with leads.



Wires – come in various colors and have plugs and sockets so they can be strung together to make longer wires.



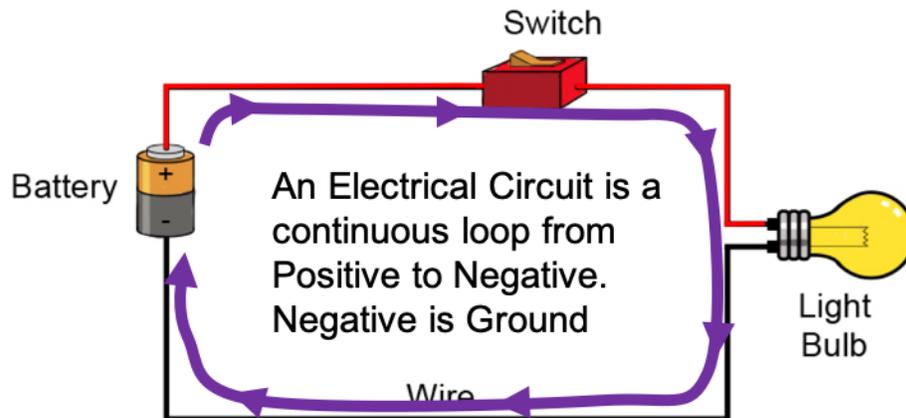
Plugs



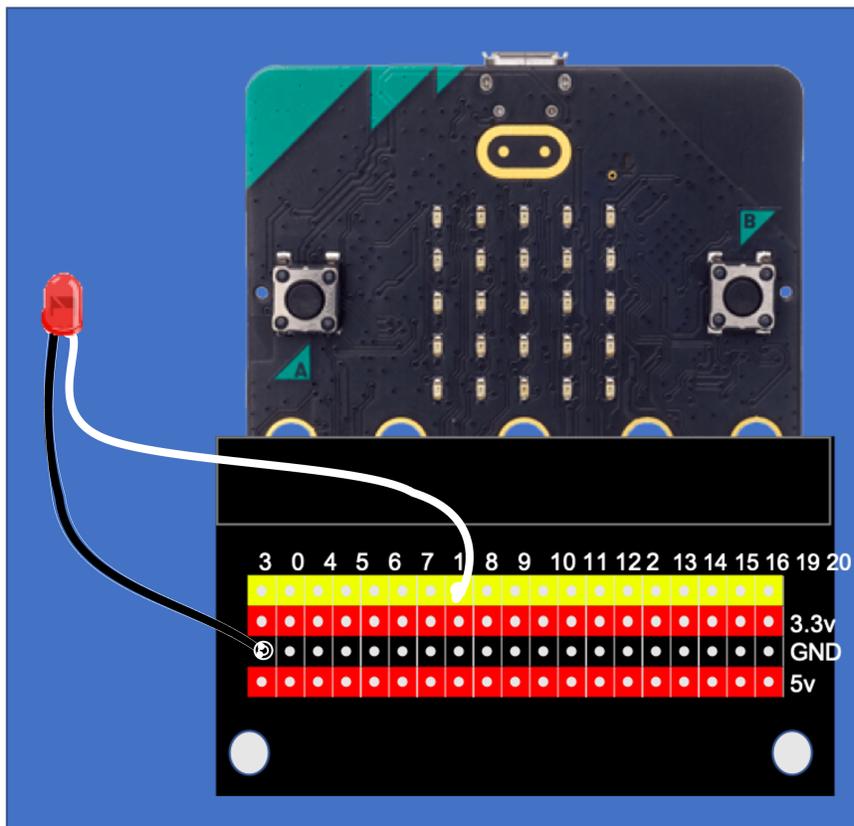
Sockets

The Circuit

As the name implies the electricity needs to complete a loop or circuit. You should be able to trace it from power to ground.



For our circuit we replace the battery with the Microbit and the switch is not a piece of hardware but code that turns the LED on and off based on a sensor, in this case a light sensor built into the Microbit.



Use the wires in the kit to make the wire longer, they can be connected together as shown in the video.

Code

Write code here: <https://makecode.microbit.org/#editor>

Experiment with the code but one options is shown.

When you are ready to run the code, follow these instructions to get the code on the Microbit.

<https://microbit.org/get-started/first-steps/set-up/>

```
forever loop
  if light level > 100 then
    digital write pin P1 to 1
  else
    digital write pin P1 to 0
```

To use the buttons, try this

```
on button A pressed
  digital write pin P1 to 1
```

```
on button B pressed
  digital write pin P1 to 0
```