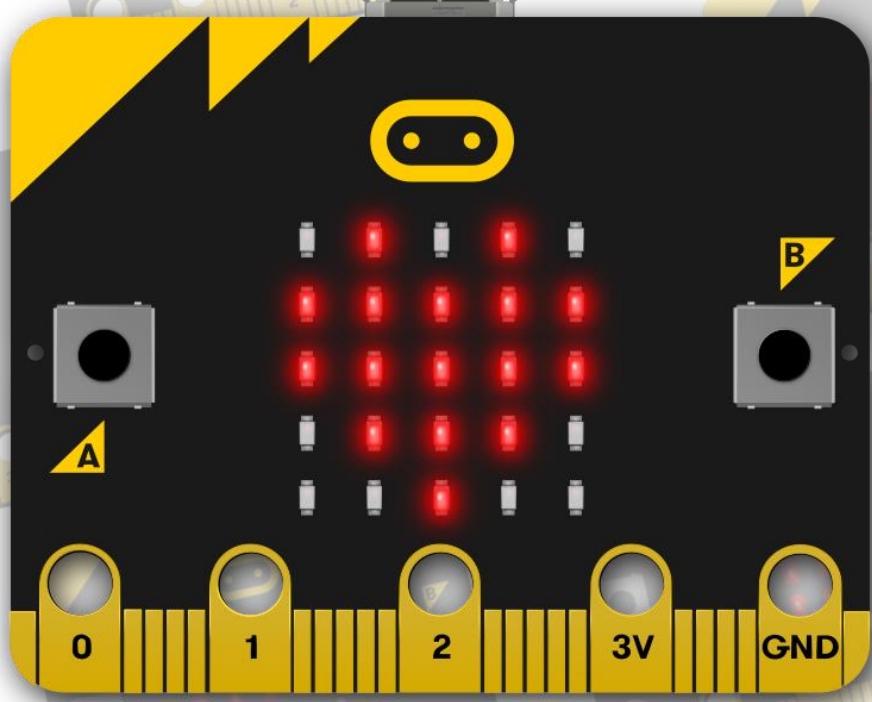


INTERNET CONNECTION
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edublocks

Making the transition from Scratch to Python easier



Controlling LEDs

MICRO:BIT EDUBLOCKS EDITOR



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EduBlocks.org
@edu_blocks

micro:bit: Controlling LEDs

Written
By: Joshua Lowe

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Objective

We are going to control an LED using the micro:bit's Edge Connector. The edge connector is the gold coloured 'pads' at the bottom of your micro:bit.

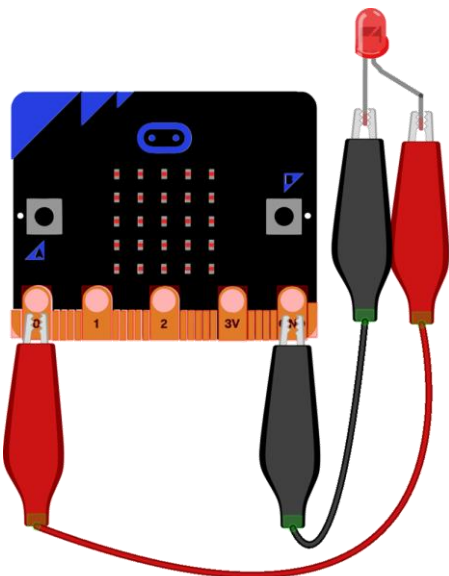
Get Started

Start by going to a web browser of your choice and heading to this website:

<https://microbit.edublocks.org>

Circuit Build

To start off, we need to wire up our LED. An LED has a long and a short leg. Long is positive and short is negative. Make sure to follow the diagram with care. Follow the wiring below:



You will need:

1x LED
2 Crocodile Clips

<https://edublocks.org>

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Let's Code

Now its time to build our code. We can drag our code blocks from the EduBlocks toolbar which is on the left hand side of the screen. Our first 3 blocks of code can be found in the Basic and Display tabs. They are colour co-ordinated. Pink blocks in Basic, and yellow in Display. Drag the blocks into the workspace as shown in the diagram below.

```
from microbit import *
```

```
while True:
```

```
on = (" 9 9 9 9 9 :"  
      9 9 9 9 9 :"  
      9 9 9 9 9 :"  
      9 9 9 9 9 :"  
      9 9 9 9 9 ")
```

```
display.show( on )
```

In this section of code we are Importing the micro:bit library and then creating an image to show when the LED is turned on, the last block displays the image.

Our next set of blocks can be found inside 2 sections. The pink ones in Basic and the red ones in Pins. This first section will turn the LED on. Make sure to put this inside the while true loop.

```
pin 0 .write_digital( 1 )
```

```
sleep( 1000 )
```

In this section of code we are turning the LED on and then waiting 1 second (1000 milliseconds)

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Let's Code

Our next bit of code will turn all the micro:bit pixels off, this will happen at the same time as when we want to turn the LED off.

```
off = (" 0 0 0 0 0 :"  
      " 0 0 0 0 0 :"  
      " 0 0 0 0 0 :"  
      " 0 0 0 0 0 :"  
      " 0 0 0 0 0 ")  
display.show( off )
```

In this section of code we are turning all the matrix pixels off. To do this, we display a blank image and then display it with the bottom block.

Now onto our final section of code, where we will turn the LED off. This section will complete our program. Again, this section is connecting under the last section we did inside the While True loop.

```
pin 0 .write_digital( 0 )  
sleep( 1000 )
```

In this section of code, we shall turn the LED off then wait for 1 second before restarting the program inside the loop.

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Save your code

Your program should look like the one below

```
from microbit import *  
while True:  
    on = (" 9 9 9 9 9 :"  
          " 9 9 9 9 9 :"  
          " 9 9 9 9 9 :"  
          " 9 9 9 9 9 :"  
          " 9 9 9 9 9 ")  
    display.show( on )  
    pin 0 .write_digital( 1 )  
    sleep( 1000 )  
    off = (" 0 0 0 0 0 :"  
           " 0 0 0 0 0 :"  
           " 0 0 0 0 0 :"  
           " 0 0 0 0 0 :"  
           " 0 0 0 0 0 ")  
    display.show( off )  
    pin 0 .write_digital( 0 )  
    sleep( 1000 )
```

Plug in your micro:bit to a USB port. To download our code onto the microbit. Click the **DOWNLOAD HEX** button in the navigation bar at the top.

 Download Hex

The file will now download to your PC. On Google Chrome, it will show at the bottom. Click on the up arrow on the grey file at the bottom and select Show in folder. Drag the highlighted file onto the micro:bit on the left hand side. For a guide on how to do this check:

uploadmymicrobit.edublocks.org

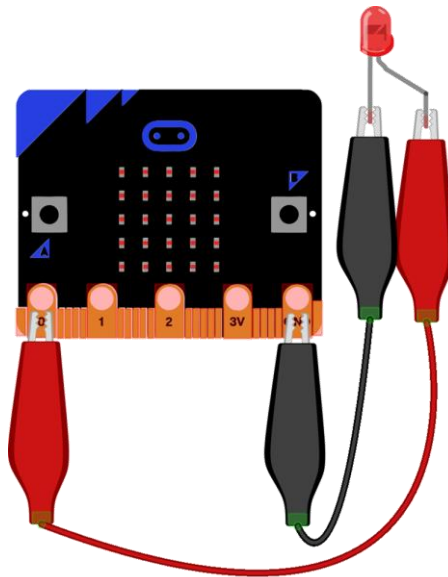
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Run your code

Now it's time to run our code. Once the file has been dragged onto the micro:bit and the orange light on the back has finished blinking, you should now be able to interact with your micro:bit. You should see the LED flash on and off and the micro:bit display also flash along side it.



Outcomes

In this tutorial we have learnt how to control LEDs with the micro:bit.

Challenge: Can you add another LED to the circuit and control it at the same time as the LED that is already connected? You could even add a piezo buzzer into the circuit too!