



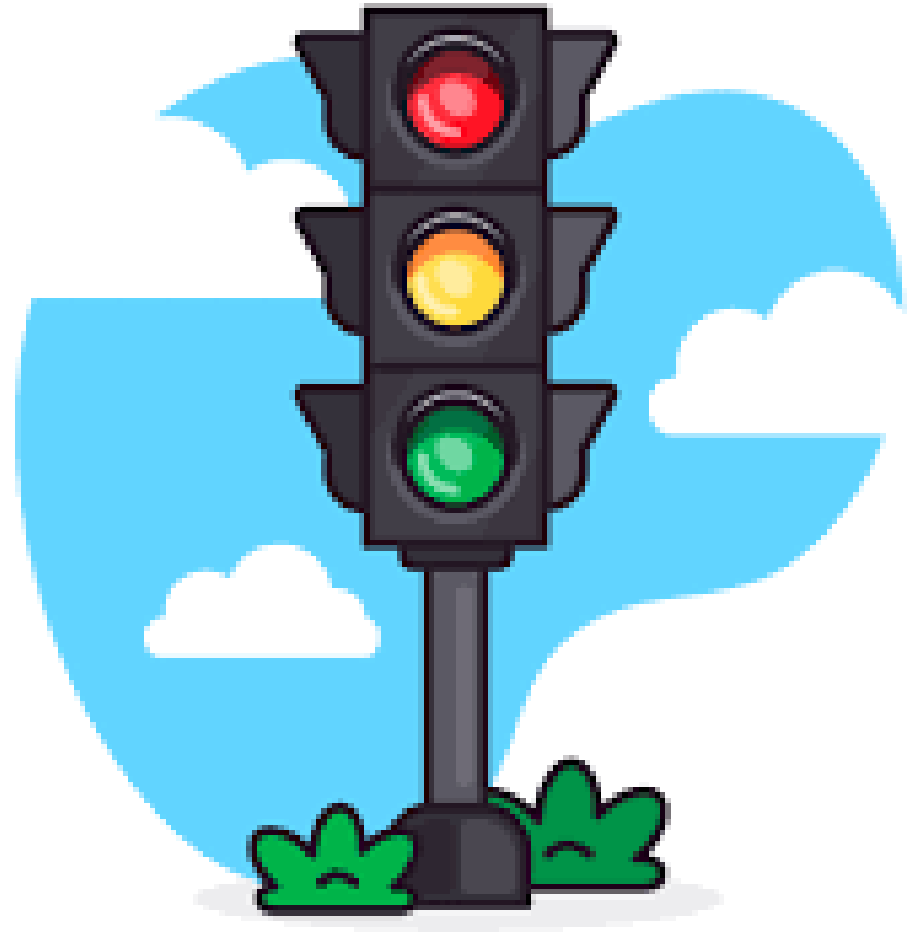
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Supporting the Professional
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Session 3

Traffic Lights





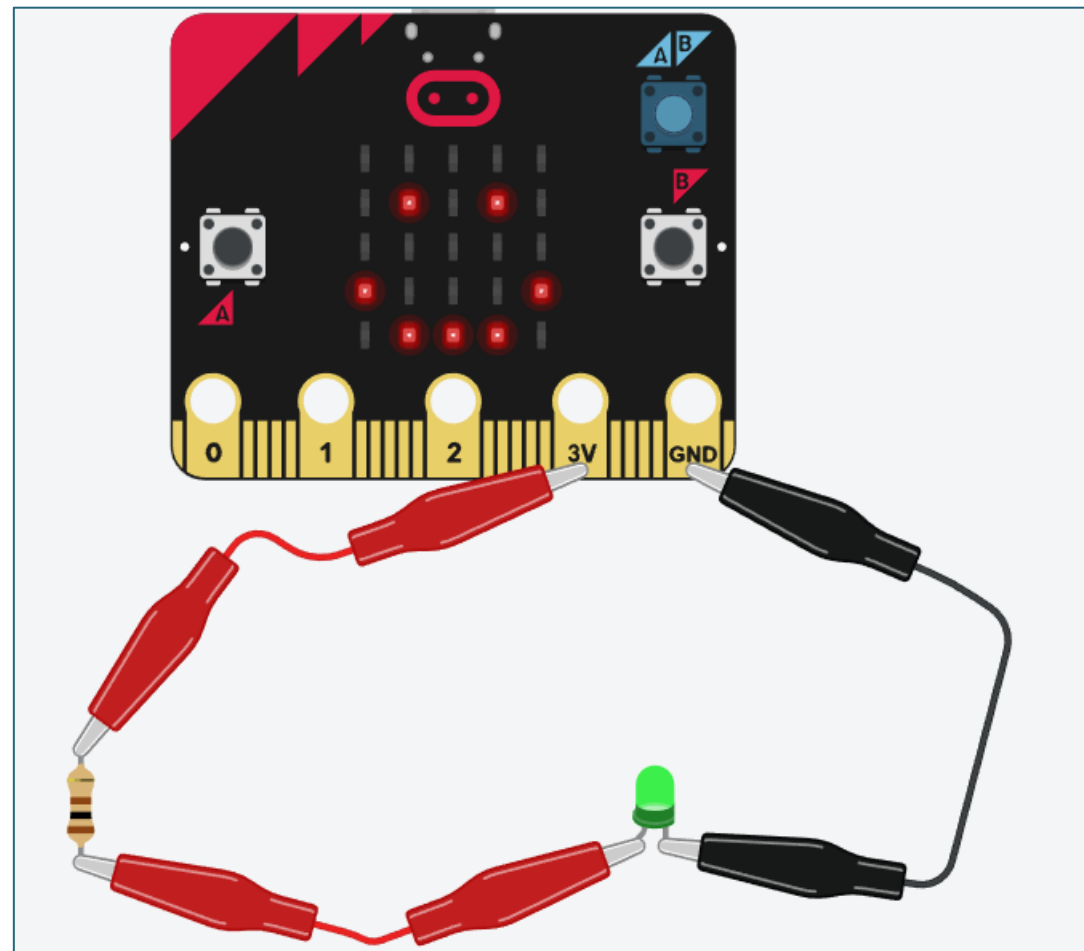
Building circuits with the micro:bit

We will...

- Learn about simple circuits
- Learn how to control digital outputs on the micro:bit
- Learn how to wire up the digital outputs on the micro:bit

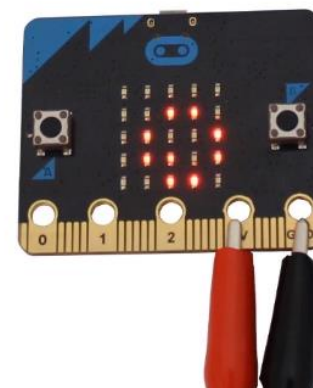
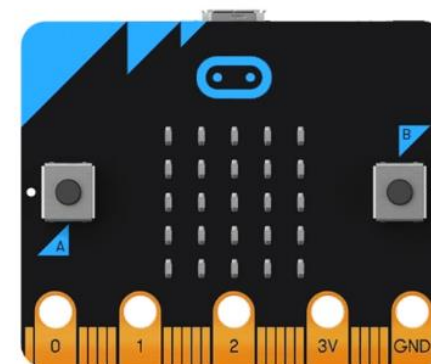
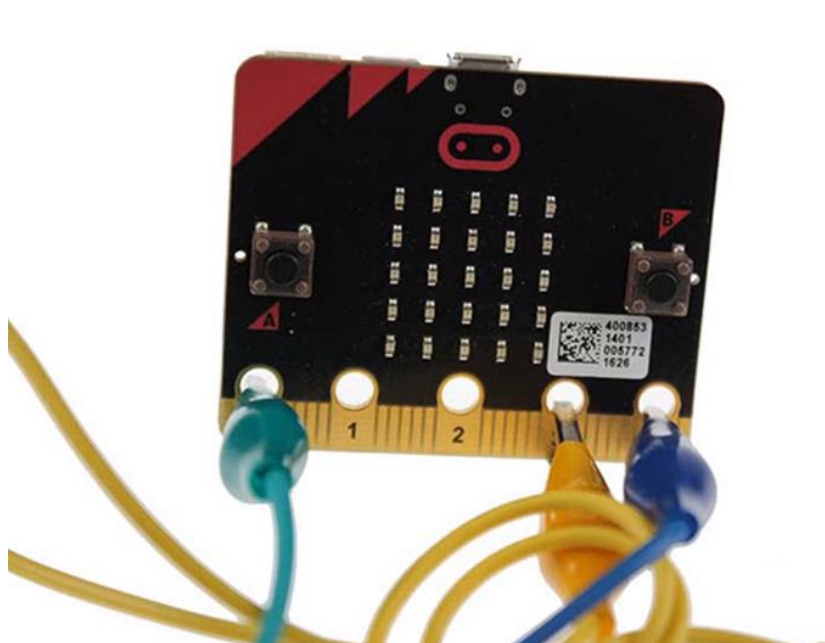


Connecting an LED





Connecting crocodile clips





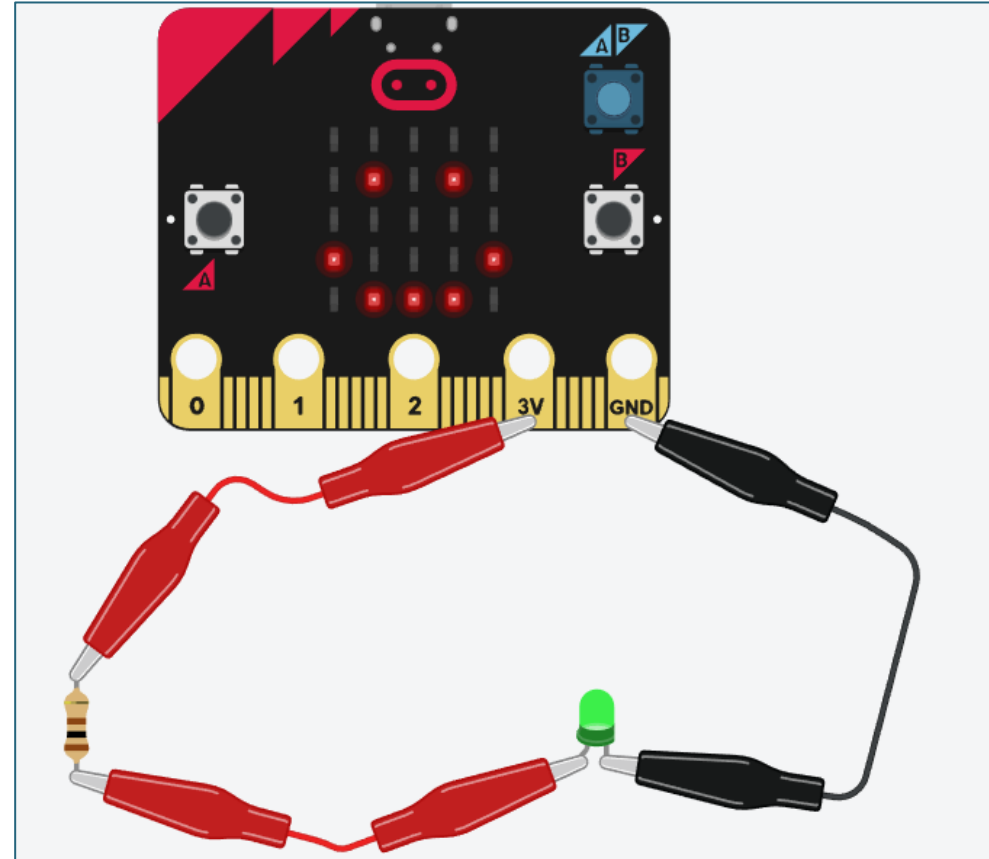
Build your circuit

You will need

- Micro:bit
- Crocodile clips
- LED
- Resistor

How can we turn the LED on and off?

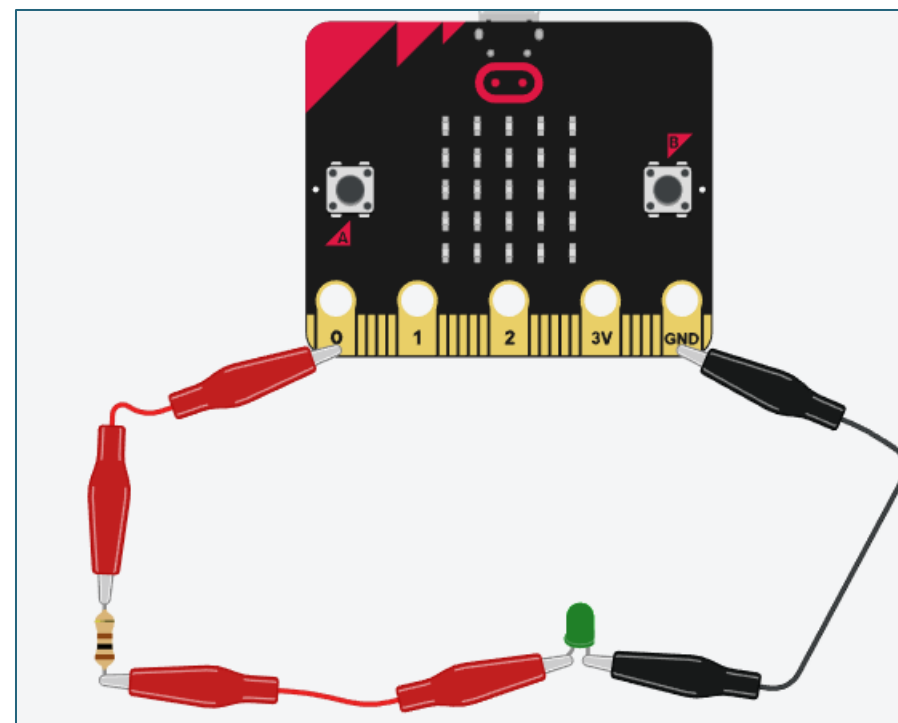
How can we CONTROL the LED?





Controlling an LED

General Purpose Input Output (GPIO) pins
0, 1, 2





Write a program to control the LED

digital write pin P0 to 0

Set a pin or connector value to either 0 or 1.

analog read pin P0

analog write pin P0 to 1023

map 0
from low 0
from high 1023
to low 0
to high 4

on button A pressed

digital write pin P0 to 0

on button B pressed

digital write pin P0 to 1



Traffic lights problem

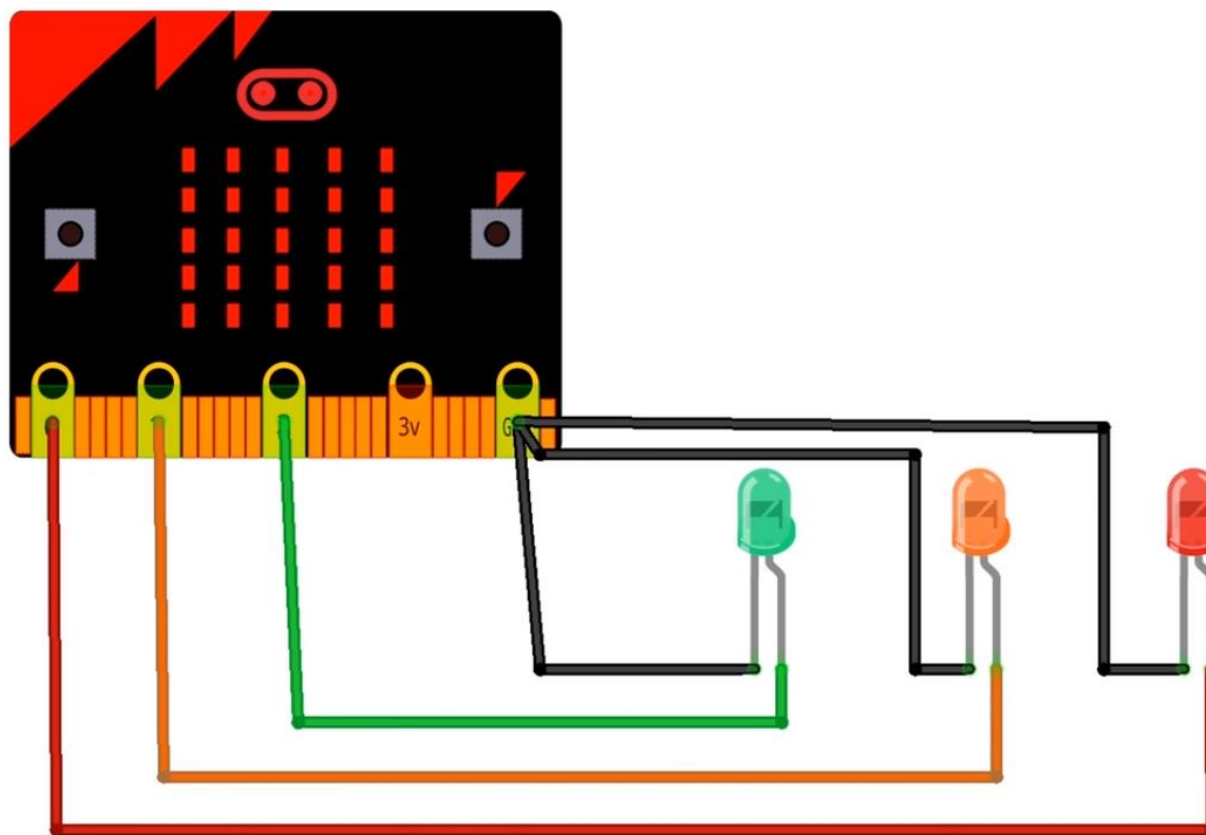
How do the traffic lights at a pedestrian crossing work?

Explain the steps one by one

Any issues that might arise?



Traffic Lights





Suggested solution

```
on start
  show string "R"
  call redON
  while true
  do
    if button A is pressed then
      pause (ms) 1000
      show string "G"
      call redOFF
      call greenON
      pause (ms) 10000
      show string "R"
      call redON
      call greenOFF
```

The code consists of the following blocks:

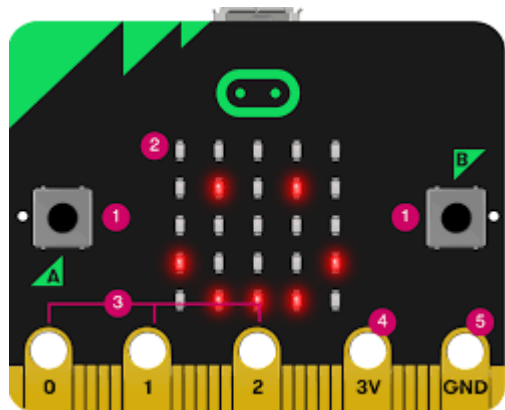
- on start** (blue):
 - show string "R"
 - call redON
 - while true (green):
 - do (green):
 - if button A is pressed then (pink):
 - pause (ms) 1000
 - show string "G"
 - call redOFF
 - call greenON
 - pause (ms) 10000
 - show string "R"
 - call redON
 - call greenOFF

Function blocks:

- function redON** (blue): digital write pin P0 to 1
- function redOFF** (blue): digital write pin P0 to 0
- function greenON** (blue): digital write pin P1 to 1
- function greenOFF** (blue): digital write pin P1 to 0



Micro:bit kits



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