Touch sensing on the micro:bit

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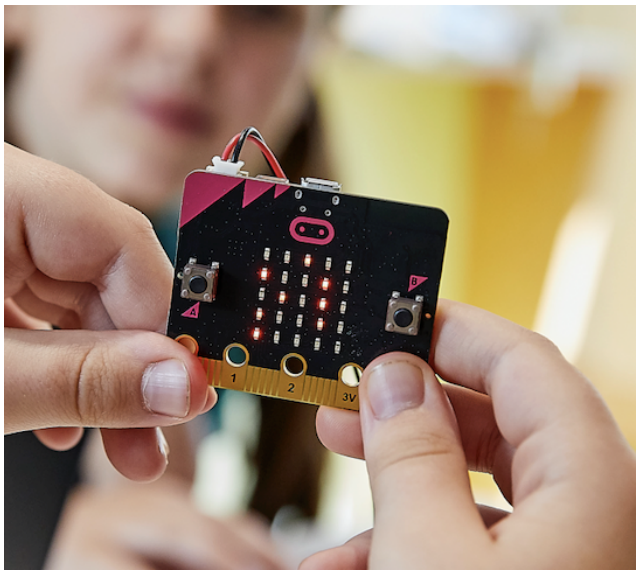
The **large pins (0,1,2)** and the **logo (V2 only)** on the micro:bit can be configured to know when they are being touched or pressed. The micro:bit **V2** is also able to use a different **touch mode,** which you are able to configure in your program.



Touch Modes

Resistive touch (default for the large pins 0, 1 and 2)
Resistive touch works by detecting a change in resistance when an electrical signal is passed through a conductive material as part of a circuit.

The human body is a conductive material, so for example, when you touch a numbered pin on the micro:bit with one finger and touch the GND pin with another finger you will complete a circuit that an electrical signal can flow through.

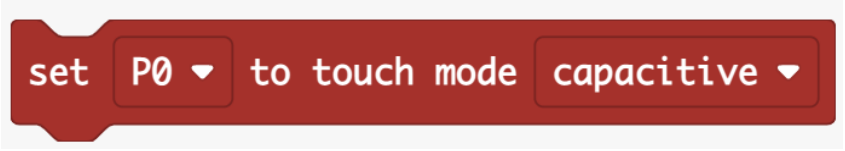
Each of these large pins has a weak **pullup** resistor connected to it, which means that by default the pin is pulled up to a voltage of 3V and when it is touched the pin is pulled down to GND or 0V. This is similar to how a button press works.

Capacitive touch (default for the logo) V2 only
Capacitive touch works by sensing changes within the electric field of a capacitor using a finger as a conductor. It will trigger as your finger touches the pin or gets very near. **Capacitive touch** (https://www.allaboutcircuits.com/technical-articles/introduction-to-capacitive-touch-sensing) does not require you to make a ground connection as part of a circuit, so you can just touch the micro:bit with one finger.

Setting the touch mode (V2 only)

It is possible to change the default settings of **resistive touch (default for the large pins 0, 1 and 2) and capacitive touch (default for the logo)** in your program.

Makecode
The **set pin to touch mode** (https://makecode.microbit.org/reference/pins/touch-set-mode)block can be found in the **Pins > … more > micro:bit(V2) toolbox**

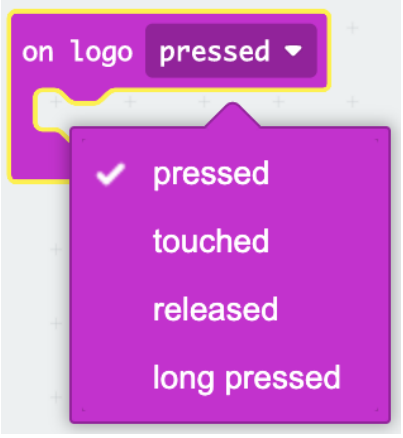


MicroPython
The **set touch mode API** (https://microbit-micropython.readthedocs.io/en/v2-docs/pin.html#microbit.MicroBitTouchPin.set_touch_mode) can be used to define the touch mode for a pin.

```
pin0.set_touch_mode(pin0.CAPACITIVE)
```

Python

What is the difference between touched and pressed?



Depending on how you interact with the pin, you can trigger several different time-based events:

Touched is triggered as soon as a finger touches a pin.

0:00

Pressed is triggered when a finger is pressed down on a pin and then released up from it.

0:00

Released is triggered when a finger is released from a pin.

0:00

Long pressed is triggered if the pin is held down for longer than 1 second before being released.

Example: If you touch a pin and then release your finger from the pin you will trigger a **touched** event followed by a **pressed** and **released** event. This is similar to how keypresses are detected on a computer or phone keyboard.

Read more about the **micro:bit events and how they are scheduled in MakeCode.** (https://makecode.microbit.org/device/reactive)