1 - Sensors

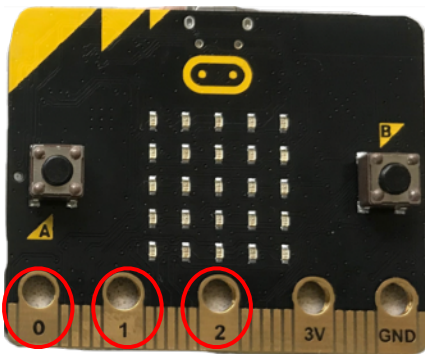Libraries: [Libraries +] 🟪 **Basic Sensors** 🟦 **LED Display**

The micro:bit has many sensors built right in! They include pushbuttons, 3-axis tilt, light level, and temperature.

Try clicking the "button A" block while holding down the A button. Then release the button and click the block again. Do you see how MicroBlocks shows whether or not the button is pressed?

Input
- button A
- button B

Pins
- read digital pin 5
- read digital pin 11

Basic Sensors
- tilt x → -37
- light level → 215
- temperature (°C) → 21

Use the "say" block in a forever loop to monitor various sensors. (Only run one forever loop at a time, or add all sensors into one "say" block.)

forever → say button A → false

forever → say light level → 55 → wait 100 millisecs

forever → say tilt x tilt y → 29 97 → wait 100 millisecs

Challenge: The micro:bit and BitMaker expose pins 0, 1, and 2 on the bottom edge connector. "Say" the **analog** value of each pin while you touch it. Do the values change as you brush your finger over each pin?
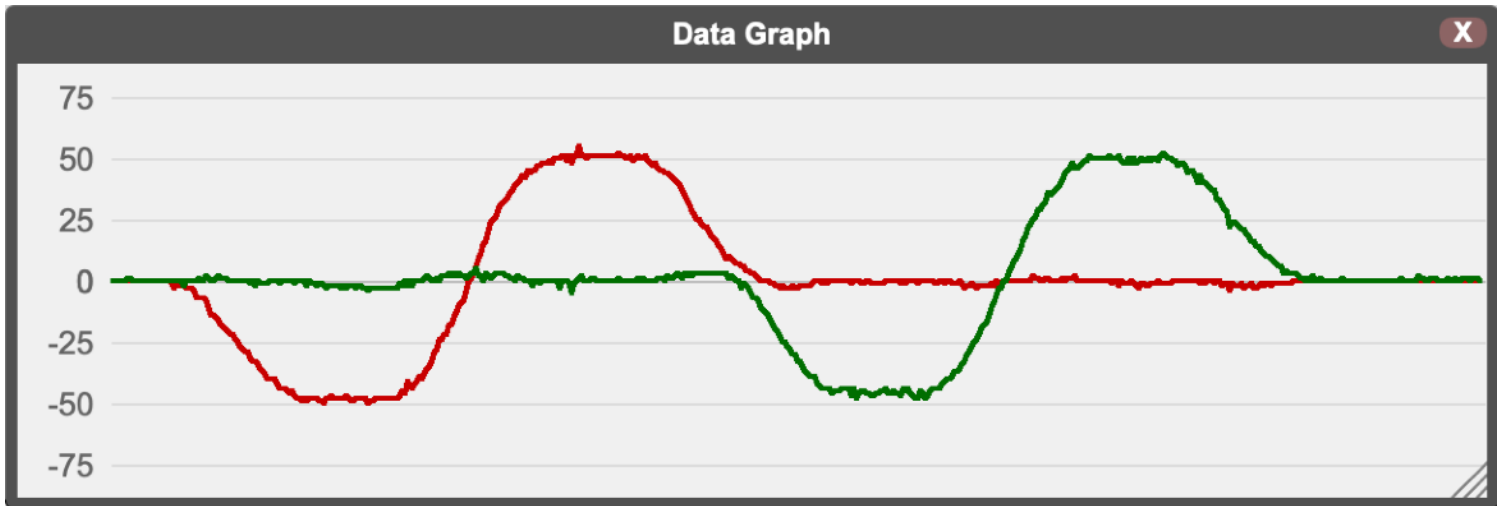
read analog pin 0 ▶

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2 - Graphing

Seeing data on a graph is very helpful. Try putting various sensors, like tilt, in the graph block. Then click 📈 .

```
forever
  graph  tilt x  tilt y  ◀▶
  wait  10  millisecs
```

Data Graph   ✕

```
 75
 50
 25
  0
-25
-50
-75
```

You can use tilt x to create a left and right turn signal as shown here.

```
when  tilt x  <  -40
  display
  [LED pattern]
  wait 100 millisecs
  clear display
  wait 100 millisecs
```

```
when  tilt x  >  40
  display
  [LED pattern]
  wait 100 millisecs
  clear display
  wait 100 millisecs
```

Challenge: Can you create a "night light" that turns on automatically if it's dark? How about graphing the temperature and light level each minute overnight? Do you have external sensors you can attach to the micro:bit?

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