Micro:bit Cheat Sheets

Want to start coding? Go to https://makecode.microbit.org/

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CODE
Activates certain outputs when the input conditions are how you want them

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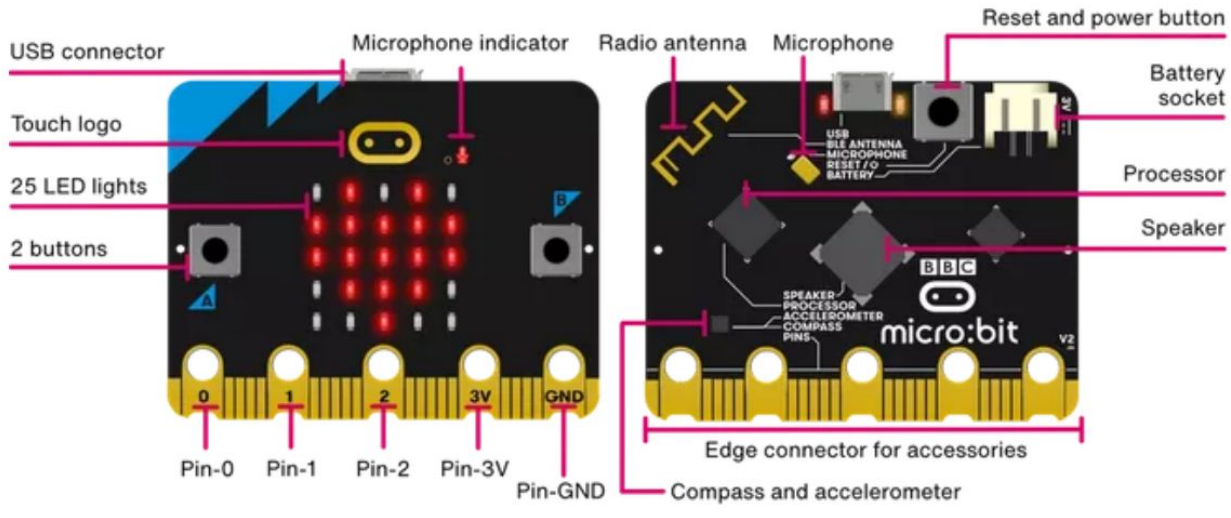
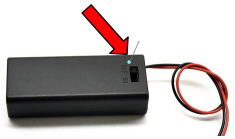


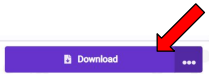
Downloading to your micro:bit

See your code in action

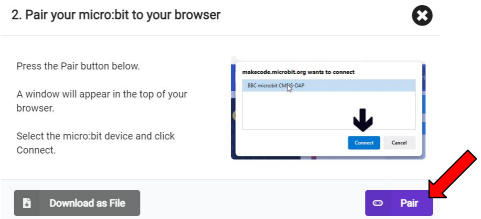


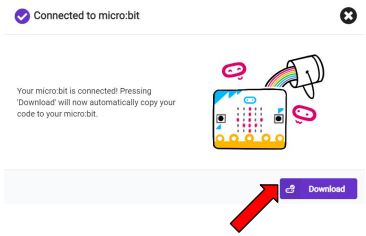
Step 1: Turn the switch on the micro:bit batteries to OFF

Step 2: Use the USB cord to connect the micro:bit to your computer



Step 3: Click the download button on your computer

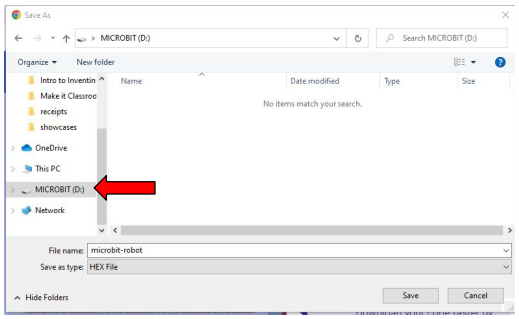




Step 4: Follow the instructions on the screen to Pair your micro:bit with the computer.

Step 5: Once connected to micro:bit, press the download button. Your download should start, and the yellow light on your micro:bit should flash.

Step 6: When the light stops flashing, disconnect your micro:bit from the computer and turn the batteries on.



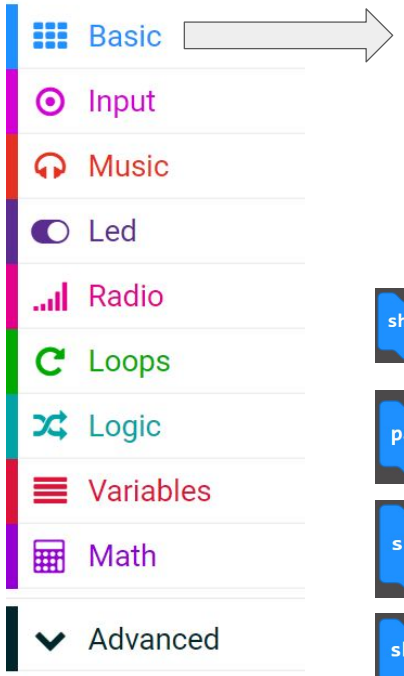
Something didn't work? Try this next.

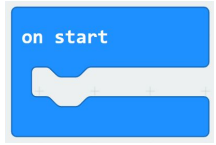
Step 7: Click Download as File. Make sure the code file is downloading to the micro:bit, not your computer. The light on the back of the micro:bit will flash.

Micro:bit Cheat Sheets

Basic Blocks

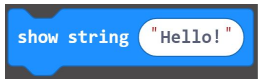
Display things on the screen and control timing





Do something once on startup.

Do something repeatedly.



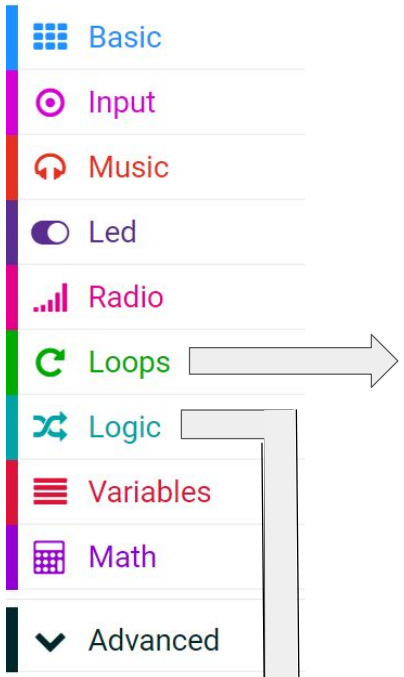
Show text that moves across the screen. You can type any words.

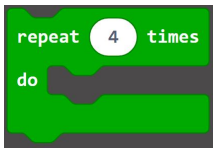
Wait for some time. 1000 ms is 1 second.

Show your choice of several different pictures.

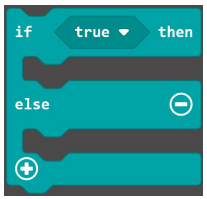
Show a custom icon that you design

Other Useful Blocks





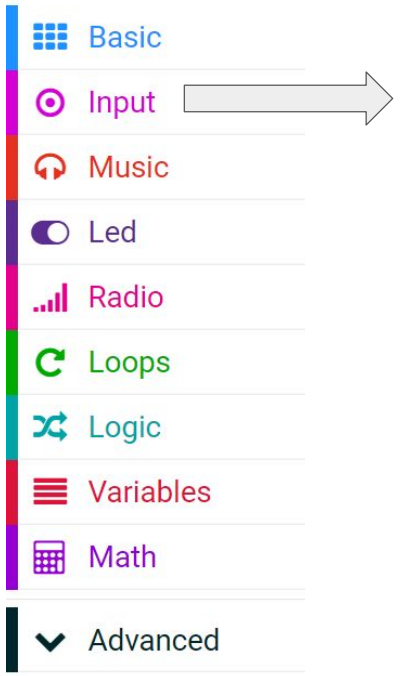
Repeat any code by placing it inside of a loop.

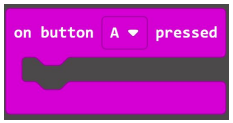


If...then statements cause an output based on different conditions (if

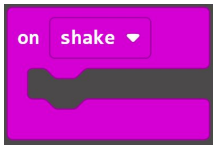
Input Blocks

Choose things to start other code



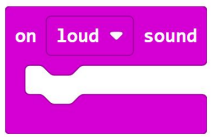


Do something when a button is pressed.

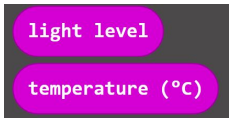


Do something when the microbit is moved (accelerometer).

Do something when pin 0 is pressed (touch/connectivity).



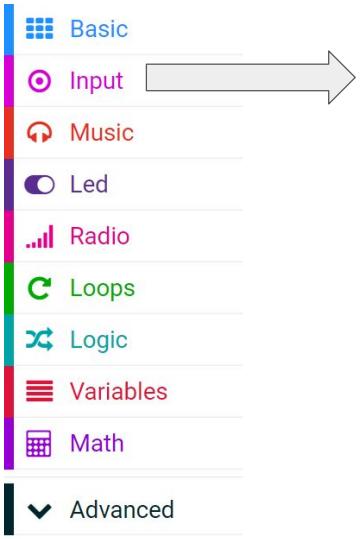
Do something when a sound is detected.

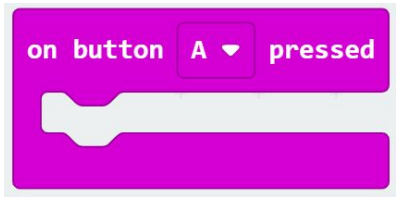


Inputs for light and temperature sensors.

Button

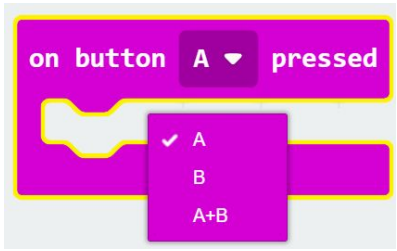
React to being pressed





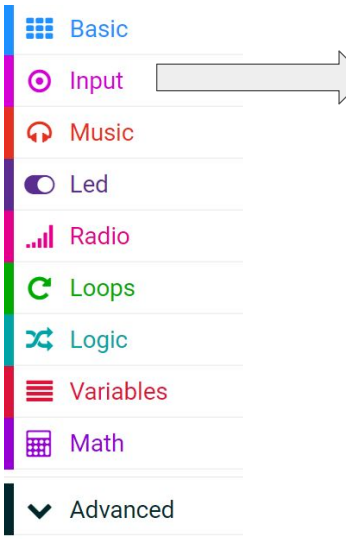
When button A is pressed, any code you put inside this block will run.

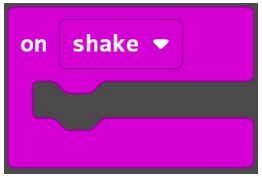
Instead of making button A activate the code, you can make button B activate the code, or you can make the code activate only when both buttons are pressed at the same time.



Accelerometer

Know when the micro:bit moves



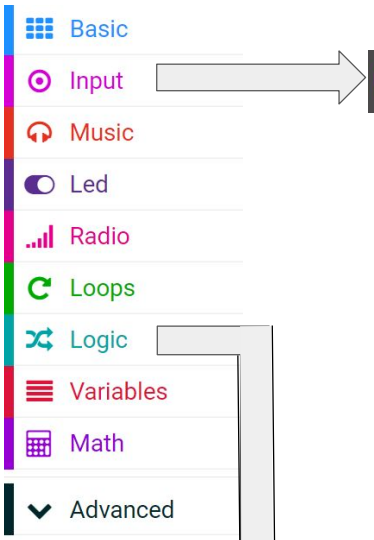


When micro:bit is shaken, any code you put inside this block will run.

Instead of making a shake activate the code, you can make other gestures activate the code.

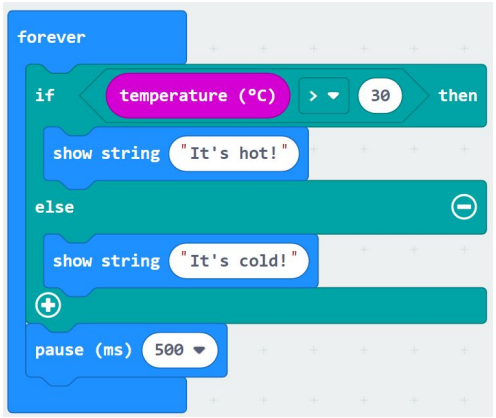
Temperature Sensor

Determine how hot or cold the room/world is, in degrees Celsius.

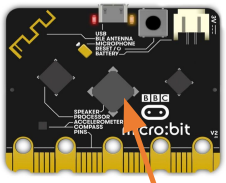


You can insert this temperature block into several other blocks.

This code will display the current temperature on the micro:bit screen. The pause gives you time to see it before it measures another temperature.



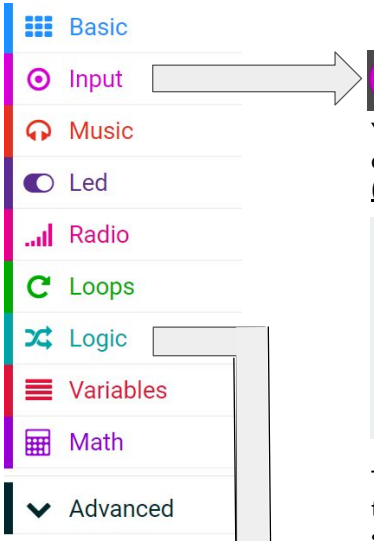
This code displays either “It’s hot!”, or “It’s cold!”, depending on the temperature.



The temperature sensor is in the processor.

Light Sensor

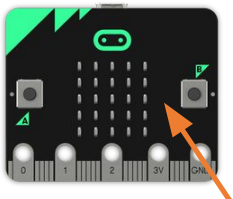
Determine how bright or dark the room/world is, on a scale from 0 to 255



You can insert this light level block into several other blocks. It measures from 0 (no light) to 255 (very bright).

This code will display the current brightness level on the micro:bit screen. The pause gives you time to see it before it measures another time.

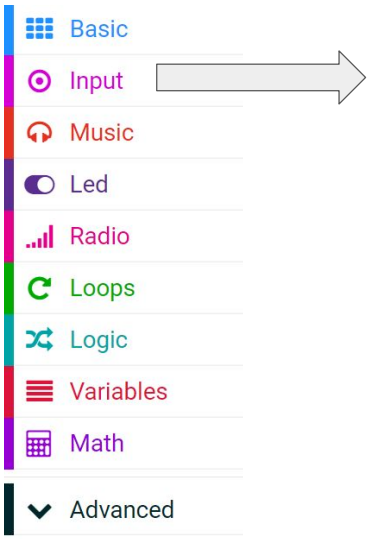
This code displays either “It’s daytime!”, or “It’s nighttime!”, depending on how bright it is.



The light sensor is in the LED display.

Logo

Know when the micro:bit logo in touched



When micro:bit logo is pressed, any code you put inside this block will run.

Instead of making a press, you can change to touch, release, or long pressed.

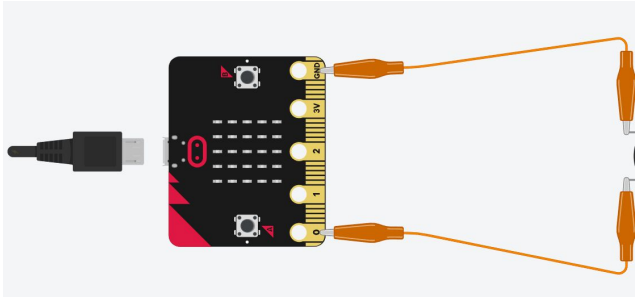
With touched or released, you may need to use a pause block as part of your code, so that the code has time to run after the input is triggered.

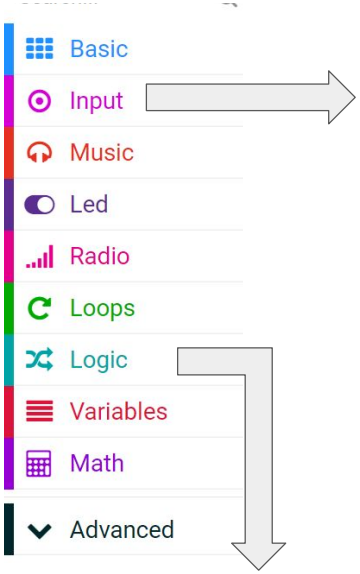
Micro:bit Cheat Sheets

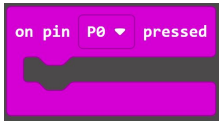
Input (Sensor)

Touch/Connectivity Sensor

Know when two wires are connected to pins



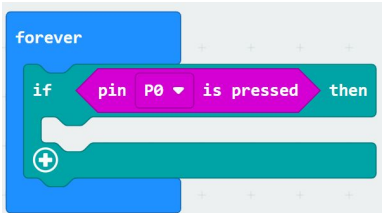




When the 0 wire is connected to the Gnd wire and then released within 1 second, any code inside this block will run.

The wires can be connected by touching them together, or by placing any conductive material between them, like aluminum foil or water.

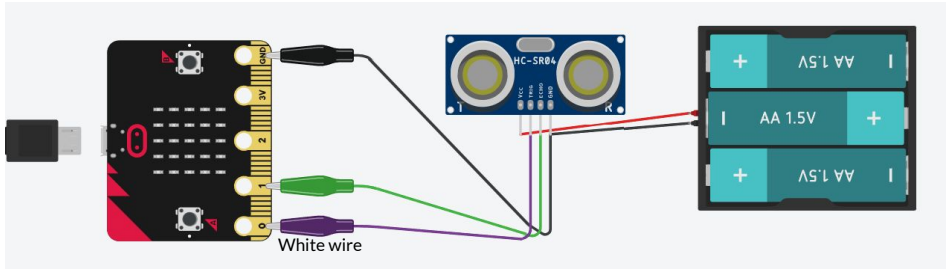
WARNING: Do not get water on the micro:bit itself.

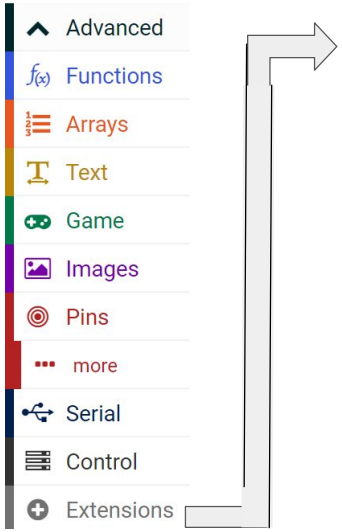


This code continually runs the code you place inside of it for as long as the two wires are touching.

External Distance Sensor

Measure how far away a target is



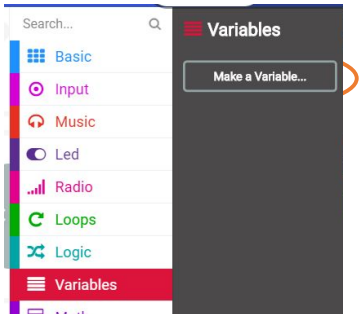


Search “sonar” and add the sonar extension.

On the main screen, go to the sonar menu. There is one option for a block to use.

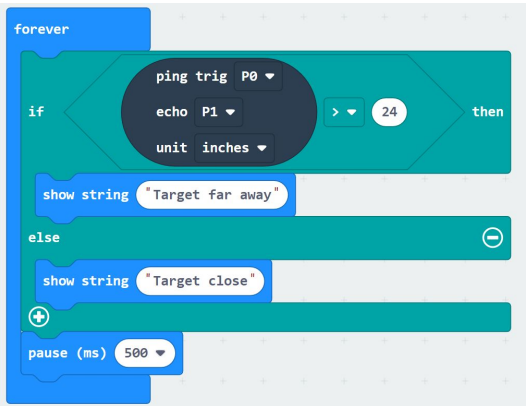
ping trig = where you connected your white wire
echo = where you connected your green wire
units = change this to cm (centimeters)

Distance Sensor continued



To show on the screen how far the distance sensor is from an object, you need to create a variable. Name it “distance”

Then, use your sonor block and distance variable. This code shows the distance to an object when button A is pressed.

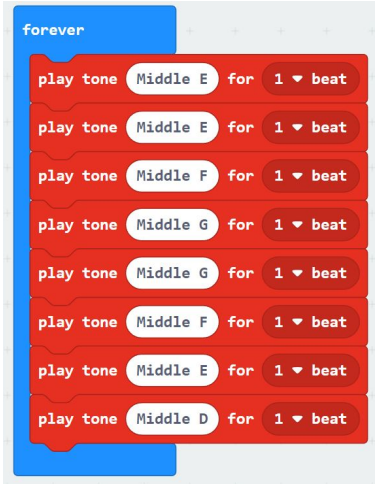


This code shows different messages depending how far away the object is.

You can change the “show string” block to any code (including moving the servo).

Sounds

Play musical notes of your choice

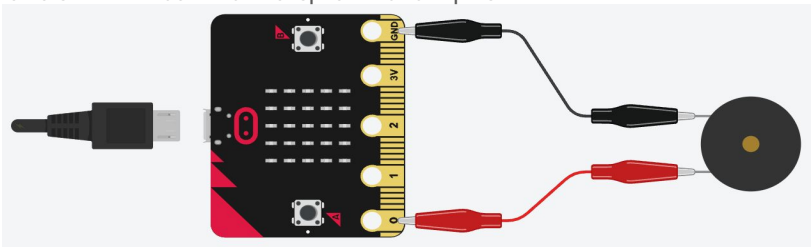


Write your own song. Change the “Middle C” value to whatever note you want to play.

Change the “1 beat” value to how long you want to note to play.

Put multiple blocks together to make your song. To play a melody over and over, put your code into a forever block.

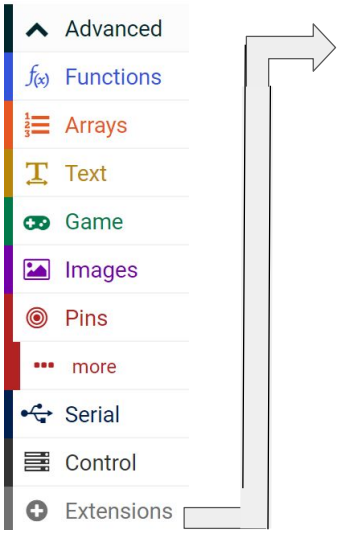
You can also connect an external speaker to the pins



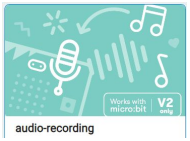
The speakers must connect to P0

Recording Audio

Create your own sound to play



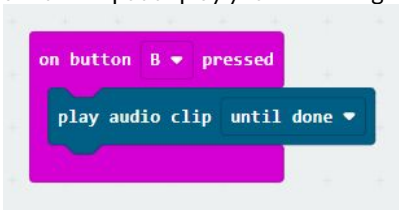
Search “audio recording” and add the extension.



On the main menu screen, go to the Record menu.

Choose one input to start your recording

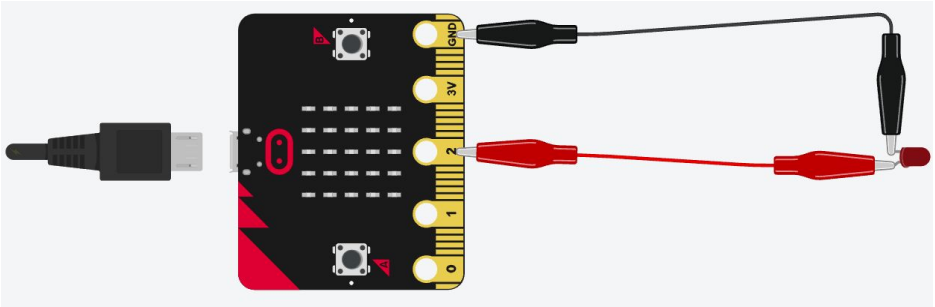
Choose another input to play your recording

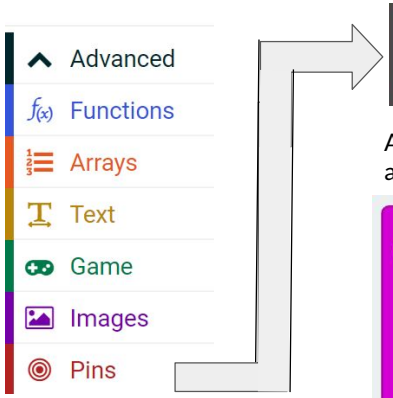


Note: the micro:bit can only store one recording at a time, so if you re-record, it will erase your previous recording.

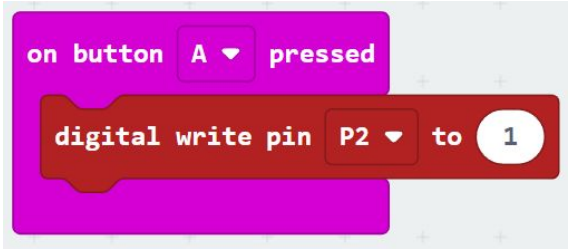
External LED Light

Illuminate a separate light from the Micro:bit





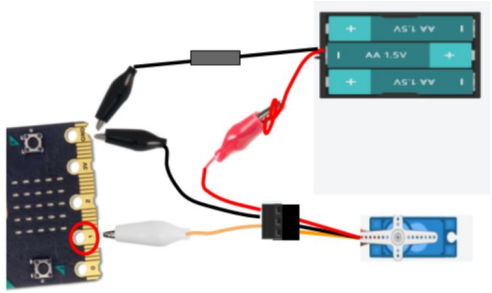
Attach your LED to either P1 or P2 (P2 in the picture above).

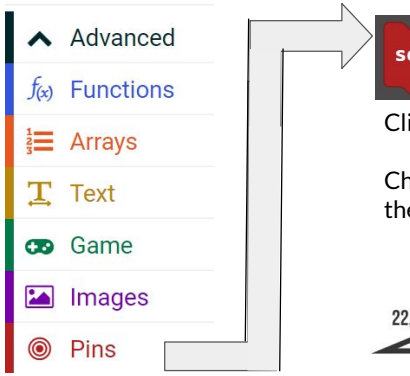


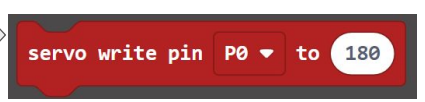
A value of “0” means the LED is turned off.
A value of “1” means the LED is turned on.

Servo Motor

Rotate to a position of your choice

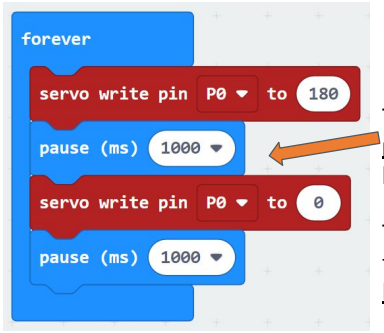






Click “Advanced”, then “Pins” to find the servo code.

Change the “180” value to change where you want the servo to move.

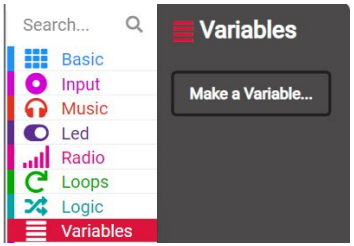


This code moves the servo back and forth. The **pause** gives the motor time to get to the location, before moving to the next spot.

The forever means the motor will keep moving back the forth. You can use a different block here (like On Button A).

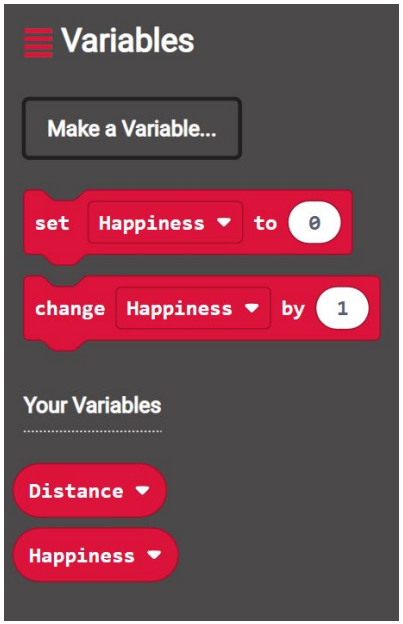
Variables

Create and measure values for sets of data



The variable menu will start out empty.

Create and name the new variable that needs to be measured.



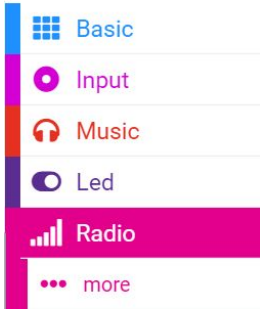
This block gives your variable a number value to start with.

This block will change/add the value (every second) by the number in the white bubble.

Any created variables are now listed here. These will be the choices available in the drop down menu.

Radio

Send radio signals to other micro:bits



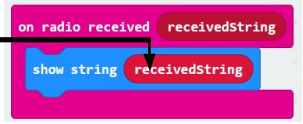
Micro:bits communicate by being in the same radio group. Place this block in a “forever” or “on start” block. Choose a group number (1-50) and type it into the bubble. Check that your group number is the same as the micro:bit you want to send messages to.

Sending Messages

To send the first message, attach one of these blocks into a “input” block. Then write a simple message.

Receiving Messages

Use the “on radio received block” to accept the message. To read the message, drag the “receivedString” bubble and place it in a “show string” block.



If you want to send a response, add the “radio send string” block with your message.