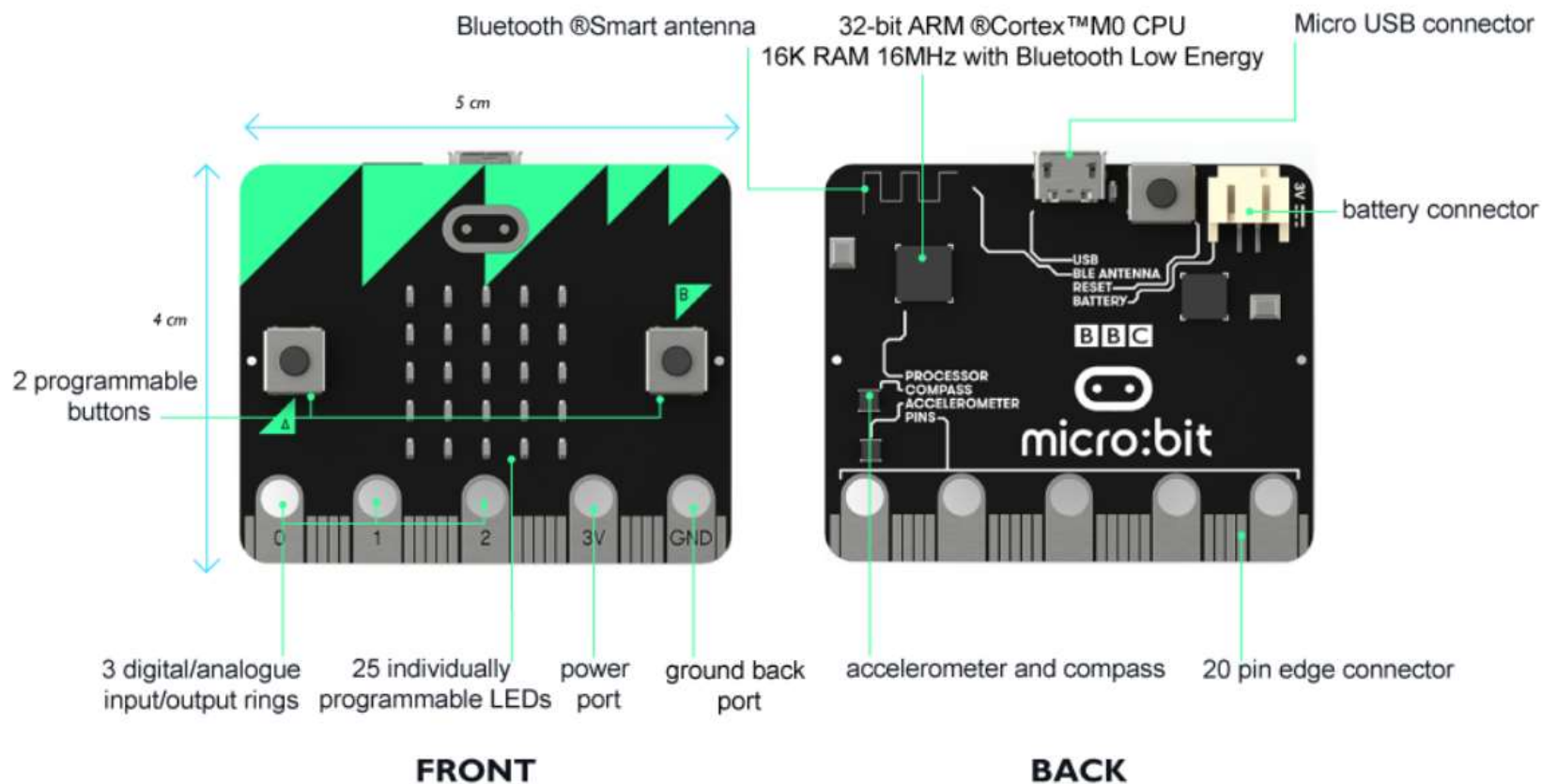


A background graphic showing a world map in shades of blue and green. Overlaid on the map are various white icons representing technology and communication: a camera, an envelope, a Bluetooth symbol, a smartphone, a Wi-Fi symbol, a camera, a Wi-Fi symbol, a headset, a camera, a Wi-Fi symbol, and a camera. These icons are connected by white curved lines, suggesting a global network or data flow.

Mirco:bit

By DTSL

Micro:bit



Connection to PC

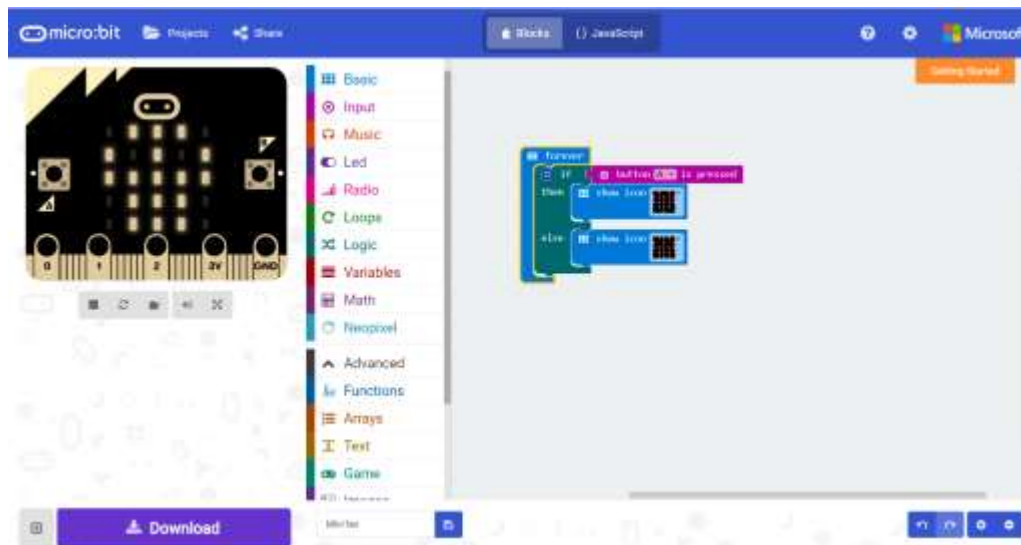
Step 1

Connect the micro:bit to your computer via micro USB cable.

Step 2

Go to <https://makecode.microbit.org/>

Write your code to run the micro:bit. You can drag and drop some blocks and try your program on the Simulator in the website.



Connection to PC

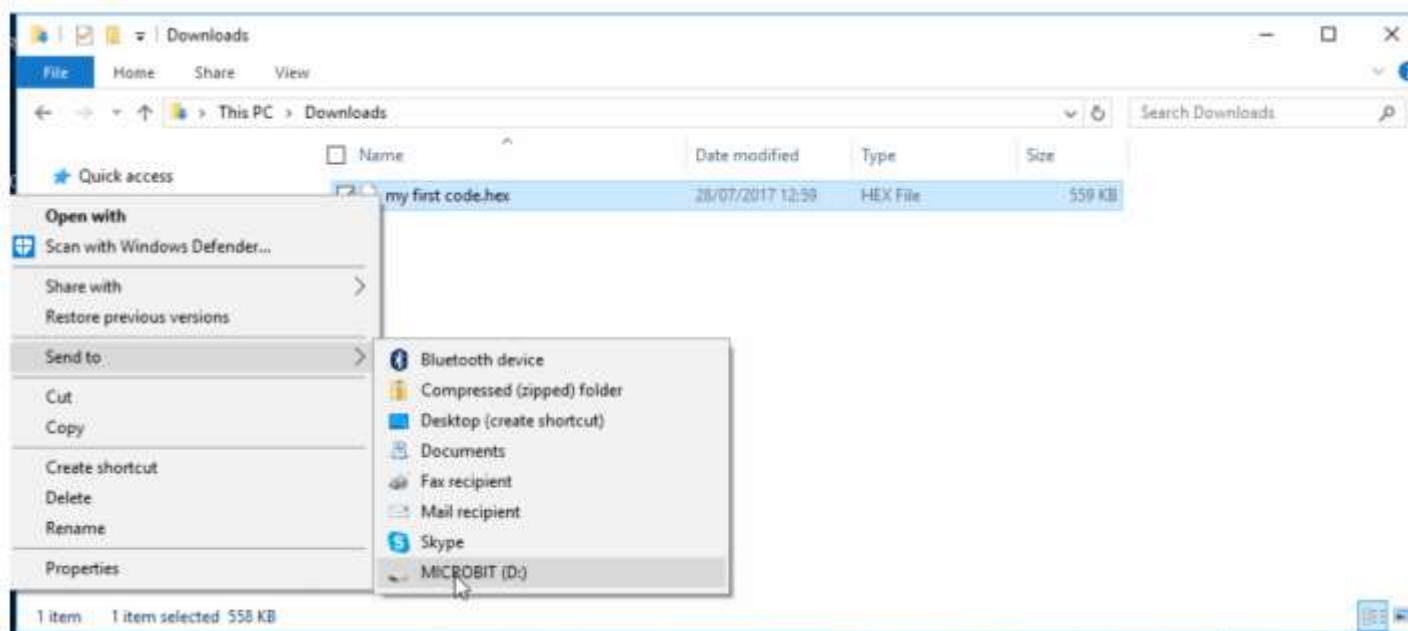
Step 3

Download the code file in .hex format.



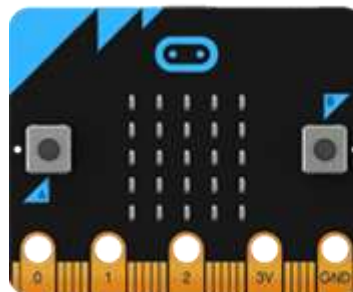
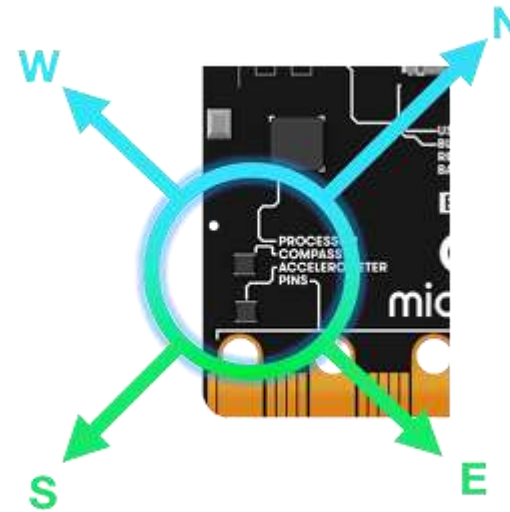
Step 4

Send the file to the micro:bit usb drive.



Features

1. 25 LEDs
2. 2 Buttons
3. Light Sensor
4. Temperature Sensor
5. Accelerometer
6. Compass
7. Radio
8. Bluetooth
9. 3.5mm audio (extension)



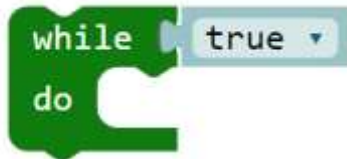
Common command



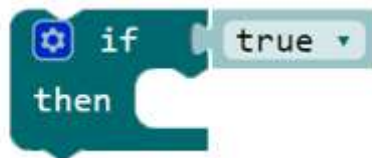
Repeat the statement inside forever



Do the statement inside **once**



Repeat the action while condition is met.



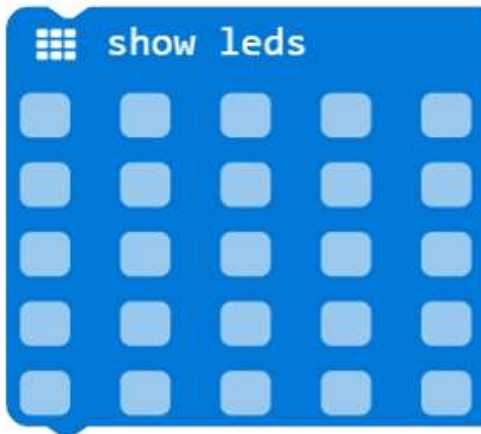
Do the action once if condition is met.



Create a variable and store it for later usage.
(Can be numbers, string, series of action...)



LED



LED can show **Icon, String and Numbers**

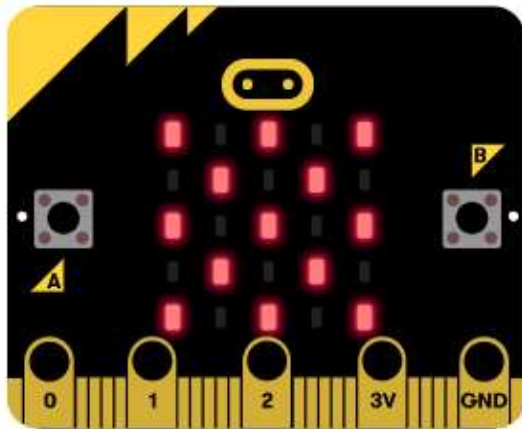


LED

```
plot x 0 y 0
```

```
unplot x 0 y 0
```

The micro:bit LED screen consists of 25 red LED lights arranged in a 5X5 grid. You use (x ,y) coordinates to specify a particular LED in the grid.



(0,0)	(1,0)	(2,0)	(3,0)	(4,0)
(0,1)	(1,1)	(2,1)	(3,1)	(4,1)
(0,2)	(1,2)	(2,2)	(3,2)	(4,2)
(0,3)	(1,3)	(2,3)	(3,3)	(4,3)
(0,4)	(1,4)	(2,4)	(3,4)	(4,4)



LED

Example: Turn a LED on/off

```
on start
  plot x 0 y 0
  plot x 1 y 1
  pause (ms) 1000
  unplot x 0 y 0
  pause (ms) 1000
  unplot x 1 y 1
```

Example: Heart Beat

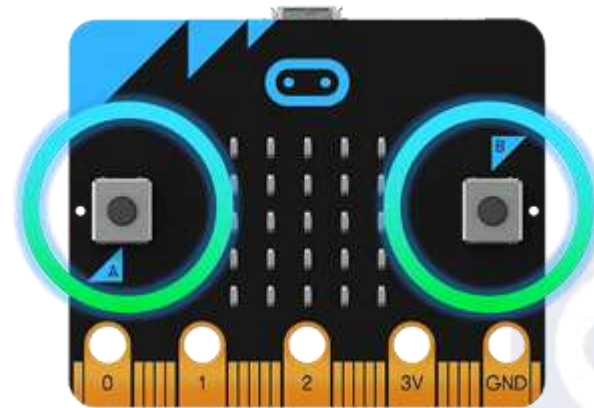
```
forever
  show icon [Heart Beat Icon]
  pause (ms) 100
  show icon [Heart Beat Icon]
  pause (ms) 100
```



Button

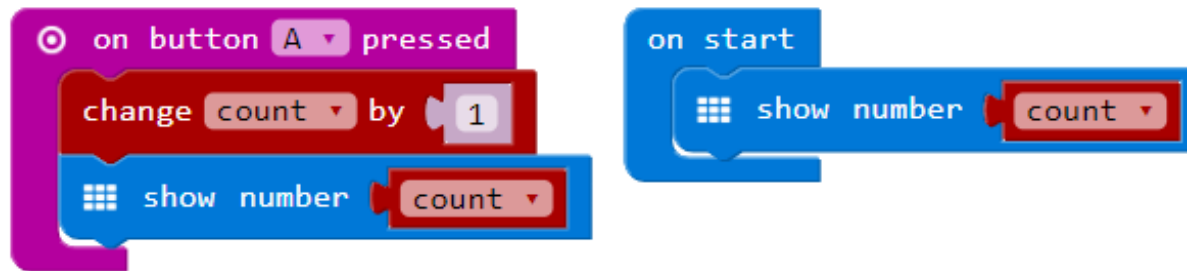
Start an **event handler** (part of the program that will run when something happens, like when a button is pressed). This handler works when button A or B is pressed, or A and B together. When you are using this function in a web browser, click the buttons on the screen instead of the ones on the micro:bit.

Event handler



Button

Example: count button clicks



Accelerometer

An accelerometer measures the acceleration of your micro:bit; this component senses when the micro:bit is moved. It can also detect other actions, e.g. shake, tilt, and free-fall. Start an event handler (part of the program that will run when something happens) This handler works when you do a **gesture** (like shaking the micro:bit).



Accelerometer

Example: Random number

```
on shake
  set x to pick random 0 to 9
  basic.showNumber(x, 100)
```



Light Sensor

Micro:bit can find the light level (how bright or dark it is). The light level 0 means darkness and 255 means bright light. By reversing the LEDs of the screen to become an input, the LED screen works as a basic light sensor, allowing you to detect ambient light.



Light Sensor

Example: show light level

```
on button B pressed
  set level to light level
  show number level
```



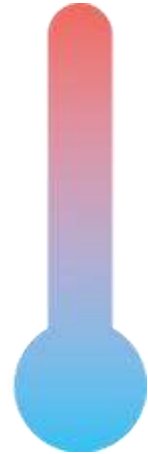
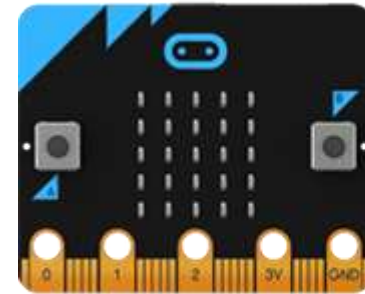
Example: chart light level

```
forever
  plot bar graph of light level
  up to 255
```



Temperature Sensor

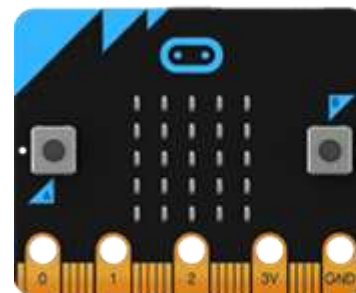
Find the temperature where you are. The temperature is measured in Celsius (metric). The micro:bit can find the temperature nearby by checking how hot its computer chips are.



Temperature Sensor

Example: Thermometer

```
forever
  set temp to temperature (°C)
  show number temp
```



Example: Fahrenheit thermometer

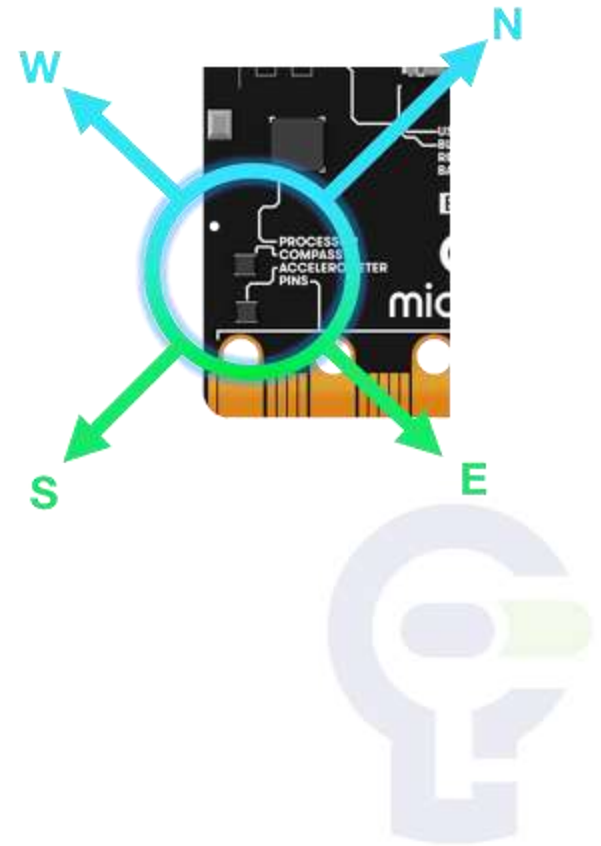
```
forever
  set c to temperature (°C)
  set f to (c * 18 ÷ 10 + 32)
  show number f
```



Compass

The compass detects the earth's magnetic field, allowing you to detect which direction the micro:bit is facing. The compass has to be calibrated before it can be used.

When the calibration begins, the micro:bit will scroll an instruction on the display for you - either "Draw a circle" or "Tilt to fill screen". To calibrate the compass, just follow these instructions and tilt the micro:bit to move the dot in the centre of the screen around until you have either drawn the outline of a circle, or filled up the whole screen.



Compass

Example: compass

```
forever
  set degrees to compass heading (°)
  if degrees < 45
  then show arrow North
  else if degrees < 135
  then show arrow West
  else if degrees < 225
  then show arrow South
  else if degrees < 315
  then show arrow East
  else show arrow North
```



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