

Student workbook

Micro:bit tools

Code Playground



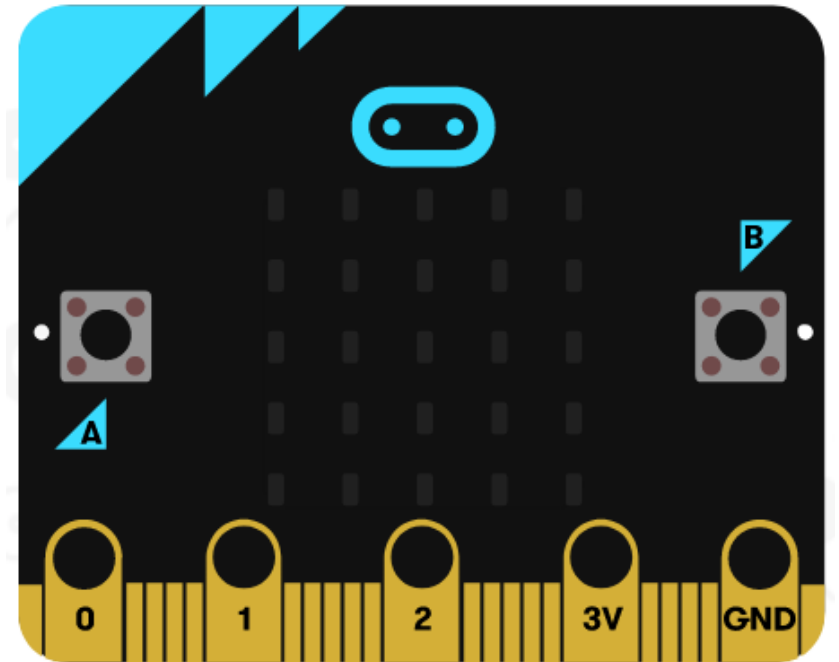
Micro:bit tools

Micro:bitprojects

Learn the basics of using the BBC Micro:bit in your projects and start learning about physical computing. Don't have a micro:bit? That's ok you can use the emulator on the micro:bit coding editor. Visit the 'Let's code' page to choose your editor:

<https://microbit.org/code/>

Hope you enjoy the workbook!



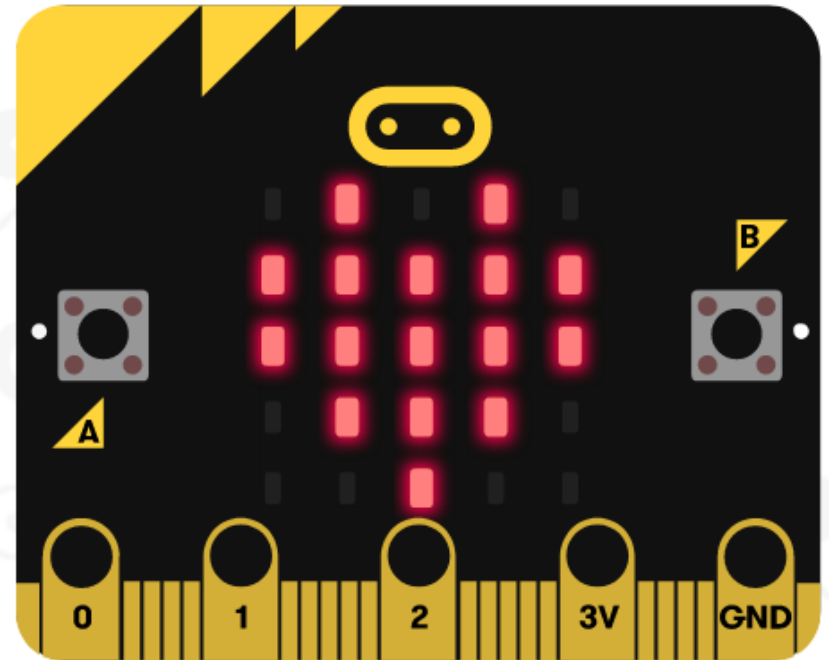
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Get started

Can you make the Micro:bit flash your name? Can you make a heart flash on the screen?

**Top tip – you might want to use the buttons to activate your code.



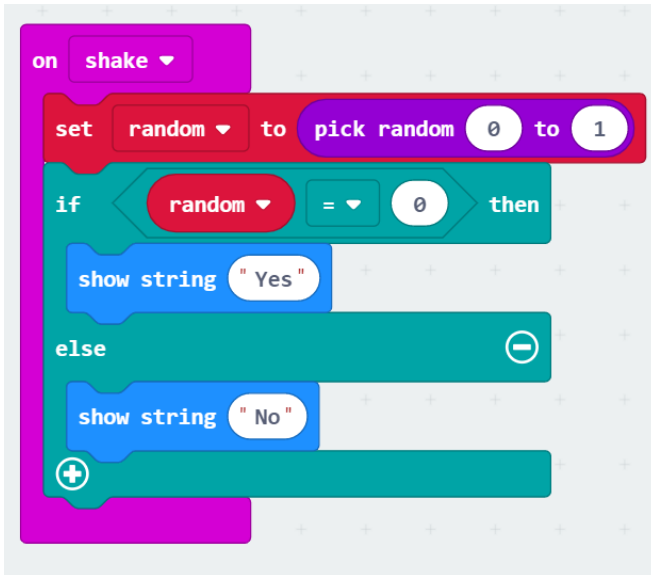
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Fortune teller

Code your micro:bit into a fortune teller. Is it going to rain at the weekend? Will your team win? The micro:bit will predict your future!

This code will help you tell your fortune. You can use the MakeCode block editor or the Python editor:



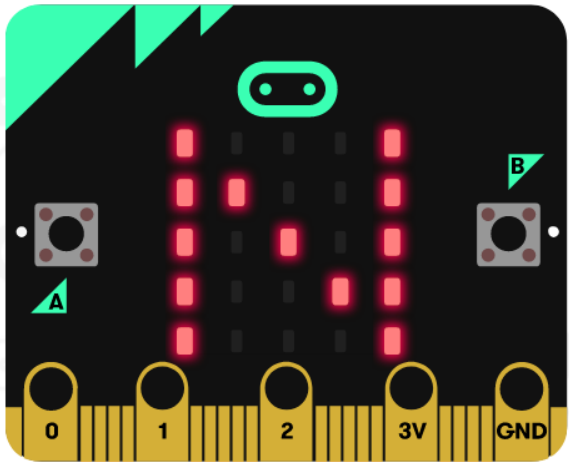
```
1 let random = 0
2 input.onGesture(Gesture.Shake, function () {
3     random = Math.randomRange(0, 1)
4     if (random == 0) {
5         basic.showString("Yes")
6     } else {
7         basic.showString("No")
8     }
9 })
10
```

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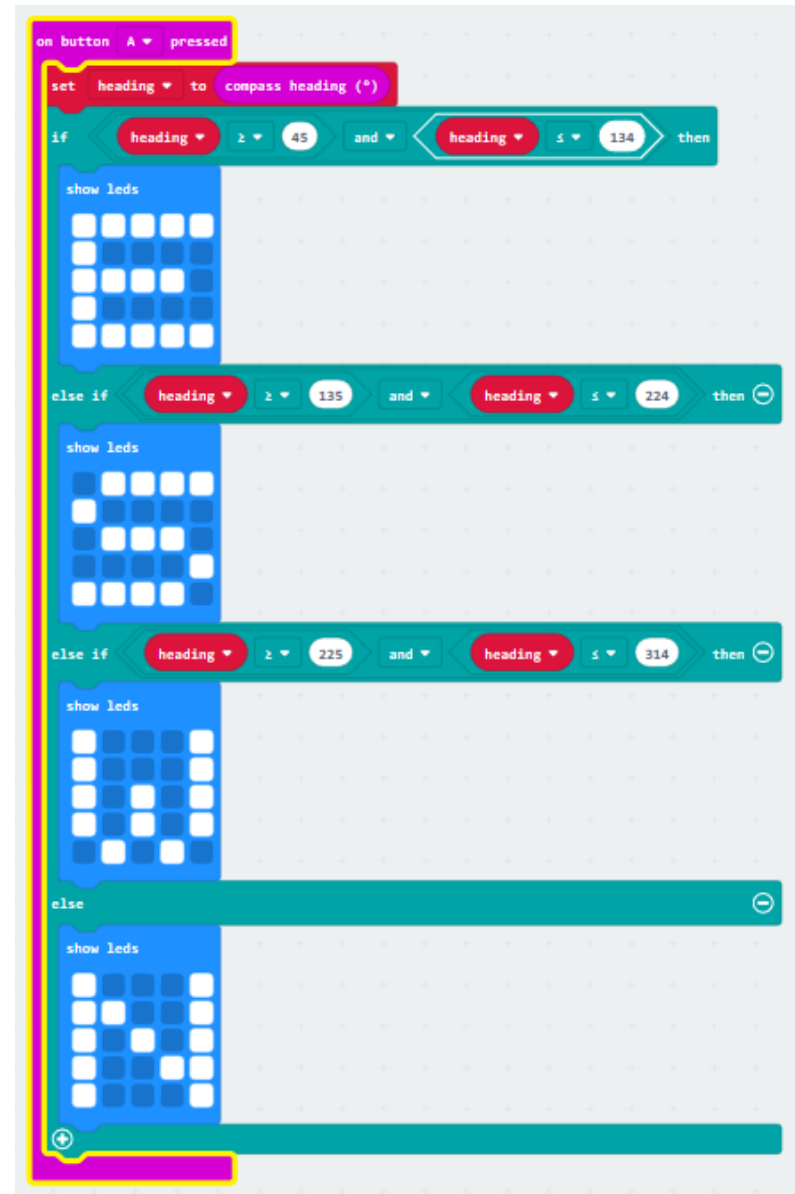
Micro:bit projects

Compass – MakeCode block editor

Stuck in the wilderness with only your micro:bit, laptop and a battery? Let's turn your micro:bit into a compass so you can get home (before your battery runs out).



Now you've set up the code for a basic compass, can you add in the code for headings NE, SE, NW and SW?

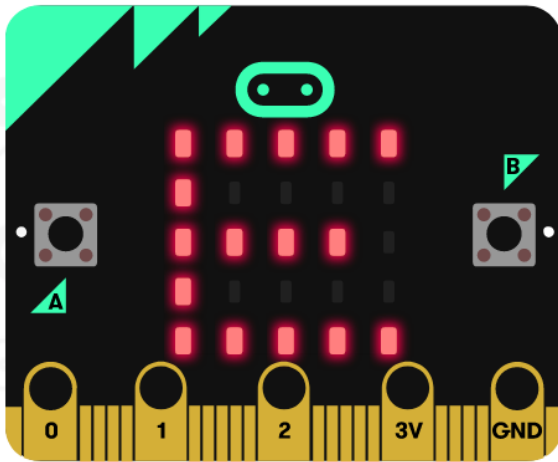


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Compass – Python editor

If you want more of a challenge try using the Python editor.



Now you've set up the code for a basic compass, can you add in the code for headings NE, SE, NW and SW?

```

1  let heading = 0
2  input.onButtonPressed(Button.A, function () {
3      heading = input.compassHeading()
4      if (heading >= 45 && heading <= 134) {
5          basic.showLeds(`
6              #####
7              # . . . .
8              ##### .
9              # . . . .
10             #####
11             `)
12     } else if (heading >= 135 && heading <= 224) {
13         basic.showLeds(`
14             . #####
15             # . . . .
16             . ##### .
17             . . . . #
18             ##### .
19             `)
20     } else if (heading >= 225 && heading <= 314) {
21         basic.showLeds(`
22             # . . . #
23             # . . . #
24             # . # . #
25             # . # . #
26             . # . # .
27             `)
28     } else {
29         basic.showLeds(`
30             # . . . #
31             # # . . #
32             # . # . #
33             # . . # #
34             # . . . #
35             `)
36     }
37 })
38

```

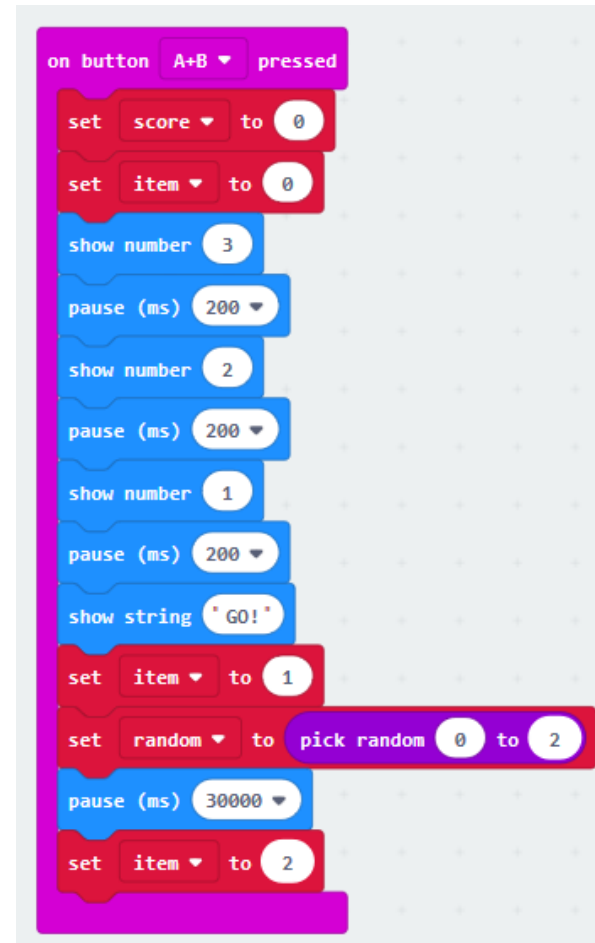
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Press it

Lets play a game! Test your reactions against the micro:bit by using the buttons and the accelerometer feature. Press the A or B button when the arrow points to it, or shake your micro:bit when it displays a cross. You have 30 seconds to get as many points as possible, but be careful – get it wrong and you'll lose points!

There's are several scripts to make this game work, add them all to your micro:bit to create the project. This script controls the start of the game.



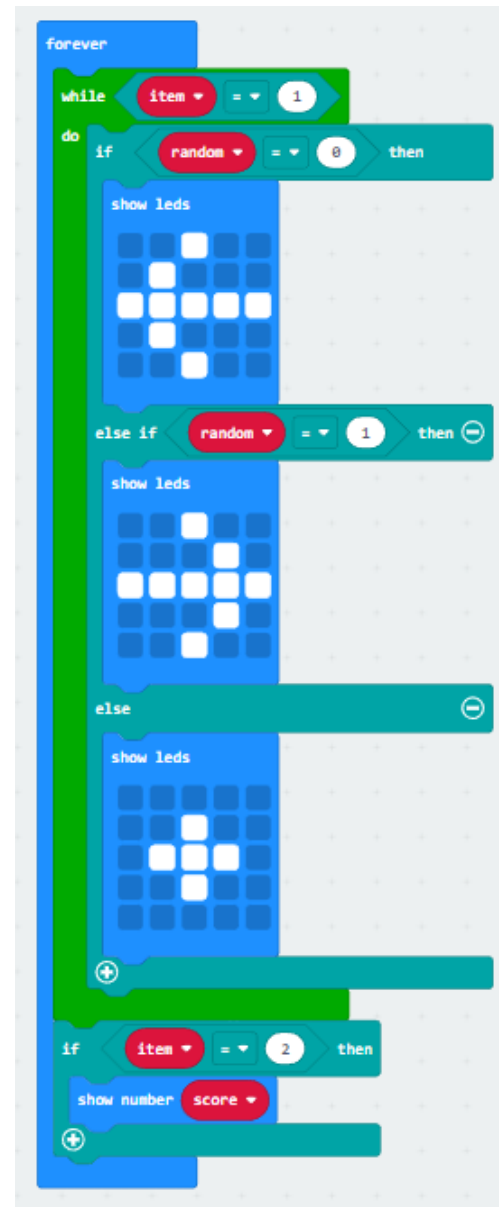
```
on button A+B pressed
  set score to 0
  set item to 0
  show number 3
  pause (ms) 200
  show number 2
  pause (ms) 200
  show number 1
  pause (ms) 200
  show string "GO!"
  set item to 1
  set random to pick random 0 to 2
  pause (ms) 30000
  set item to 2
```

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Press it - continued

This script controls which option shows on the micro:bit for the game play.

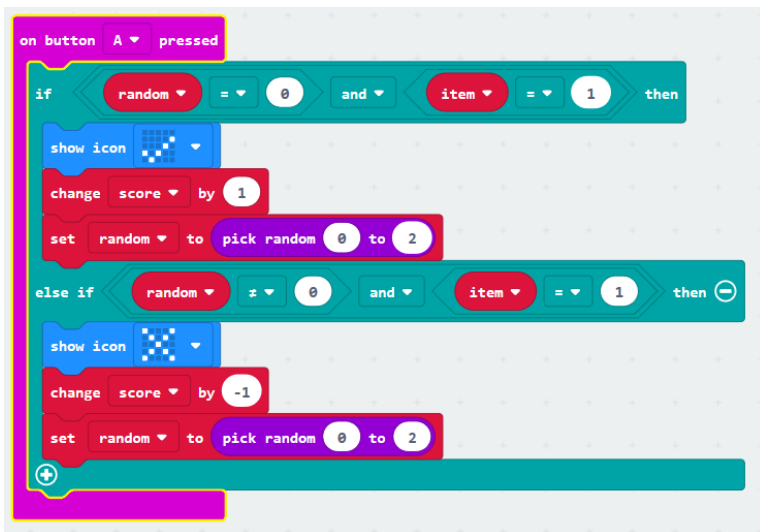


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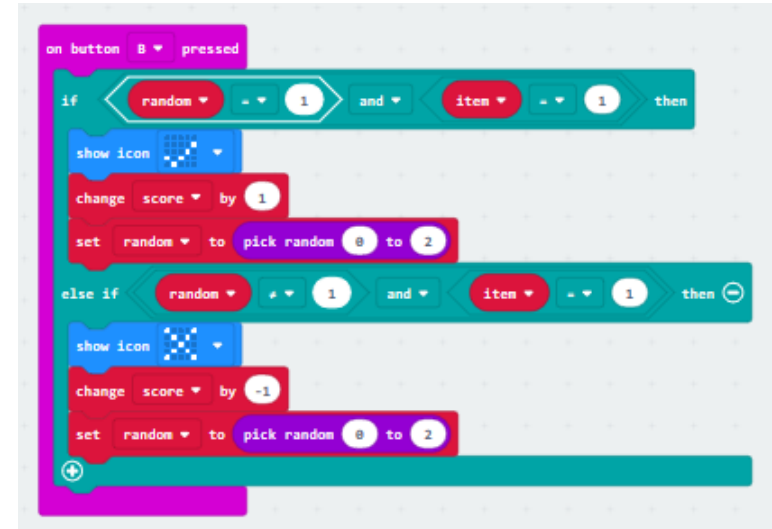
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Press it - continued

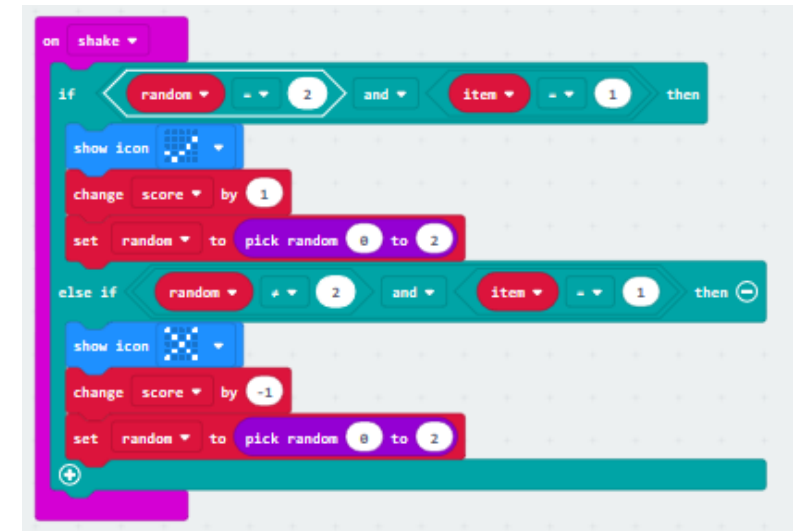
These scripts control what happens when the player chooses either button or the shake option. Once you've added these, your game will be ready to play.



```
on button A pressed
  if random = 0 and item = 1 then
    show icon
    change score by 1
    set random to pick random 0 to 2
  else if random ≠ 0 and item = 1 then
    show icon
    change score by -1
    set random to pick random 0 to 2
```



```
on button B pressed
  if random = 1 and item = 1 then
    show icon
    change score by 1
    set random to pick random 0 to 2
  else if random ≠ 1 and item = 1 then
    show icon
    change score by -1
    set random to pick random 0 to 2
```



```
on shake
  if random = 2 and item = 1 then
    show icon
    change score by 1
    set random to pick random 0 to 2
  else if random ≠ 2 and item = 1 then
    show icon
    change score by -1
    set random to pick random 0 to 2
```

Can you upgrade the game to display a 'Game Over' message? Instead of losing points when you get it wrong, how about ending the game? Instead of playing to a timer, code your game so you can keep playing until you make a mistake

Notes

Code Playground

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