INTERNET CONNECTION NEEDED

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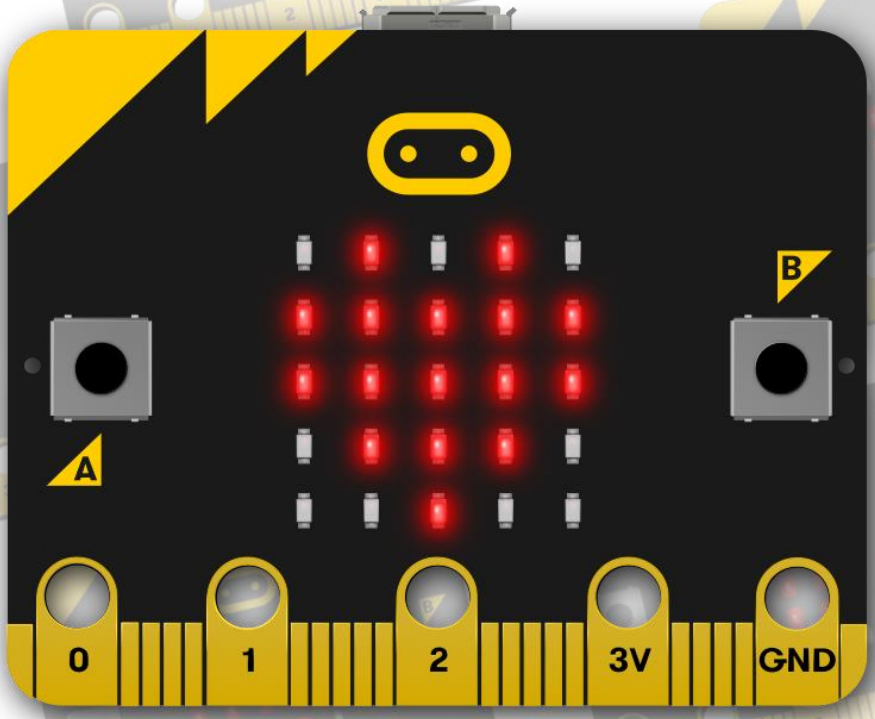
Making the transition from Scratch to Python easier



Rock, Paper, Scissors

MICRO:BIT EDUBLOCKS EDITOR

EduBlocks.org
@edu_blocks

micro:bit:
Rock, Paper, Scissors

Written By: Joshua Lowe

Objective

We are going to create a game called Rock, Paper, Scissors with the micro:bit. You may have heard of it before and even played it. When the micro:bit is shaken it will display an image at random.

Get Started

Start by going to a web browser of your choice and heading to this website:

https://microbit.edublocks.org

Let's Code

Now its time to build our code. We can drag our code blocks from the EduBlocks toolbar which is on the left hand side of the screen. Our first 3 blocks of code can be found in the Basic Tab. They are colour co-ordinated. Drag the blocks onto the workspace as shown in the diagram.

In this section of code we are importing the micro:bit & random library's, these are key to the game. Also, we are creating a while true loop to constantly check for a shake.

micro:bit:
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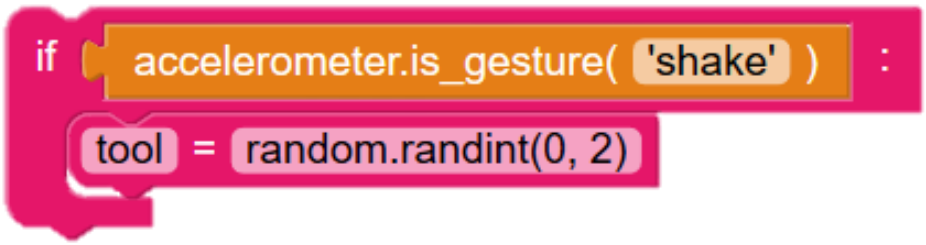
Our next 3 blocks can be found inside 2 sections. The pink ones in Basic and the orange ones in Accelerometer. The orange gesture block snaps inside of the input of the if block.



In this section of code we are creating an if function that will detect if the micro:bit is shook, when it is, it will run the code underneath. The variable block will generate a number between 0 and 2. This will be used to select a tool for the game.

Now let's create the first tool, this time the rock image. We shall be using an image block, which is yellow and can be found in Display. Again, the pink blocks can be found in Basic. Drag this section underneath the last tool variable block in the if statement.

In this section of code, when 0 is selected by the random generator it will display the rock image. We use the display.show block to show the image created in the above block.

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Let's Code

So, you have completed the first 3 sections. Now onto the fourth, as before pink blocks in Basic and Yellow in display, this section goes underneath the last section.

```
elif tool == 1 :
    p = Image(" 0 0 0 0 0 :"
              " 0 9 9 9 0 :"
              " 0 9 9 9 0 :"
              " 0 9 9 9 0 :"
              " 0 0 0 0 0 ")
    display.show( p )
```

In this section of code we are creating an else if function that will run if the random selection chooses the number 1. It will display a paper symbol.

Now onto our final section of code, where we will create the scissors symbol. When inputting numbers into the image block, you can use the TAB key to move onto the next box.

```
else:
    s = Image(" 9 9 0 0 9 :"
              " 9 9 0 9 0 :"
              " 0 0 9 0 0 :"
              " 9 9 0 9 0 :"
              " 9 9 0 0 9 ")
    display.show( s )
```

In this section of code, when the number 2 is selected it will display the scissors icon on the 5x5 display on the micro:bit.

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Save your code

```
from microbit import *
import random
while True:
    if accelerometer.is_gesture( 'shake' ) :
        tool = random.randint(0, 2)
        if tool == 0 :
            r = Image("9 9 9 9 9 :"
                      "9 0 0 0 9 :"
                      "9 0 0 0 9 :"
                      "9 0 0 0 9 :"
                      "9 9 9 9 9 ")
            display.show( r )
        elif tool == 1 :
            p = Image("0 0 0 0 0 :"
                      "0 9 9 9 0 :"
                      "0 9 9 9 0 :"
                      "0 9 9 9 0 :"
                      "0 0 0 0 0 ")
            display.show( p )
        else:
            s = Image("9 9 0 0 9 :"
                      "9 9 0 9 0 :"
                      "0 0 9 0 0 :"
                      "9 9 0 9 0 :"
                      "9 9 0 0 9 ")
            display.show( s )
```

Plug in your micro:bit to a USB port. To download our code onto the microbit. Click the DOWNLOAD HEX button in the navigation bar at the top.

Download Hex

The file will now download to your PC. On Google Chrome, it will show at the bottom. Click on the up arrow on the grey file at the bottom and select Show in folder. Drag the highlighted file onto the micro:bit on the left hand side. For a video on how to do this check:

uploadmymicrobit.edu
blocks.org

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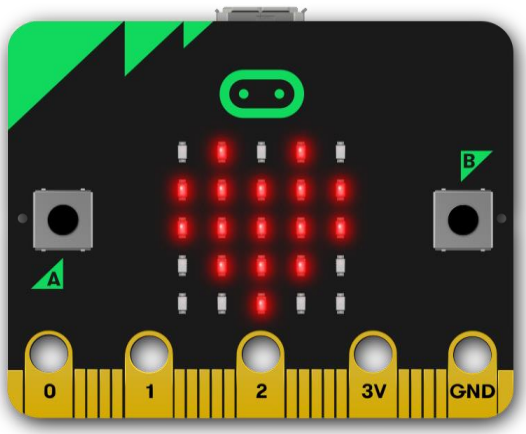
Run your code

Now it's time to run our code. Once the file has been dragged onto the micro:bit and the orange light on the back has finished blinking, you should now be able to interact with your micro:bit. Shake the micro:bit and it will go through the random selection to then display an image. Grab a friend with another micro:bit and play Rock, Paper, Scissors!



Outcomes

In this tutorial we have learnt how to import libraries, have the micro:bit do something on a shake and then select a random number to display an icon depending on the number selected.

Challenge: Can you use the micro:bit radio functions to have the two micro:bit's talk and decide a winner?