



---

# Beginner micro:bit Workshop

---

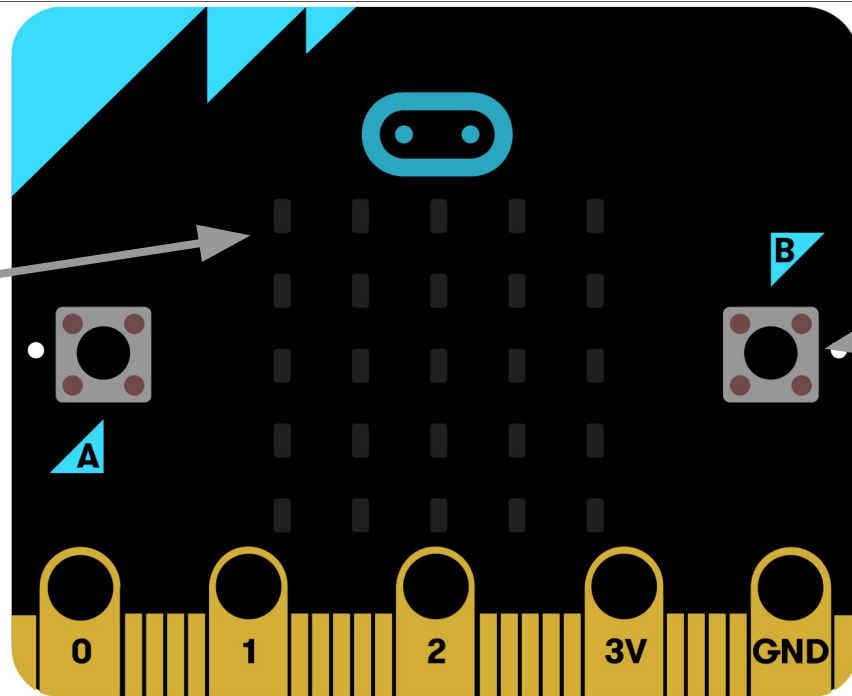


# The micro:bit - what it is?

Reset button  
(on the back)

LEDs

Buttons





---

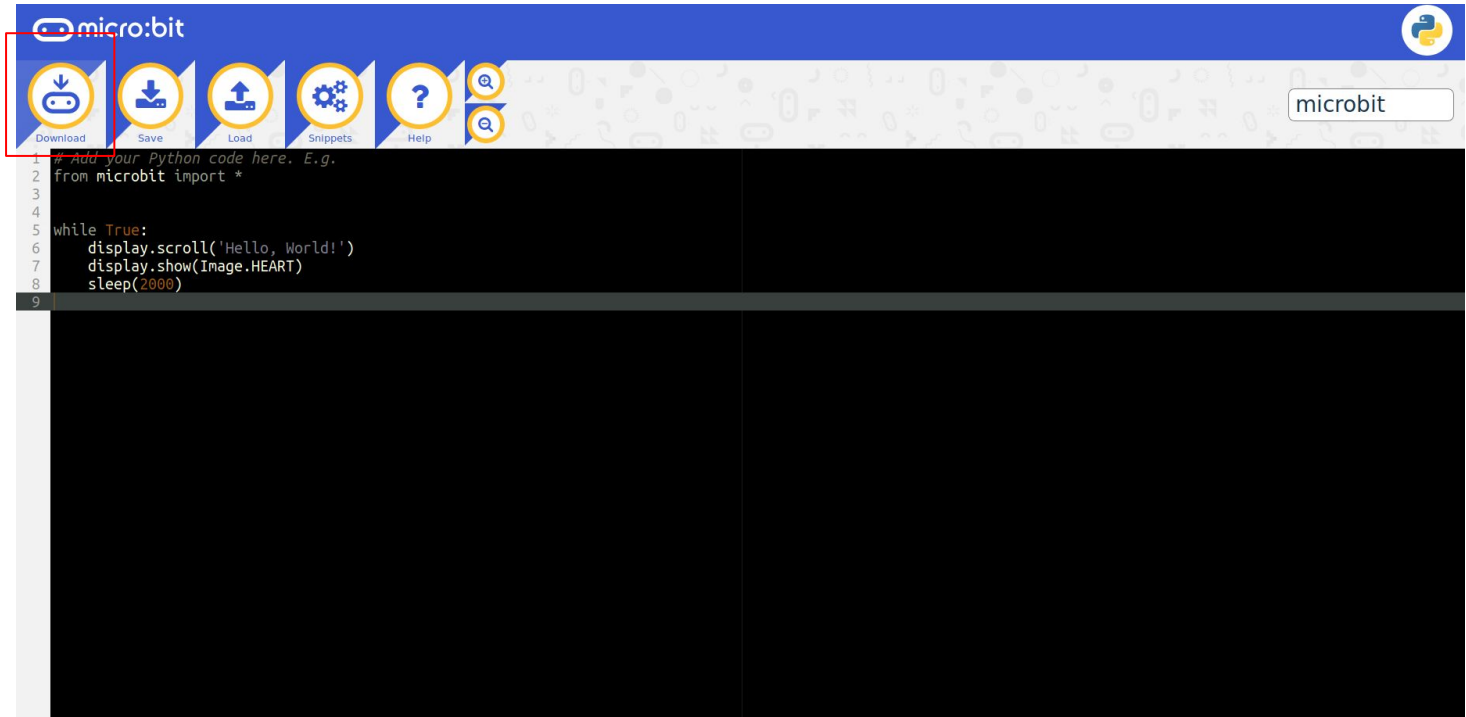
# python.microbit.org

Slides: [tinyurl.com/ears-microbit](https://tinyurl.com/ears-microbit)

---



# Environment setup

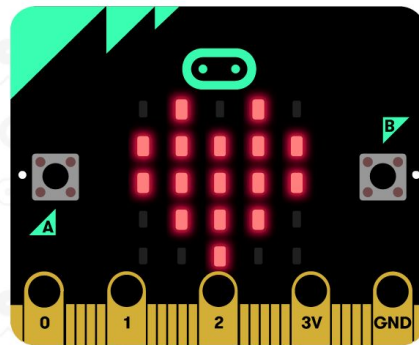




---

# Coding on the micro:bit

```
from microbit import *  
  
display.show(Image.HEART)
```





---

# Coding on the micro:bit

```
from microbit import *  
display.scroll('Hello, World!')
```



---

# The game

- micro:bit displays 'A' or 'B'
- The user then presses the appropriate button
- Display a heart when user succeeded



---

# Variables

# Like a container for a letter, text or number  
`var1 = 'A'`

`just_any_number = 5`

# Container content can be used later in program

`display.show(var1)`

`display.show(just_any_number)`

---





---

# Displaying a character

TODO:

- Use `display.show(char)` to display a character (use a variable)



---

# Displaying a character

```
from microbit import *
```

```
character = 'A'
```

```
# Display the character A on the screen  
display.show(character)
```

---



---

# Lists

A collection of containers



```
# use square brackets and commas  
just_any_list = ['A', 5, 3.14, 'Hello']
```

---



---

# Functions

- A piece of code that we can run by using the function name
- Can take a piece of information
- Can give back another bit of information

```
# display.show is a function:  
display.show(character)
```

```
# functions can be used to calculate something  
another_variable = math.sqrt(9)
```

---



---

# Random

```
# tell the program that we need new  
functions
```

```
import random
```

```
my_list = [2, 3, 5, 7, 11]
```

```
# Choose a random element from a list  
my_variable = random.choice(my_list)
```

---



---

# Random

TODO:

- Import `random`
- Define a list of characters containing 'A' and 'B'
- Choose a character with `random.choice`
- Use `display.show` to display the character



---

# Random

```
from microbit import *  
import random
```

```
characters = ['A', 'B']
```

```
choice = random.choice(characters)
```

```
display.show(choice)
```

---



---

## If statements

```
if 2 > 3:  
    print("That can't be correct!")  
else:  
    print("2 is actually smaller than 3")
```

# Can be used to check the value of a variable

```
if my_variable > 5:  
    print("my_variable is greater than five")
```

---





---

# Sleep

```
# Sometimes we just need to wait...  
sleep(2000) # wait 2s
```



---

## Button presses

```
# gets number of times button_a was pressed  
button_a.get_presses()
```

```
# We can use a function to check how often  
# the button was pressed
```

```
if button_a.get_presses() > 0:  
    display.show(Image.HEART)  
else:  
    display.show(Image.SAD)
```

---



---

# Button presses and output

```
sleep(500)
```

```
if choice == 'A':  
    # check button A  
else:  
    # check button B
```



---

# Button presses and output

TODO:

- Check the correct button has been pressed (You will need an if **inside** an if)
- If the correct button has been pressed then display a heart.



---

# Button presses and output

```
sleep(500)
```

```
if choice == 'A':  
    if button_a.get_presses() > 0:  
        display.show(Image.HEART)  
  
else:  
    if button_b.get_presses() > 0:  
        display.show(Image.HEART)
```

---



---

# While loops

```
while True:  
    character = random.choice(['a', 'b', 'c'])  
    display.show(character)  
    sleep(1000)
```



---

# Making things run forever

- Put everything inside a **while** `True`:
- Make sure to indent with a tab inside the while loop



---

# Making things run forever

```
while True:
    character = random.choice(characters)
    display.show(character)
    sleep(300)

    if character == 'A':
        ...
```

---





---

## Extension 1 - keeping score

The user might want to know how many times they have pressed the button correctly.

- Create a variable `correct_count` = 0
  - Every time the user gets it right, increase by 1
  - Display it to the user when you think is appropriate
    - Could be after every go
    - Or after a certain number of goes
-



---

## Extension 2 - stop cheaters!

Check it out! Press both buttons at the same time and you win!

- Check that the wrong button **hasn't** been pressed



---

[tinyurl.com/earsmembers](https://tinyurl.com/earsmembers)

[tinyurl.com/earsboard](https://tinyurl.com/earsboard)

---