



- Use variables to create a calculator which can add two numbers



10 mins

1. Overview

A *variable* is a temporary storage location in memory, and are a fundamental part of programming. We are going to create a simple adding calculator.

Pressing button A increases the first number; pressing button B increases the second number, and pressing A

and B together at the same time adds and displays the result.

Go to www.microbit.org/code, scroll down to *Python Editor* and click the orange *Let's Code* button beneath it to open the code editor.

2. Enter the code

Creates a variable called *firstNumber* and stores a value of zero in it

Takes the number stored in *firstNumber*, adds one to it, and stores the new value

```
from microbit import *  
  
firstNumber = 0  
  
while True:  
    if button_a.is_pressed():  
        firstNumber = firstNumber + 1  
        display.scroll(str(firstNumber))
```

Values stored in *firstNumber* are *integers* (whole numbers). Before we can display them, they need to be converted to a *string* (text). This is called *casting*.

Type in this program, download it to your computer, then transfer it to your micro:bit.

Each time you press button A, the number will increase.

3. Adding the second number

At the moment, all your program does is count whenever you press button A.

Modify your program so that pressing button B stores a second number.

Hints:

- You will need to make a second variable to store the second number
- Use the `ELIF` command

Type in this program, download it to your computer, then transfer it to your micro:bit.

4. Your program so far

So far, your program should look like this:

This is the variable to store our second number

Our elif condition, for when button B is pressed

Note that this part of the program is nearly the same as the first part of the if statement, only the variable name is different

```
from microbit import *

firstNumber = 0
secondNumber = 0

while True:
    if button_a.is_pressed():
        firstNumber = firstNumber + 1
        display.scroll(str(firstNumber))

    elif button_b.is_pressed():
        secondNumber = secondNumber + 1
        display.scroll(str(secondNumber))
```

Type in this program, download it to your computer, then transfer it to your micro:bit.

Each time you press button A, the first number will increase. Each time you press button B, the second number will increase.

5. Adding the numbers together

We need to change our program so that pressing the A and B buttons at the same time will add the two numbers together and display the result.

```
from microbit import *

firstNumber = 0
secondNumber = 0

while True:
    if button_a.is_pressed() and button_b.is_pressed():
        display.scroll(str(firstNumber + secondNumber))

    elif button_a.is_pressed():
        secondNumber = secondNumber + 1
        display.scroll(str(secondNumber))

    elif button_b.is_pressed():
        secondNumber = secondNumber + 1
        display.scroll(str(secondNumber))
```

Adds together the contents of both variables; converts to a string; and displays it on the micro:bit

Well done!