## Lesson 5 -Activity Sheet

## Getting Started

Look at the code below what is the difference, is there one? Discuss your findings with another student.

from microbit import \*

total = 3

while True:

if button\_a.is\_pressed():

display.scroll(total)

from microbit import \*

total = "3"

while True:

if button\_a.is\_pressed():

display.scroll(total)

In the second example program the 3 is enclosed in double quotation marks “3”. What does this do then? This means that the 3 is treated as a string: although it is the number 3 is does not have a value of 3, it is simply the symbol used to represent the number 3. Try out the code below:

from microbit import \*

total = "3" + "1"

while True:

if button\_a.is\_pressed():

display.scroll(total)

What happens? The program does not add the two numbers together, it simply places them together as 31. This is because they are strings. String use the “” or ‘’ symbols, double quotes or single quotes. Remove the quotes and change the numbers to 2 + 5, does the program work now? These are no longer strings, so they have value, the total displayed in your micro:bit will be 7.

## **Keeping a Running Total**

This program creates a **variable** called *total* and stores an initial value of 0 in the variable. Every time you press Button A it adds one to the total – **increments** it. For example, if you press Button A four times, then it will display the numbers 1, 2, 3, then 4 on the micro:bit. Each time you press Button B it subtracts 2 from the total. If the current total is 4 then the program subtracts 2 and displays the new total, 2.

It is possible to create negative numbers which are preceded by the – sign. Copy up the code below and experiment with the program.

from microbit import \*

total = 0

while True:

if button\_a.is\_pressed():

total = total + 1

sleep(100)

display.scroll(total)

elif button\_b.is\_pressed():

total = total - 2

sleep(100)

display.show(total)

elif button\_a.is\_pressed() and button\_b.is\_pressed():

total = 0

sleep(100)

display.show(total)

else:

display.show(Image.SMILE)

This program is a useful method for keeping a running total or a score in a game or a quiz. Think about how else you could use it.

## Success Criteria

1. Add two numbers stored as strings together
2. Convert the strings to numbers and add the numbers together
3. Create a program that keeps a running score
4. Adapt the program

## Pro-tip

If the program requires non-numerical responses such as ‘yes’ or ‘no’ then you can use breakto break out of the while True loop and move onto the next question or section of the program. Create a program that uses this method.

A question

while True:

if button\_a.is\_pressed():

display.scroll("yes")

sleep(2000)

break

elif button\_b.is\_pressed():

display.scroll("no")

sleep(2000)

break

Another question

while True:

if button\_a.is\_pressed():

display.scroll("yes")

sleep(2000)

break

elif button\_b.is\_pressed():

display.scroll("no")

sleep(2000)

break

## Test Time

When writing the program code check the indentation levels as these can cause errors and stop the program functioning correctly.

## Stretch Tasks

* Add images and text to your program
* Share your program with your teacher of other learners

## Final Thoughts

Variables are essential to programs so that data can be stored and used later on. This lesson has introduced how to combine selection, variables and combine the data stored in the variable. Either by joining the data together or adding it. You can use these skills in the Healthy Eating Quiz project.