



Year 9 Computer Science – Micro:bit (Expert)

Keywords

Keyword	Definition
Algorithm	Step by step instructions to solve a given problem
Pattern Recognition	Looking for similarities or characteristics that can help solve the problem
Decomposition	Breaking the problem down into smaller problems to solve
Abstraction	Removing aspects that are not required to solve the problem
Selection	A choice built into the program to determine the next section of code to execute based on the output to a set condition
Sequence	The order the program code must be in to work correctly
Repetition	A loop of a set section of the program code
Variable	A single temporary storage location within the program code that can be changed or edited
Function	A set of instructions that are given a name and only when this name is called in the main program, is it executed

Sequence

A program which is executed line by line

```

1# -*- coding: utf-8 -*-
2"""
3Created on Thu Dec 28 22:53:20 2017
4
5@author: Philippe BOULANGER
6"""
7from math import cos, sin, pi
8
9
10def create(nb):
11    step = pi / nb
12    var = (( i, step * i ) for i in range( nb+1 ) )
13    values = [ ( i, x, cos(x), sin(x) ) for i, x in var ]
14    with open( "concat_test.csv", "w" ) as file:
15        for t in values:
16            text = ""
17            for i, v in enumerate(t):
18                if i != 0:
19                    text += ','
20                text += str( v )
21            file.write( text + "\n" )
22
23nb = 1000000
24create( nb )
    
```



Selection

A program which makes a choice or decision – sometimes there may be more than one.

```

1# -*- coding: utf-8 -*-
2"""
3Created on Thu Dec 28 22:53:20 2017
4
5@author: Philippe BOULANGER
6"""
7from math import cos, sin, pi
8
9
10def create(nb):
11    step = pi / nb
12    var = (( i, step * i ) for i in range( nb+1 ) )
13    values = [ ( i, x, cos(x), sin(x) ) for i, x in var ]
14    with open( "concat_test.csv", "w" ) as file:
15        for t in values:
16            text = ""
17            for i, v in enumerate(t):
18                if i != 0:
19                    text += ','
20                text += str( v )
21            file.write( text + "\n" )
22
23nb = 1000000
24create( nb )
    
```



Iteration

A program which repeats a number of times or until a condition is met

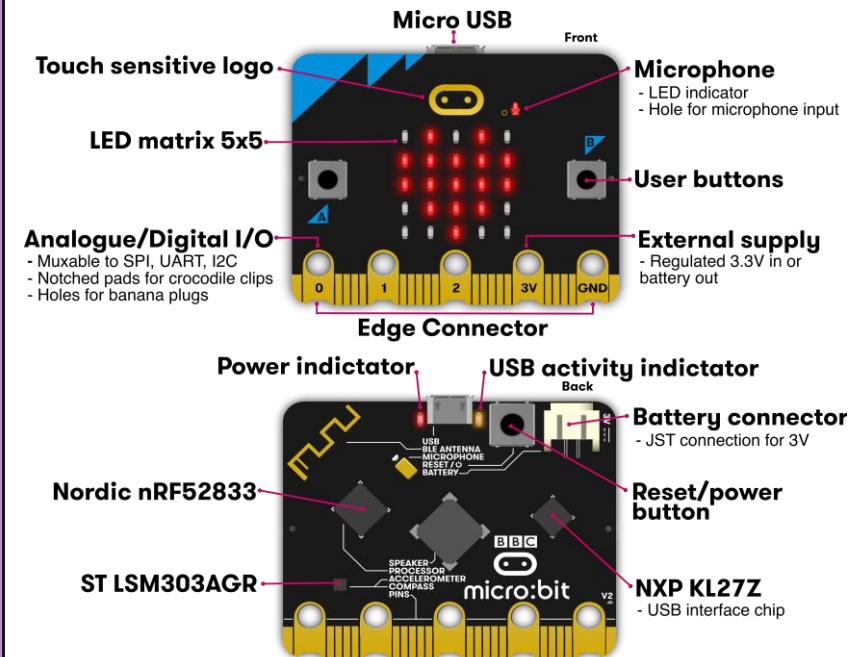
```

1# -*- coding: utf-8 -*-
2"""
3Created on Thu Dec 28 22:53:20 2017
4
5@author: Philippe BOULANGER
6"""
7from math import cos, sin, pi
8
9
10def create(nb):
11    step = pi / nb
12    var = (( i, step * i ) for i in range( nb+1 ) )
13    values = [ ( i, x, cos(x), sin(x) ) for i, x in var ]
14    with open( "concat_test.csv", "w" ) as file:
15        for t in values:
16            text = ""
17            for i, v in enumerate(t):
18                if i != 0:
19                    text += ','
20                text += str( v )
21            file.write( text + "\n" )
22
23nb = 1000000
24create( nb )
    
```

Micro:bit Hardware

Definition: The micro:bit is a tiny computer.

You can write programs for the micro:bit on your computer and then transfer them to the micro:bit to be run.



Functions

A function is a piece of code that is created with a name and you can call this function anywhere else by using its name.

```

1# -*- coding: utf-8 -*-
2"""
3Created on Thu Dec 28 22:53:20 2017
4
5@author: Philippe BOULANGER
6"""
7from math import cos, sin, pi
8
9
10def create(nb):
11    step = pi / nb
12    var = (( i, step * i ) for i in range( nb+1 ) )
13    values = [ ( i, x, cos(x), sin(x) ) for i, x in var ]
14    with open( "concat_test.csv", "w" ) as file:
15        for t in values:
16            text = ""
    
```

