SUB PROGRAMS

Procedures are a set of instructions stored under a name so that you can call the procedure to run the whole set of instructions.
A **function** is like a procedure but always returns a value.
Parameters are variables used to pass values into a function or procedure.

A procedure **with** parameters	A procedure **without** parameters

procedure intro (name)
  print("Hello " +name)
  print("Welcome to the game")
endprocedure
	procedure intro ()
	  print("Hello")
	  print("Welcome to the game")
	endprocedure

ARRAYS

One-Dimensional Arrays- this is like a list.
In this example an array has been created called students. The list can hold 3 items (as shown).

```
array students [3]
students [0] = "Bob"
students [1] = "Dave"
students [2] = "Bob"
```

This command would print the second item (1) From the array. It would print "Dave".

```
print(students[1])
```

Two-Dimensional Arrays – these are lists within lists (like a table)

```
Grades=[["Bob", "22%", "44%"], ["Dave", "85%", "100%"]]
```

	0	1	2
0	Bob	22%	44%
1	Dave	85%	100%

The code above creates the 2D array. The code Below would output:
"Bob's first test score was 22%"

```
print("Bob's first test score was " + Grades [0, 1]
```

STRING MANIPULATION

```
0  1  2  3
W  o  r  d
```

The characters in a string are numbered starting with position 0.

Function	Purpose
x.length	Gives the length of the string
x.upper	Changes the characters in the string to upper case
x.lower	Changes the characters in the string to lower case
x[i]	Gives the character in position i. Eg: x[2] = "r"
x.substring(a,b)	Gives the characters from position a with length b. Eg: x.subString(1,2) = or
+	Joins (concatenates) two strings together

are used to comment on your code and put code into sections. Explaining your code helps you to understand what the code is doing at each section.

File Handling

Myfile=open ("filename", "r")	Opens the file in read mode
Myfile=open ("filename", "w")	Opens the file in write mode
Myfile=open ("filename", "a")	Opens the file in append mode
Myfile.writeLine ("Hello")	Writes a line to the file
Line1=myfile.read Line()	Reads one line of the file
Myfile.close()	Closes the file

Operator	Definition
Exponential	Raises a number to a power e.g: 2**3
Remainder/ MOD. E.g 7 % 3	Gives the remainder part of a division
DIV e.g 9 // 2	Gives the whole number after a division
> <	Greater and less than
== !=	Equal to &not equal to
+ - / *	Add, Subtract, Divide, Multiply

This **count-controlled loop** would print "Hello World" 8 times.:

```
for i=0 to 7
    print ("Hello")
next i
```

These **condition controlled loop** would check if a password's correct:

```
while answer != "letmein123"
    answer=input("Enter password")
endwhile
```

Sequence	Parts of the code that run in order and the pathway of the program reads and runs very line in order.
Selection	Selects a pathways through the code based on whether a condition is true
Iteration	Code is repeated (looped), either while something is true or for a number of times
Algorithm	A set of rules/instructions to be followed by a computer system
Variable	A value that will change whilst the program is executed. (eg. temperature, speed)
Sub-Routine	A collection of code that works outside the main program. These are created to speed up programming. They can be called from a single line of code at any time. E.g def Name_of_Sub-Routine (Parameter) :
Parameter	A variable that gets passed into a sub-routine so data that has been created outside of the sub-routine can be used inside.
Comparative Operator	When comparing data, an operator is used to solve the problem e.g == > < !=
Syntax	The punctuation/way that code has to be written so that the computer can understand it. Each programming language has its own syntax.
Data Type	This indicates how the data will be stored. The most common data types are integer, string, and float/real.
String	A collection of letters, numbers or characters. (eg, Hello, WR10 1XA)
Integer	A whole number. (eg. 1, 189)
Float/Real	A decimal number.(eg. 3.14, 26.9)
Boolean	1 of 2 values. (eg. True, False, Yes, No)
File Handling	Allowing data to be stored / retrieved from a file (txt or csv using read (r), write (w) or append (a) modes.
Array	A data types that allows list - this can be 1D or 2D. Square brackets are used to set these up. E.g 1D array list_name = ["item1", "item2", "item3"]