# Topic Exploration Pack

# Programming Techniques

Task 1

Find a definition for the following words as they relate to programming:-

* modularity
* argument
* function
* subroutine
* variable
* data type
* constant
* local variable
* parameter
* procedure
* scope
* global variable

Task 2

Basic programming tasks

1. Assuming knowledge of what a variable is; write a simple program that asks for a number and outputs the square of that number. Save it as Square\_1.
2. Change the previous program to use branching to decide whether the input is valid, i.e. is it a number? Save it as Square\_2.
3. Change the program to use iteration to allow more than one attempt at entering a number. Save it as Square\_3.
4. Further change the program to allow a user to quit the program. Save it as Square\_4.
5. Use a different type of iteration to print all the squares for numbers 1 to 10.
6. (Stretch and challenge) write a program to calculate all the prime numbers up to 100 and output the result in a formatted style.

Task 3

Extend Square\_4 to run from a procedure (no need to use parameters yet, just put the whole thing in a procedure). Save it as Square\_7.

Using Square\_4 again, create a procedure to just calculate the square root and use parameters to pass the values into and out of that procedure. Save it as Square\_8.

Create an algorithm to change this to a recursive solution.

Discuss the differences between iteration and recursion and where it would be appropriate to use either.