SESSION 1 - Program Design Methods - 18 November 2019

**Programming Concepts** :

1. Algorithm – A series of steps to carry out a task

Tools to convert algorithms into computer programs:

* Flowchart – Graphical depiction of steps and show it all connects and relates to each other to carry out a task
* Pseudocode – Simple notations for the program, usually in simple English terms instead of syntax

1. Source Code – Written code, actual text, for a computer program

Source Code (for human interface) is later translated into something the computer can understand in order to execute the program.

1. Compiler – Translator

Translates the source code to an object code (language a computer can understand

1. Data Type – Classification of pieces of information

String, Integer, Boolean, etc.

1. Variable – A container to keep a value

Can store different data types

Value of variables can be changed all throughout a program

1. Constant – A variable that does not change

Similar to variables, but the values cannot be changed, for example: pi

1. Conditional – A code that will only execute if a certain condition is true

Conditions must be met before this code can be executed, commonly used in Loops and Algorithms.

Can also be used to test expressions.

Due to this concept, a program can change every time it runs

1. Arrays – List

A special type of variable, containing a list of same data typed values

1. Loop – Repeated Code

Executes repeatedly when a required condition is met

Can be repeated any amount of times depending on the conditions met

With different input, different outputs

1. Function – Set of code to carry a task

Will take parameters which will affect its output.

Sort of like a preset of code, where you can call it later on in your code instead of retyping the whole code

1. Class – Template for a real-world object to be used in a program

Set of code to execute a real-world object.

Includes many of the programming concepts above including functions, loops, arrays, conditionals, constants, and variables.

Interpreter vs Compiler

<https://techdifferences.com/difference-between-compiler-and-interpreter.html>