

## 9.2 : ALGORITHMS

What is it?

An algorithm is a series of steps that must be followed in a sequential manner in order to solve the given problem (for which the algorithm is being designed).

There are three main ways of expressing algorithms:

### 1. Structured English

A method of showing the steps of an algorithm using a list of steps, often numbered, that utilize basic and straightforward English vocabulary to indicate what operation is being performed.

Example:

1. Ask for the number of values
2. Loop that number of times
3. Enter a value in loop
4. Add the value to the Total in loop
5. Calculate and output average

↳ keywords like this indicate what's going on

for example: "Calculate" indicates that an arithmetic operation is being performed

### 2. Pseudocode

A method of showing the structure and steps of an algorithm using fake, made-up syntax (ie. "pseudo-code").

Pseudocode purposefully mimics actual code structure, making it ideal to plan out programs.

Example:

Total  $\leftarrow$  0

keywords  $\leftarrow$  PRINT "Enter the number of values to average"

that  $\leftarrow$  INPUT Number

resemble FOR Counter  $\leftarrow$  1 TO Number

actual code PRINT "Enter value"

INPUT Value

Total  $\leftarrow$  Total + Value

NEXT Counter

Average  $\leftarrow$  Total / Number

PRINT "The average of," Number, "values is," Average

### 3. Flowcharts

A more visual representation of an algorithm, that uses specific shapes to indicate the type of operation being performed and flow lines to indicate the order that they're performed in.

## Example:

Flowchart

For example,  
the  symbol  
indicates that some  
kind of processing  
(i.e. calculation,  
assignment, etc.)  
is being done.

