

# Algorithm Development

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**Algorithm** - procedure for solving a problem in terms of the actions to be executed and the order in which those actions are to be executed. An algorithm is merely the sequence of steps taken to solve a problem.

## 2 Ways To Depict An Algorithm:

- a. **Pseudocode** - is a plain language description of the steps in an algorithm or another system
  - often uses structural conventions of a normal programming language, but is intended for human reading rather than machine reading
- b. **Flowchart** - a type of diagram that represents a workflow or process
  - a diagrammatic representation of an algorithm, a step-by-step approach to solving a task

# Steps To Write Pseudocode

- Capitalize key commands (IF score > 70 THEN...)
- Write one statement per line
- Use indentation
- Be specific
- Keep it simple

**START/BEGIN:** This is the start of your pseudocode.

**INPUT:** This is data retrieved from the user through typing or through an input device.

**READ / GET:** This is input used when reading data from a data file.

**PRINT, DISPLAY, WRITE, SHOW:** This will show your output to a screen or the relevant output device.

**COMPUTE, CALCULATE, DETERMINE:** This is used to calculate the result of an expression.

**SET, INIT:** To initialize values.

**INCREMENT, BUMP:** To increase the value of a variable.

**DECREMENT:** To reduce the value of a variable.

**STOP/END:** The end of the pseudocode.

Example 1: Write a pseudo code for a program that prompts the user to input two numbers. Thereafter, the program will display the product of the the two numbers.

**BEGIN**

**SET** product = 0

**INPUT** num1 , num2

**CALCULATE** product = num1\*num2

**WRITE** product

**END**

**Program Flowchart** - is a diagram that uses a set of standard graphic symbols to represent the sequence of coded instructions fed into a computer, enabling it to perform specified logical and arithmetical operations.

**The Oval or Pill Shape** - represents the start/end.



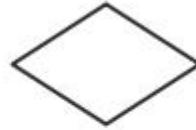
**The Rectangle Shape** - represents a process.



**The Parallelogram Shape** - represents the input/output of the information.



**The Diamond Shape** - represents a decision.



**The Arrow Shape** - represents the flow of the sequence.



Example 1: Using a flowchart, develop an algorithm for a program that prompts the user to input 4 Major Exams. Thereafter, the program will display “PASS” if average grade is greater than or equal to 60 otherwise, it will display “FAIL”.

