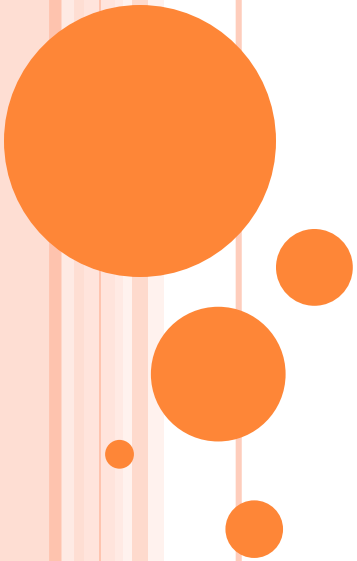


Flow Chart/Pseudo Code

Muhammad Suffian

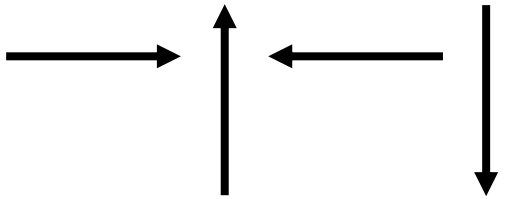
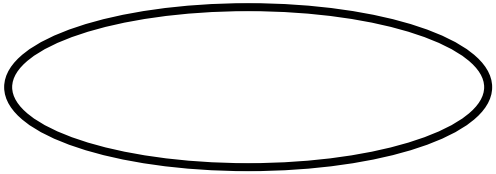
PRE-PROGRAMMING PHASE

- **Drawing the Program Flowcharts**
  - Flowchart is the **graphic** representations of the individual steps or actions to implement a particular module.
  - The flowchart can be likened to the blueprint of a building. An architect draws a blueprint before beginning construction on a building, so the programmer draws a flowchart before writing a program.
  - Flowchart is independent of any programming language.

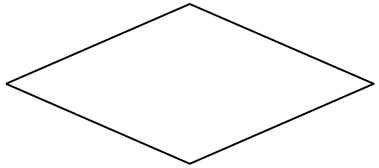
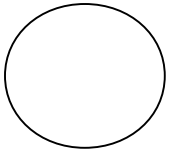
PRE-PROGRAMMING PHASE

- Flowchart is the logical design of a program.
- It is the basis from which the actual program code is developed.
- Flowchart serves as documentation for computer program.
- The flowchart must be drawn according to definite rules and utilizes standard symbols adopted internationally.
- The International Organization for Standardization (IOS) was the symbols shown below (You can draw the symbols using ready-made flowcharting template):

PRE-PROGRAMMING PHASE

Symbol	Function
	Show the direction of data flow or logical solution.
	Indicate the beginning and ending of a set of actions or instructions (logical flow) of a module or program.
	Indicate a process, such as calculations, opening and closing files.

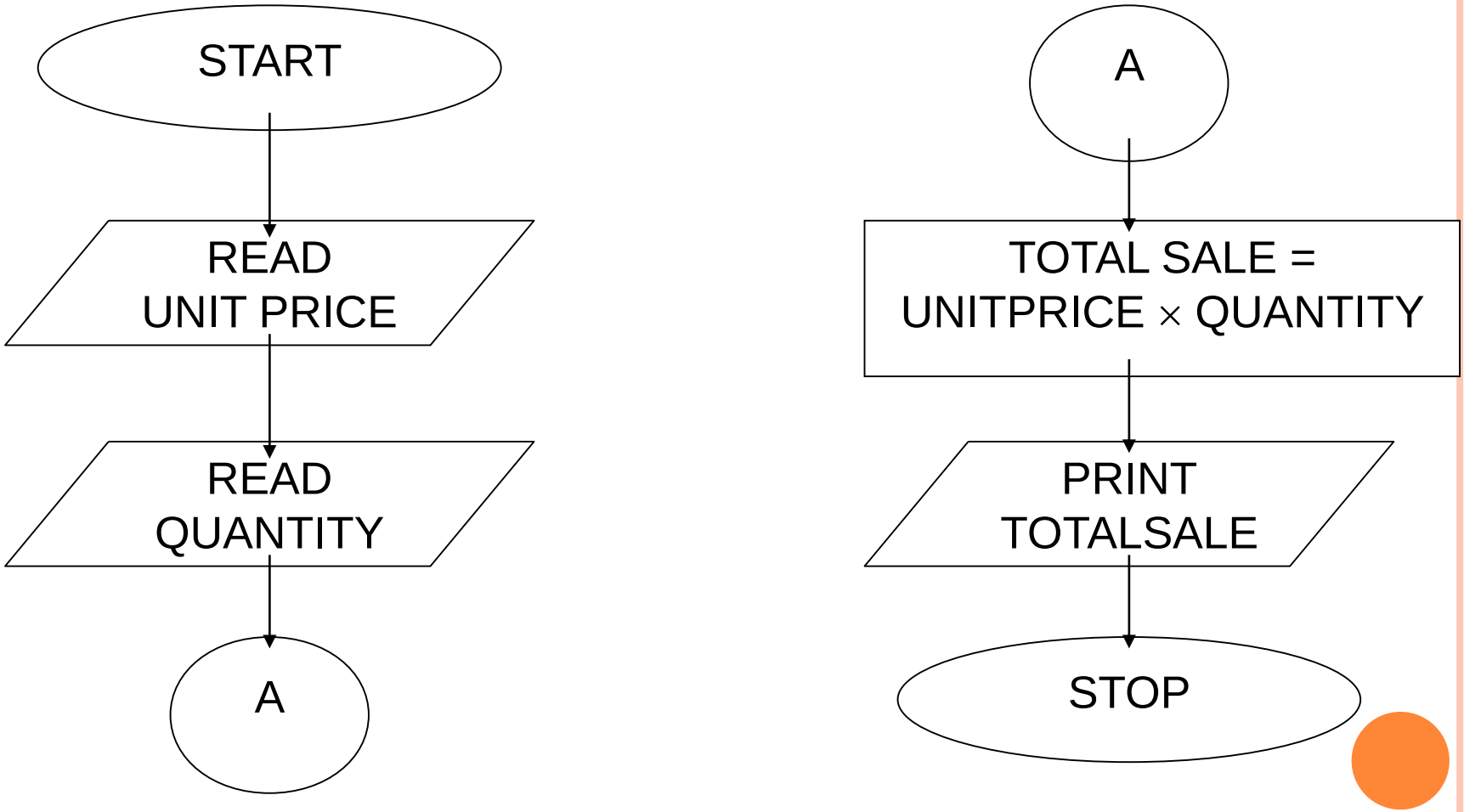
PRE-PROGRAMMING PHASE

	Indicate input to the program and output from the program.
	Use for making decision. Either True or False based on certain condition.
	Use for doing a repetition or looping of certain steps.
	Connection of flowchart on the same page.
	Connection of flowchart from page to page.

PRE-PROGRAMMING PHASE

- **Example 2.3 : Sale Problem**
  - Draw a flowchart for a problem that to read two numbers. The first number represents the unit price of a product and the second number represents the quantity of the product sold. Calculate and print the total sale.
  - Solution: Stepwise Analysis of the Sale Problem
    - Start of processing
    - Read the unit price
    - Read the quantity
    - Calculate total sale
    - Print total sale
    - Stop the processing

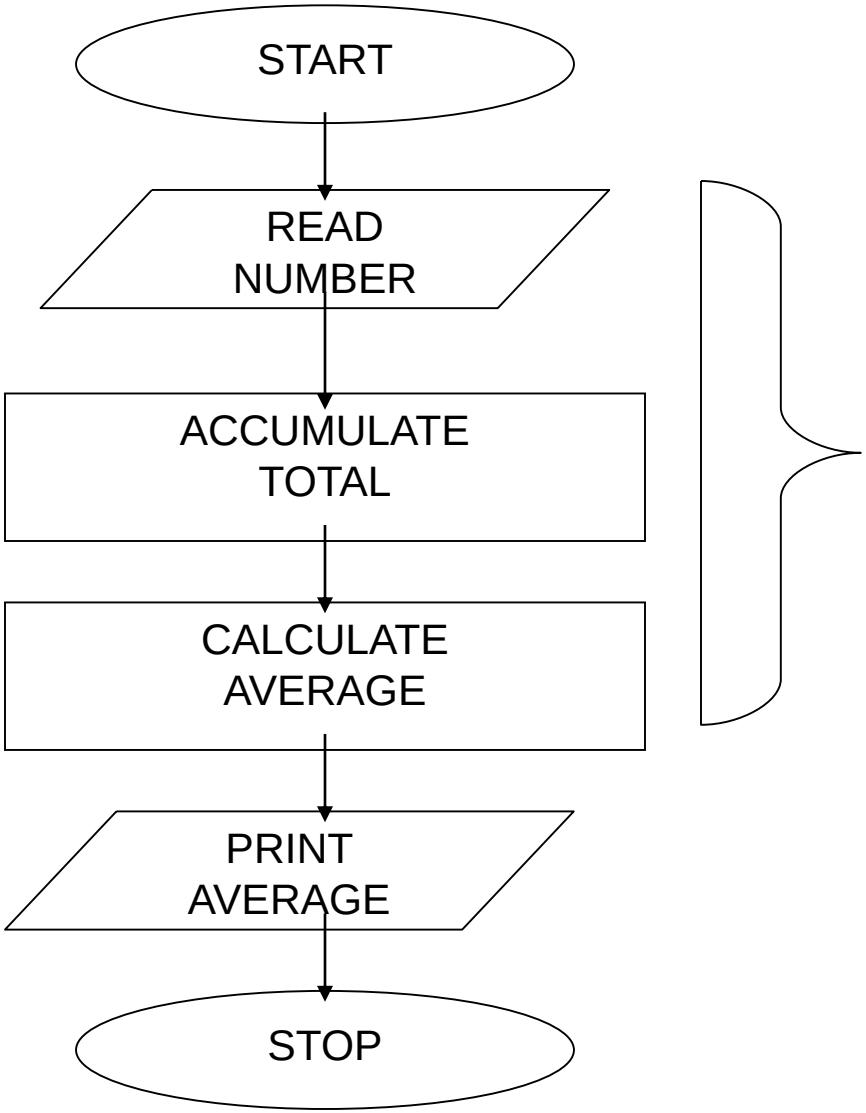
PRE-PROGRAMMING PHASE



PRE-PROGRAMMING PHASE

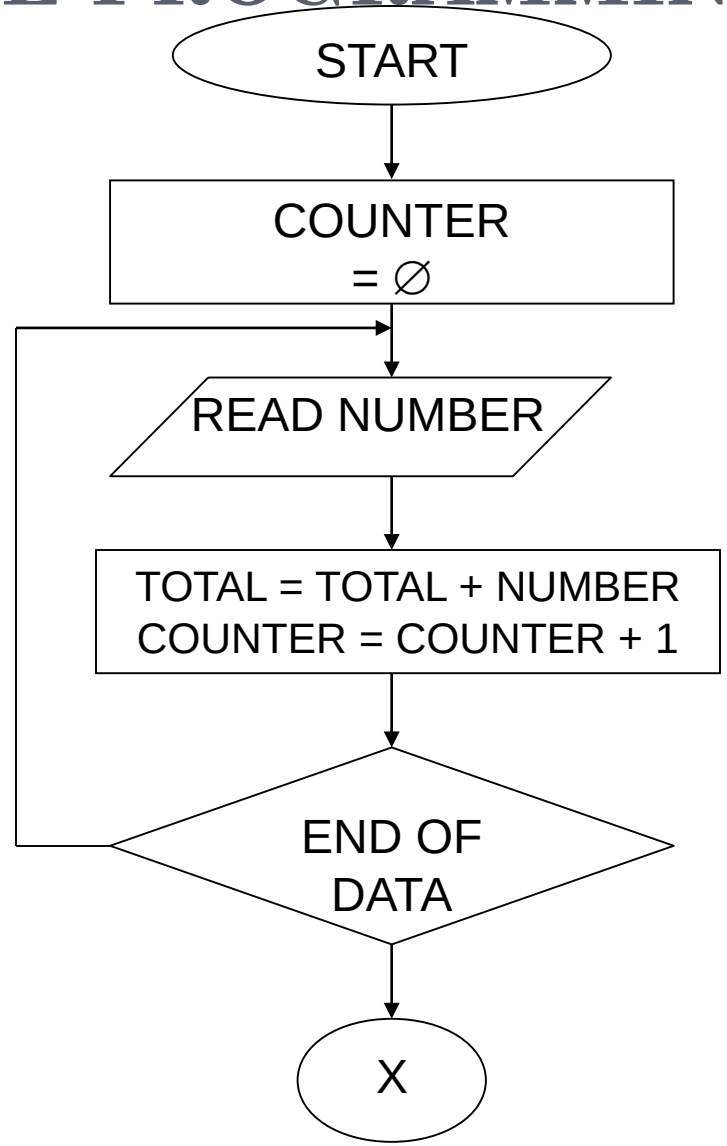
- **Finding Average Problem**
  - Read a sequence of number, find the average of the number and print the average.
  - Solution: Stepwise Analysis of Average Problem
    - Start the processing
    - Read a number
    - Add the number
    - Repeat reading until last data
    - Calculate the average
    - Print the average
    - Stop the processing

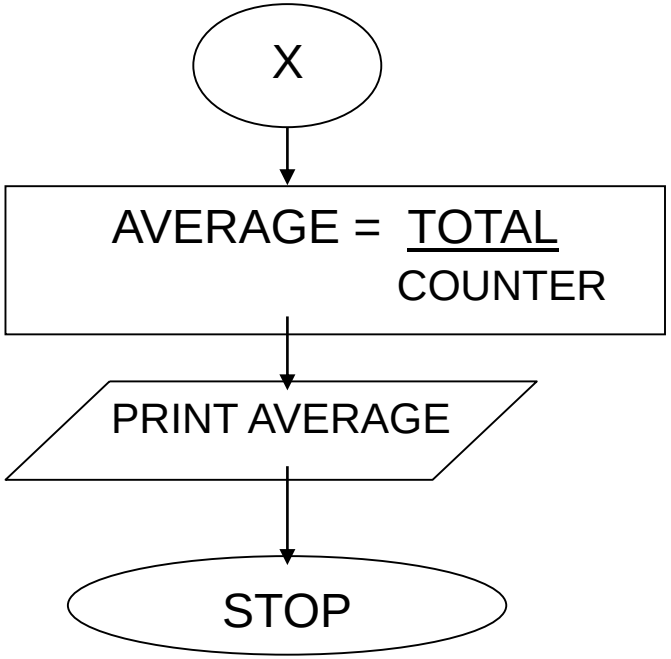
PRE-PROGRAMMING PHASE

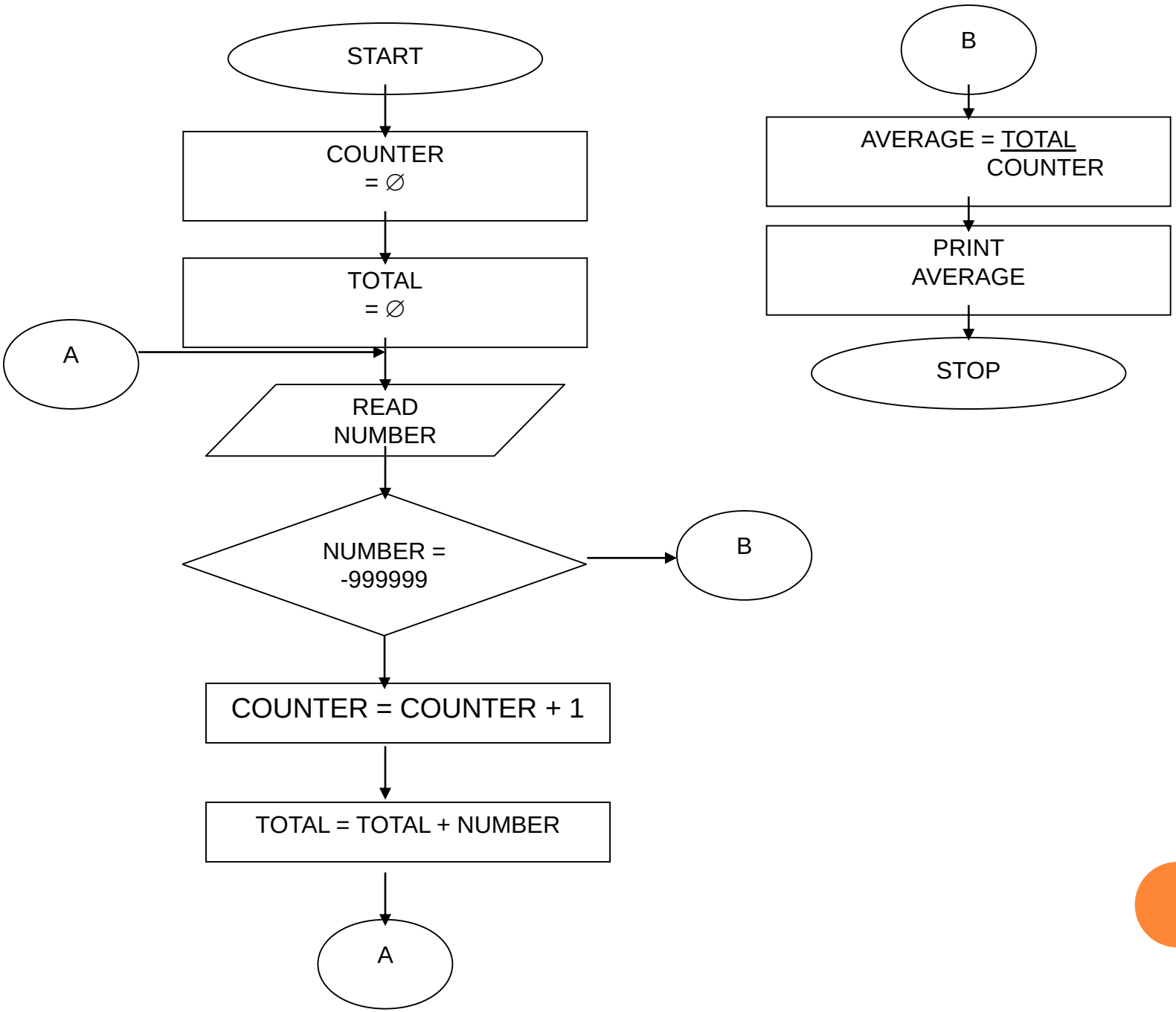


Repetition until end of data

PRE-PROGRAMMING PHASE

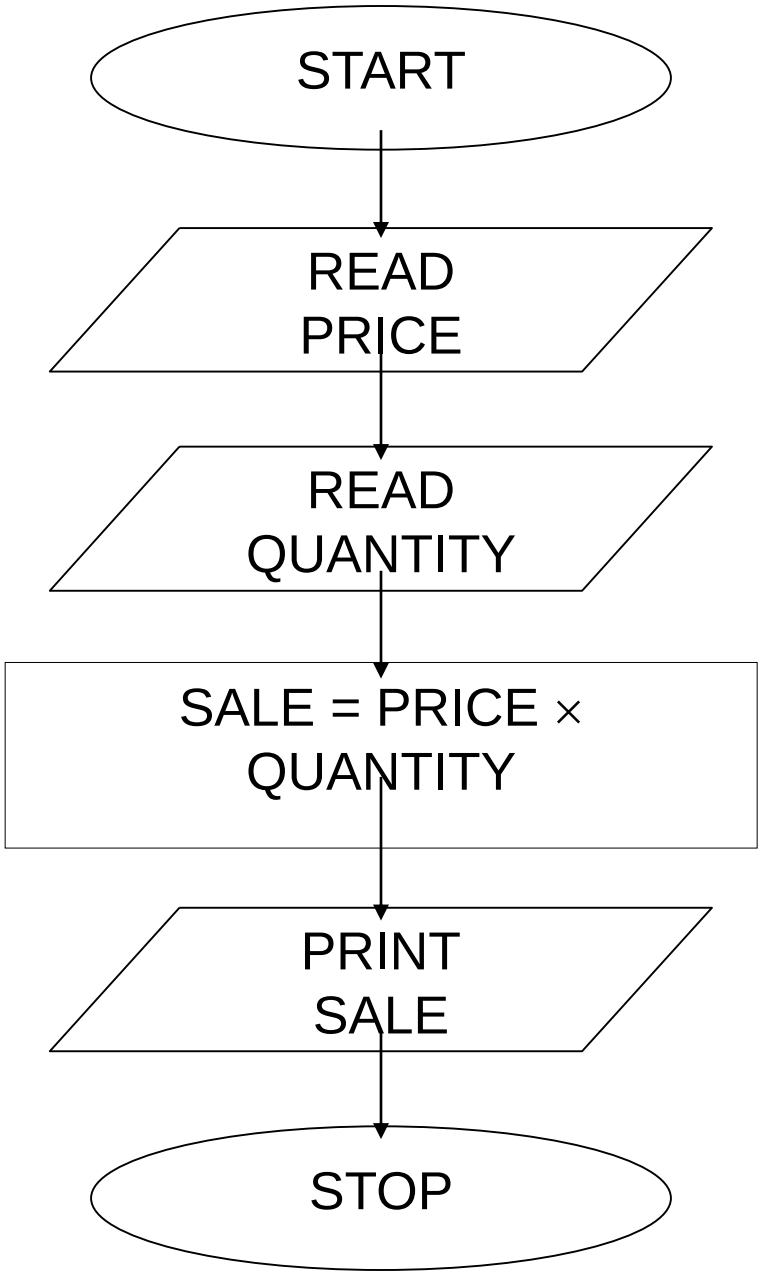





START
COUNTER
= ∅
TOTAL
= ∅
A
READ
NUMBER
NUMBER =
-999999
B
COUNTER = COUNTER + 1
TOTAL = TOTAL + NUMBER
A
B
AVERAGE = TOTAL
COUNTER
PRINT
AVERAGE
STOP

PRE-PROGRAMMING PHASE

- **Writing the Algorithm (Pseudocode)**
  - Pseudocode means an imitation computer code.
  - It is used in place of symbols or a flowchart to describe the logic of a program. Thus, it is a set of instructions (descriptive form) to describe the logic of a program.
  - Pseudocode is close to the actual programming language.
  - Using the Pseudocode, the programmer can start to write the actual code.



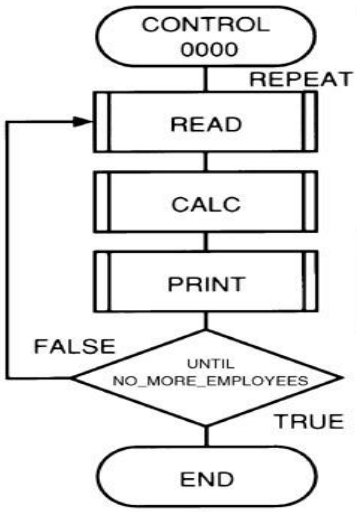
Algorithm:

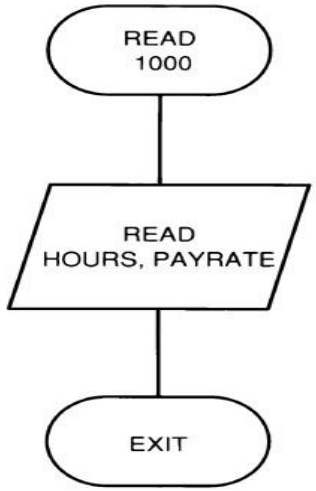
Start

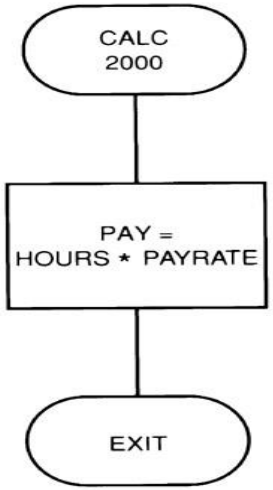
Read price, quantity
Sale = price x quantity
Print Sale

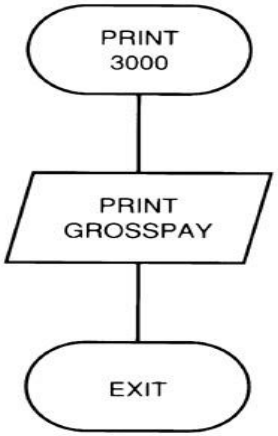
End

Payroll System

Algorithm	Flowchart
Control Module 0000 1. REPEAT PROCESS READ PROCESS CALC PROCESS PRINT UNTIL NO_MORE_ EMPLOYEES 2. END	

Algorithm	Flowchart
Read Module 1000 1. READ HOURS, PAYRATE 2. EXIT	

Algorithm	Flowchart
CALC Module 2000 1. GROSS PAY = HOURS WORKED * PAYRATE 2. EXIT	

Algorithm	Flowchart
Print Module 3000 1. PRINT PAY 2. EXIT	

Example: Flowchart & Algorithm