General Programming Concept

Program and programming

- Computer is a programmable machine , it can be programmed to perform a variety of tasks.
- A program is the set of instructions written in programming language which performs some tasks in a computer.
- The technique of creating a program involving various steps in an organized way is known as programming.

Programming language

- A programming language is the artificial language that is used for writing program for a computer.
- There are two types of languages:

1)Low level language

2)High level language

Low Level Language

- Low level language is machine oriented language.
- There are two types of low level languages:

i)Machine language

ii)Assembly language

Machine language

- It is a programming language of 1s and 0s.
- It is also known as binary language.
- The program written in machine language is directly understood by a computer.

Assembly language

- It is a low level programming language that uses mnemonic codes.
- The mnemonic codes are combination of letters , numbers or symbols.
- The program written in assembly language needs to be converted into machine language program.
- The assembler used to convert program in assembly language into machine language program.

High level language

- It is a programming language that uses English like words and mathematical notation.
- It is not the machine dependent language.
- The program written in high level language needs to convert into machine language program.
- The translation is done either by an interpreter or a compiler.
- QBASIC, C,C++, java , etc. are some popular high level language.

Language processor/translator

- It is the program that translates or converts program written in assembly language or high level language into machine codes.
- Programs written in high level language are translated into computer codes either by Interpreter or Compiler.

Interpreter	Compiler
It translates the source program line by line.	It translate the source program in a single line.
It is slower.	It is faster.
It consumes more time.	It consumes less time.
Debugging is easier than compiler.	Debugging is harder than interpreter.
Interpreters are smaller in size than compilers.	Compilers are larger in size.

Program Development cycle

- The stepwise activities involved in the development of a program is known as program development cycle.
- It contains the following activities:

a) Define the problem
b) Analyze the problem
c) Design the solution
d) Coding the program
e) Test and debug the program
f) Documentation‘
g) maintenance

Tools for Designing programs

- The programming tools are used to design the logical solution of a problem.
- These tools help to develop the sequential logical design before writing codes in computer.
- Algorithm and Flowchart are commonly used programming tools to design logical solution of a problem.

Algorithm

- It is one of the most commonly used programming tools.
- It is the stepwise instructions of a solution for a problem.
- Algorithm is the programming tool that has well defined rules for solving the program in finite number of steps.

Algorithm to calculate simple interest

Step 1: Start

Step 2: Read principal amount, rate and number of year.

Step 3: Multiply principal, rate and number of year.

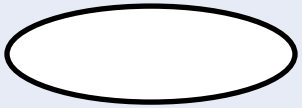
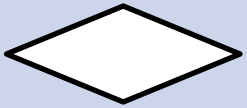
Step 4:Divide the product by 100 and put the value in interest.

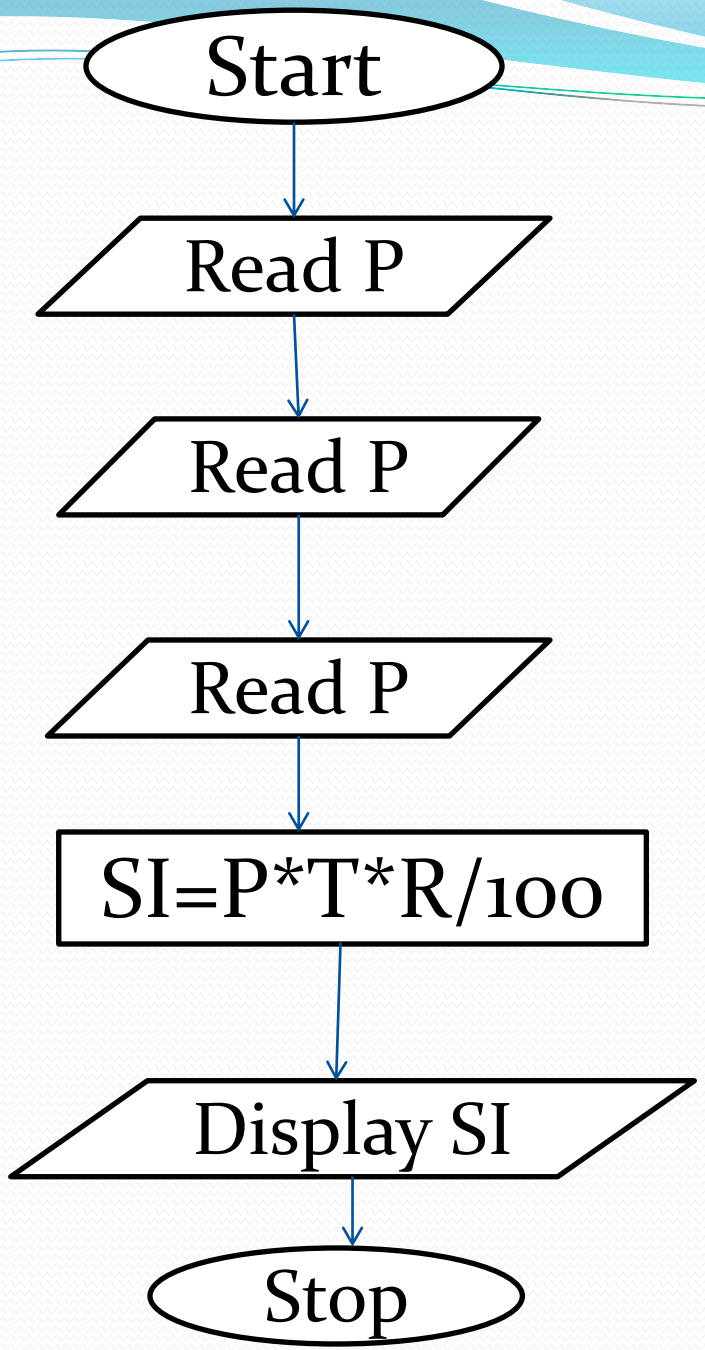
Step 5: Display the interest.

Step 6: Stop

Flowchart

- It is a graphical or symbolical representation of an algorithm.
- Flowchart is the graphical or symbolical representation of stepwise instructions to be performed to get solution of a problem.
- Flowchart to calculate simple interest.

Symbol	Meaning
 Flow line	Denotes the direction of logic flow in the program.
 Terminal box (Start/Stop)	Indicates the beginning or end of a program.
 Input / Output Box	Indicates input or output operation. Reading , accepting or displaying data are represented by this symbol.
 Processing Box	Indicates the processing operation i.e. assigning value or calculating value.
 Decision Box	Indicates logical branching point . It decides a route on the basis of condition.


Start
Read P
Read P
Read P
SI=P*T*R/100
Display SI
Stop