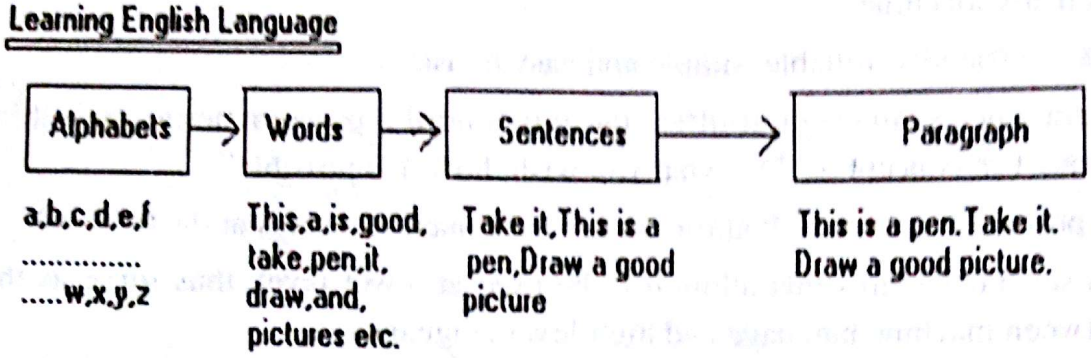
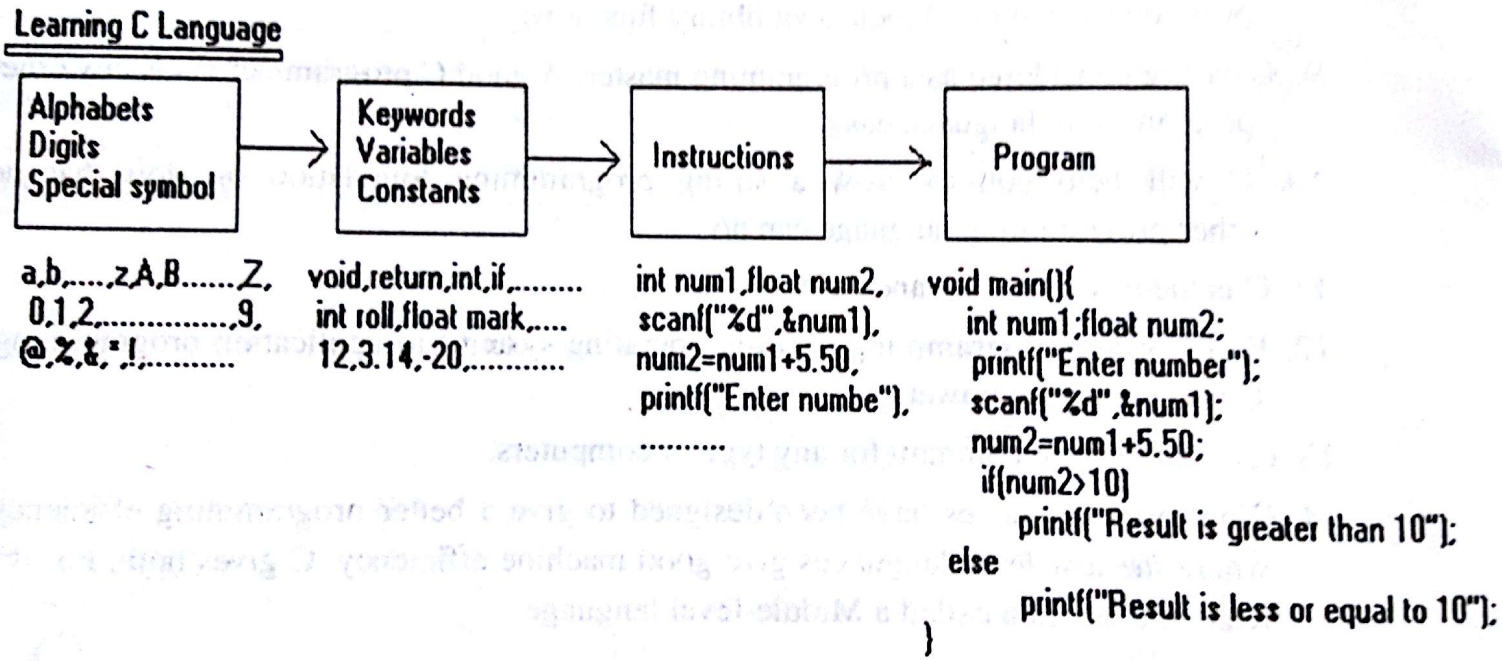
The process are shown in the following figure :





1.8 Algorithm

An algorithm is a steps-by-step program solving procedure that can be carried out by a computer.

An algorithm is a set of rules or steps to solve a mathematical problem or a computer program. Algorithm describes how people realise a problem, find a right way to solve it,

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analyse the available resources (data), make an optimal solution, and finally outputs the result.

As for example, suppose we want to input a positive integer (greater than zero) and check whether it's an even number or an odd number. Then what is the algorithm of this problem ?

Problem 1 : Check whether a given positive integer is even or odd.

Algorithm Steps :

1. Input a number.
2. If the number is less than 0 ,then go to step 1.
3. Divide the number by 2 and find the remainder.
4. If the remainder is 0, then print a message "it's an even number". Otherwise, print the message "it's an odd number".
5. Stop.

Problem 2 : You are given the value of radius of a circle. Find its area.

Algorithm steps :

1. Input radius.
2. If radius is less then 1, then go to step 1.
3. calculate area : area = 3.14159 * radius*radius.
4. Print the value of area.
5. Stop.

Problem 3 : Input n numbers from the user . Find their sum and average.

Algorithm steps :

1. Initialise the variable count by 0 and sum by 0 : count=0, sum=0.
2. Input the value of n.
3. Input a number p.
4. Add p to sum.
5. Increase the value of count.
6. If count is less than n, then go to step 3. Otherwise, go to step 7.
7. Calculate average : average=sum/n.
8. Output the value of sum and average.
9. Stop.

A good algorithm should have the following properties :

1. It should be as simple as possible.
2. Steps must be unambiguous so that they are understood by the computer properly.
3. It should be understand by others.
4. It must be effective to solve the required problem.
5. It should be able to find an optimal solution.
6. It should have the capability to handle some unexpected situation during the problem solving. This situation may arise from the user or hardware failure.

1.9 Flowchart

A flowchart (also called "flow diagram" or "flow sheet") is a diagram which graphically describe the movement or action of a complex activity. It is called a flowchart since it charts

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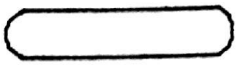
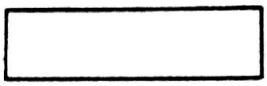
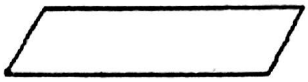
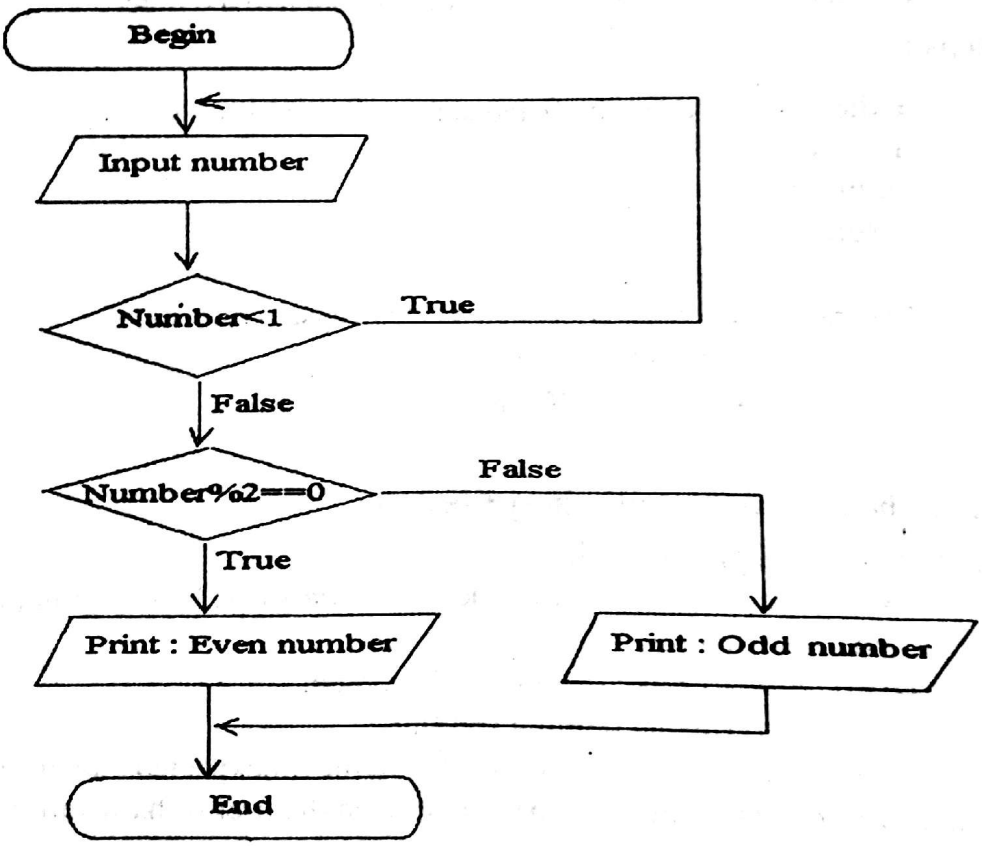
the flow of a program. Some specified graphical shapes (such as rectangle, oval, diamond etc.) are used to represent a flowchart.

Followings are some of the important geometrical shapes used for flowcharting :

Symbol	Operation
	Begin, Stop, End
	Check condition / decision
	General processing (such as addition, subtraction, increament etc.)
	Input / Output operation

Flowchart for finding even and odd number :



1.10 Pseudo code

Pseudo code is an alternative of flowchart. It allows the programmer to describe the solution of a problem which may look like plain English. The reason for pseudo code is to represent

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the solution to anybody without programming difficulties. As it is easy to implement and understand. Many programmers represent their solution using pseudo code, rather than flowchart.

Example : 1

Write a pseudo code to find whether a given positive integer number is even or odd.

```
Input number
WHILE number < 1 Do
        Input number
END WHILE
If number%2=0 THEN
        Print Even number
ELSE
        Print Odd number
END IF
Stop
```

Example : 2

Write a pseudo code to calculate the sum of series : 1+2+3+.....+20

```
Initialise n to 1
Initialise sum to 0
WHILE n<21 DO
        Add n to sum
        Increase n by 1
END WHILE
Print sum
Stop
```

Self study :

1. Write a pseudo code to calculate the sum of series : 1+3+5+.....+51.
2. Write a pseudo code to calculate the sum of series : 2+4+6+.....+50.
3. Write a pseudo code to find the area of a circle.
4. Write a pseudo code to find the areas of several circles.

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