

27/09/23

2. State

1. Conceptual process have state
2. When the process evolve the state will change
3. In an algorithm state of process can be represented by a set of variables.
4. The state at any point of execution is the value of the variable. The values of the variables can be changed.
5. The state is basic and important abstraction.
6. An algorithm starts with initial state ~~and~~ ~~ends~~ with some value as the actions are performed its state changes. it ends with the final value. During the conceptual process the state is stored in any data structure.

3. Control flow

Types :

- i Sequence ii Decision (selection) iii iteration (looping)

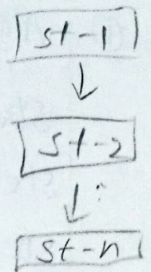
• What is control flow?

The statement to be executed in an algorithm may depend on the state of the process. Thus the order in which the statements are executed may differ from the order in which they are written in algorithm. This order of execution of statement is known as control flow.

i Sequence flow

⇒ Statements will be executed one after the.

other. In this statement, instruction in sequence control flow executed exactly once.



Example :

Write an algorithm to find the sum and average of 100 numbers / 3 numbers.

Step 1 : Start the process

Step 2 : Read three numbers in a, b, & c

Step 3 : Compute the sum of a, b & c as tot

Step 4 : Compute $avg = \frac{a + b + c}{3}$ (tot)

Step 5 : print tot, avg

Step 6 : Stop the process

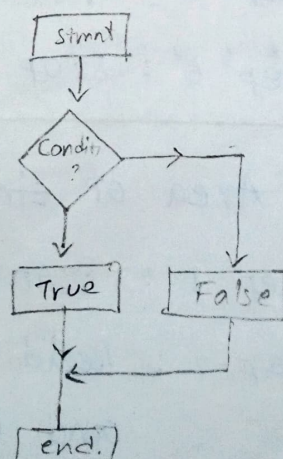
HW ① Write an algorithm to find the simple interest. ($S.I = \frac{PNR}{100}$)

HW ② Write an algorithm to find the area of the circle. ($A.O.C = \pi r^2$)

i) circle ii) rectangle iii) Square iv) Sphere
(πr^2)

iii) Decision / selection

① write a program to check whether the given no is odd/even.



- ① Algorithm to calculate simple interest
- Step 1: Start
- Step 2: Define variables p, n, r and SI
- Step 3: Read the values of variable P (Principal), n (no. of years) and r (Rate of interest).
- Step 4: compute the values of
- $$SI = (p * n * r) / 100.$$
- Step 5: Display SI (Simple Interest).
- Step 6: Stop.

② Algorithms to find

i) Area of circle

- Step 1: START
- Step 2: Read the values of radius R.
- Step 3: Let $\pi = 3.14$
- Step 4: Calculate area = $\pi * R * R$
- Step 5: Print "area"
- Step 6: STOP

ii) Area of circle rectangle

- Step 1: START
- Step 2: Read the values of L (length) and W (width)
- Step 3: Calculate AR = $L * W$
- Step 4: Display AR
- Step 5: STOP

iii) Area of square

- Step 1: START
- Step 2: Read the value of a (area)
- Step 3: Calculate AS = $a * a$
- Step 4: Print AS
- Step 5: END

iv) Area of Triangle

- Step 1: START
- Step 2: Read the value of b (base) and h (height)
- Step 3: calculate AT = $1/2 * b * h$
- Step 4: Display AT
- Step 5: STOP

v) Area of Sphere

- Step 1: START
- Step 2: Read the value of radius r
- Step 3: Let $\pi = 3.14$
- Step 4: Compute AS = $4 * \pi * r * r$
- Step 5: Print AS
- Step 6: END