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ALGORITHMS.

A step-by-step instruction proder procedure to solve a particular problem.

ALGORITHM NOTATIONS

- Name of the algorithm. [mandatory]
- Start [Begin of algorithm]
- Step Number [mandatory]
- Explanatory comment [optional]
- Termination [mandatory]

PROPERTIES OF AN ALGORITHM.

Finiteness - Must terminate after certain ∞ of steps
Definiteness - Action in each step must be specified.
Input - Has 0 or more inputs.
Output - Has 1 or more outputs.
Effectiveness - Operations must be basic.

STEPS TO WRITE AN ALGORITHM.

ID the input and output → Identify any other data and constants required to solve the problem [Logic]

↓

Write the algorithm. ← ID what needs to be computed and how to compute.

Eg :) Area of the circle.

Step 1: Start

Step 2: Input radius; ~~declare area~~.

Step 3: [compute area].

Area = 3.14 * radius * radius.

Step 4: print 'area of the circle =' area.

Step 5: Stop.

2) Name of the algorithm: Interchange two values.

Step 1: Start.

Step 2: Input 2 variables (A, B)

Step 3: Temp ← A

Step 4: A ← B

Step 5: B ← Temp.

Step 6: Print "value of A & B are", A, B.

Step 7: Stop.

3) Name of the algorithm: Find the largest of 3 no s.

Step 1: Start

Step 2: Input A, B, C.

Step 3: [compare A and B]

if A > B go to Step 5.

Step 4: [Otherwise compare B with C]

if B > C then

Print B is largest.

else

Print C is largest.

Go to step 6.

Step 5: [Compare A and C]

if A > C then

print A is largest.

else

print C is largest.

Step 6: Stop.

TUTORIALS.

1) Name of the algo: To add, multiply and divide.
   Step 1: Start.
   Step 2: Input A and B.
   Step 3: [Add A & B].
        print "Sum is "A+B.
   Step 4: [Sub A from B]
        print "Difference is "A-B.
   Step 5: [Multiply A and B]
        print A*B "product is "A↑B,
   Step 6: [Divide A and B].
        print "quotient is" A/B.
   Step 7: Stop.

2) Name of algo: Swap two no.
   Step 1: Start.
   Step 2: Input A, B.
   Step 3: [Swap]
        A ← A+B
   Step 4: B ← A-B.
   Step 5: A ← A-B.
   Step 6: Print '2 nos after swapping", A,B
   Step 7: Stop.

FLOWCHARTS

Flow chart is used to represent algorithm which basically provides a soln to any computational problem.

Key features:
- Diagrammatic
- Easier to understand.
- Machine independent.
- Well suited for any logic.

Start ⟶ Oval for beginning and end.

⟶ Flow line indicates the direction of flow.

"Enter Radius"
GET radius.
⟶ ‖ ℓℓogram for 10

Area ← 3.14*radius *radius ⟶ Rectangle for simple statements.

PUT "Area of circle" is Area.

End.

⟶ Diamond
if any decision is to be made.

eg

num1 > num2