

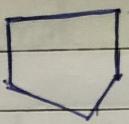
Unit 2

• **Flow chart** :- It is a symbolic or diagrammatic representation of an algorithm.

A flow chart is a type of diagrams that represents a work flow or process.

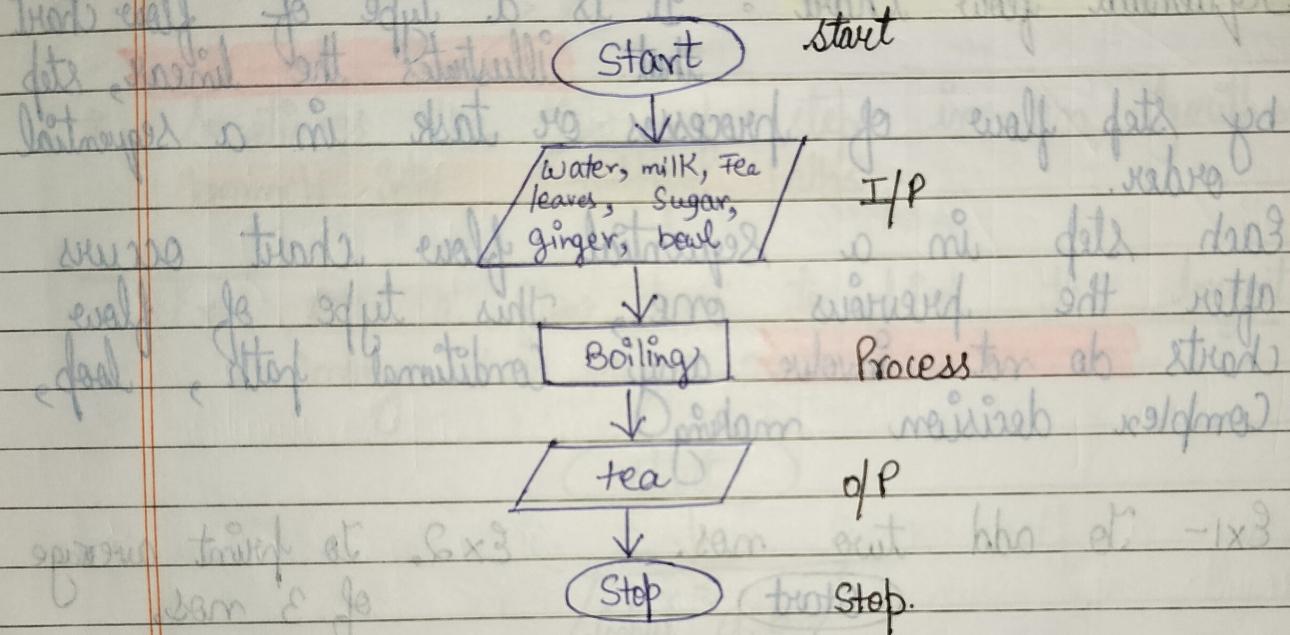
Symbol Name	Representation	Purpose
Start / Stop	○	Used at the beginning & end of the flowchart.
Process	□	Indicate process like mathematical or logical operations.
I/O	[/ \]	Used for denoting program input & output.
Decision	◇	Stands for decision statements in a program where ans is usually yes or no.
Arrows	↓ ↓ →	Shows relationships b/w diff. shapes (flow lines)
ON-Page Connector	○	Connects two or more parts of a flowchart which are on the same page.

Off - Page Connector

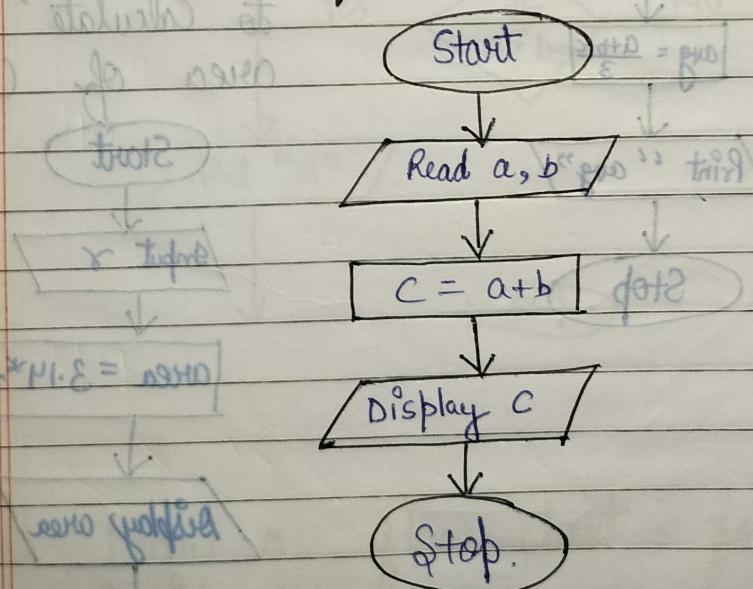


Connects two parts of a flow chart which are spread over different pages

Q: Draw a flow chart to make a Tea.



Q: Make a flow chart to add two numbers.



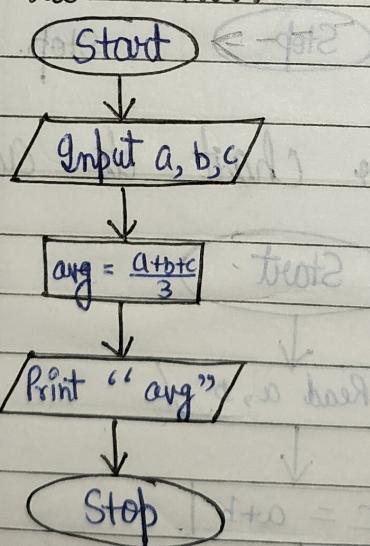
Types of Flow Chart

1. Sequential flow chart
2. Branching & Conditional flow chart
3. Looping flow chart.

1. Sequential flow chart : It is a type of flow chart that illustrates the linear, step by step flow of processes or task in a sequential order.

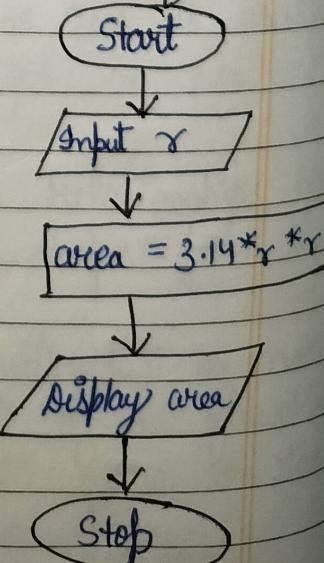
→ Each step in a sequential flow chart occurs after the previous one. This type of flow charts do not involve any conditional path, loop, complex decision making.

Ex1- To add two nos.



Ex2. To print average of 3 nos.

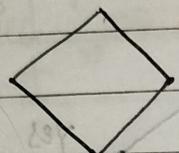
Ex3. Draw a flowchart to calculate the area of circle.



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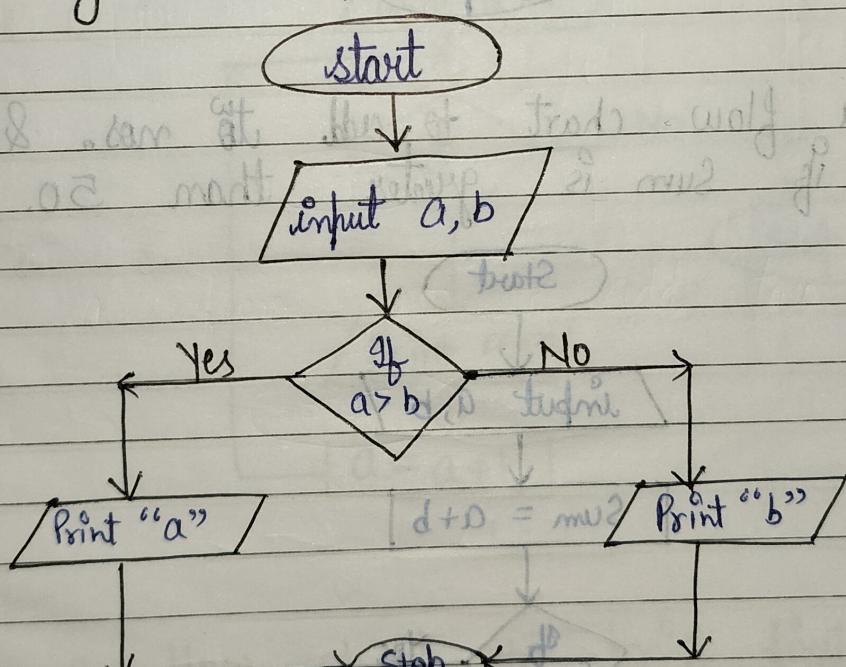
2. Branching & Conditional flow chart : It is used when a condition is

- imposed on a problem.
- The Condition will either be true (yes) or false (No).
- The Condition will be specified within the following shape.



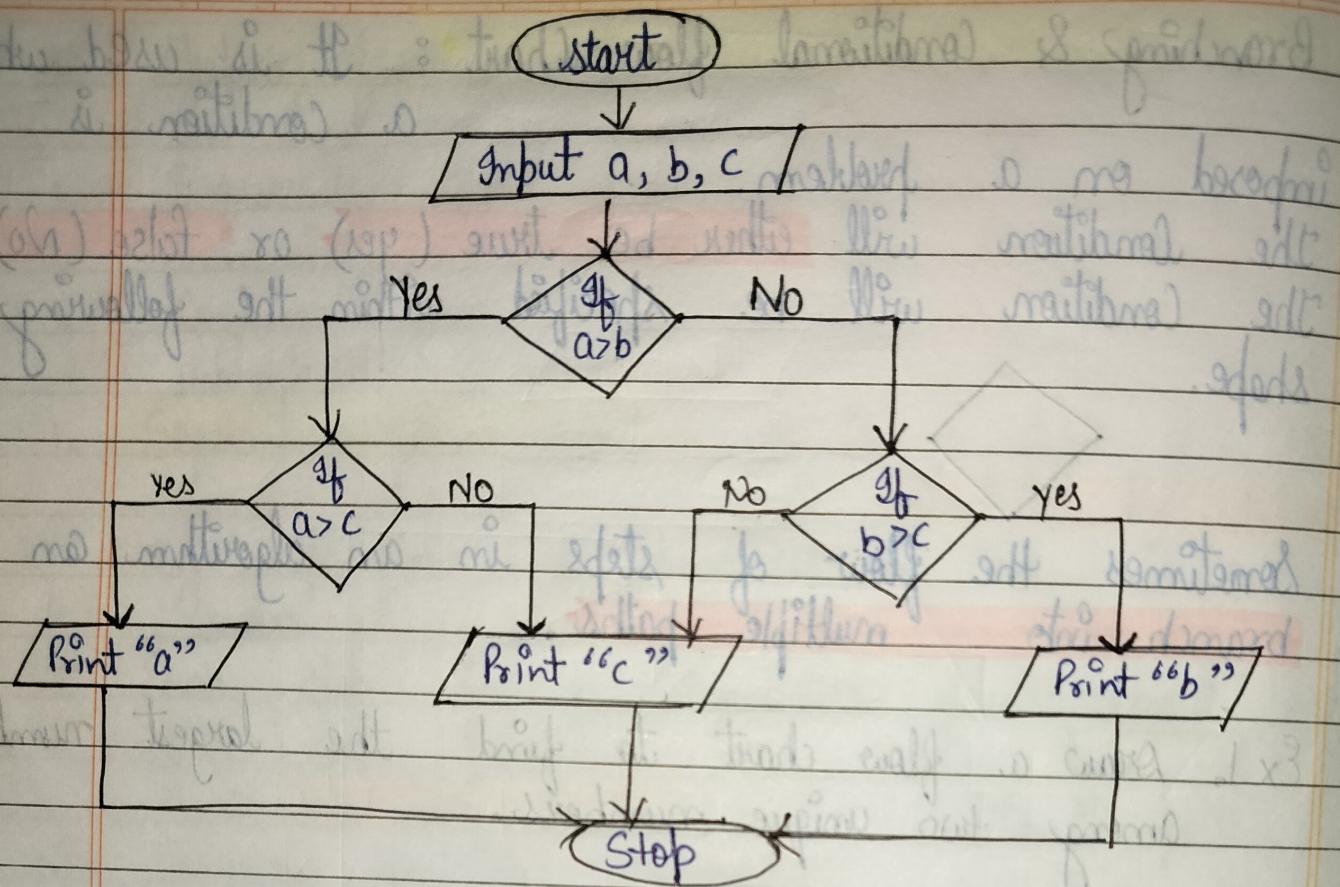
- Sometimes the flow of steps in an algorithm can branch into multiple paths.

Ex 1. Draw a flow chart to find the largest number among two unique numbers.

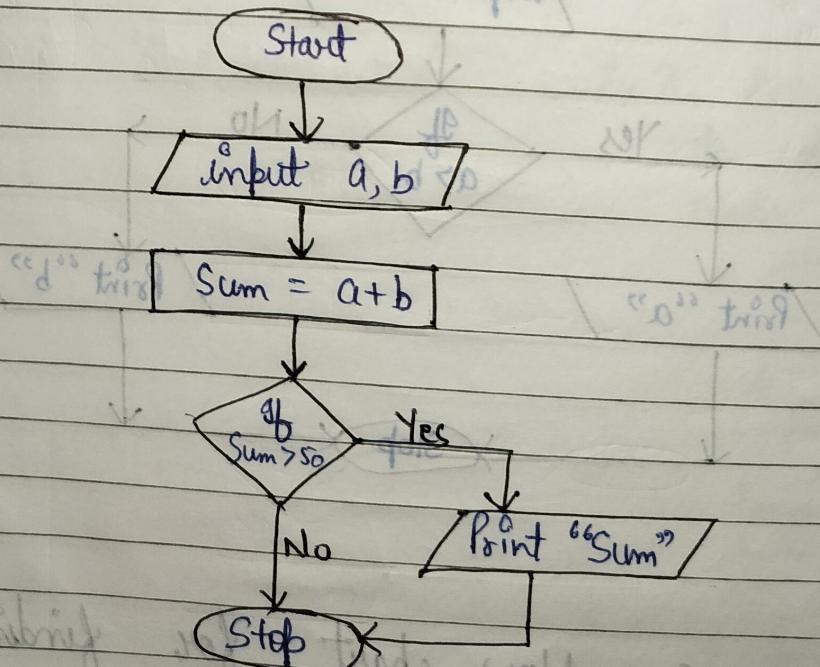


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Draw a flow chart for finding greatest of 3 integers.



- Draw a flow chart to add two nos. & print the result if sum is greater than 50.

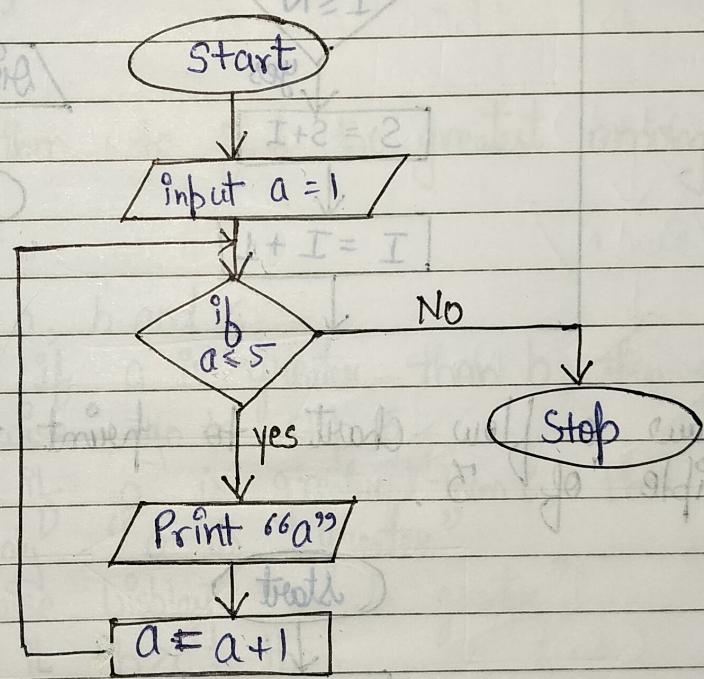


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3) Looping flow chart : Sometimes, some steps in an algorithm have to be repeated for a given number of times. This is known as a loop.

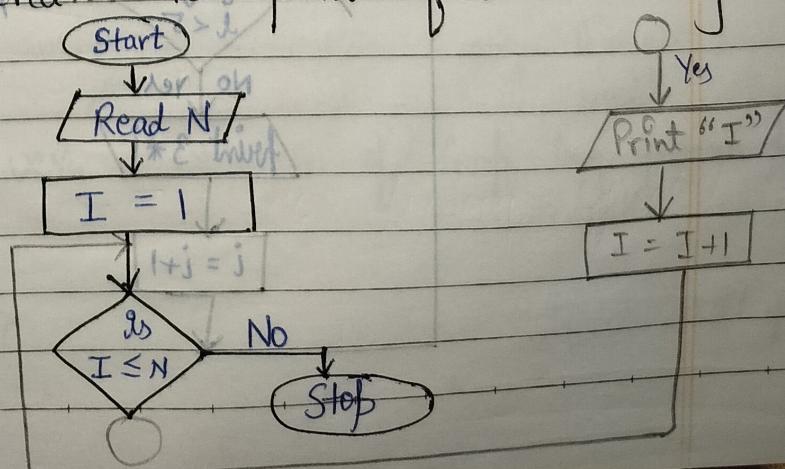
" A Loop is the sequence of instructions that repeats a specified no. of times until a particular condition is met."

Draw a flow chart to print the first five nos. (1 to 5).

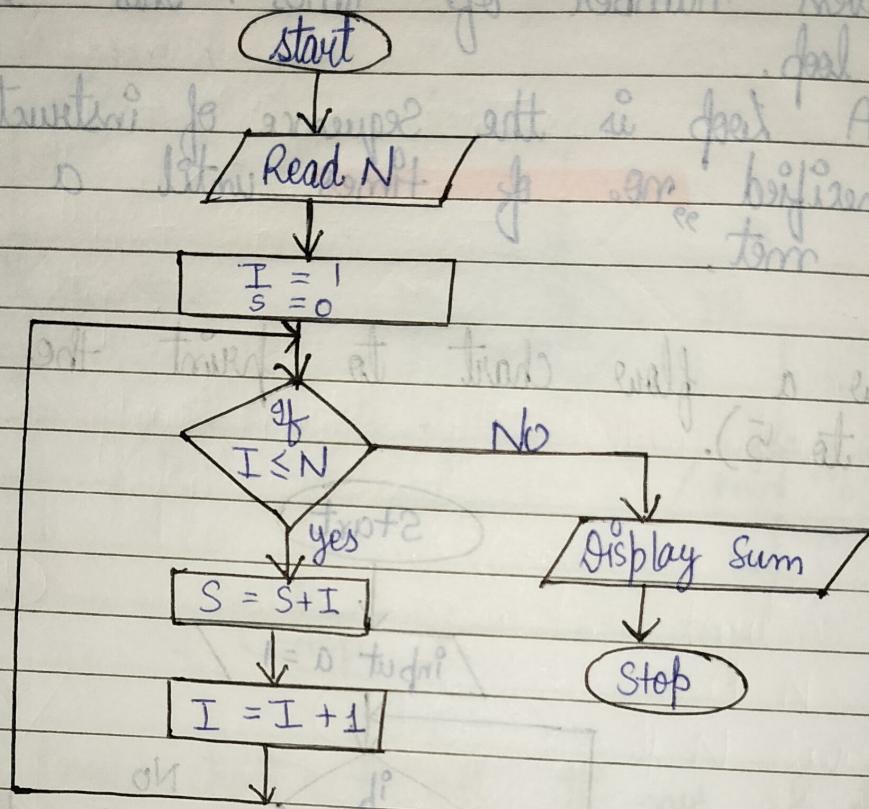


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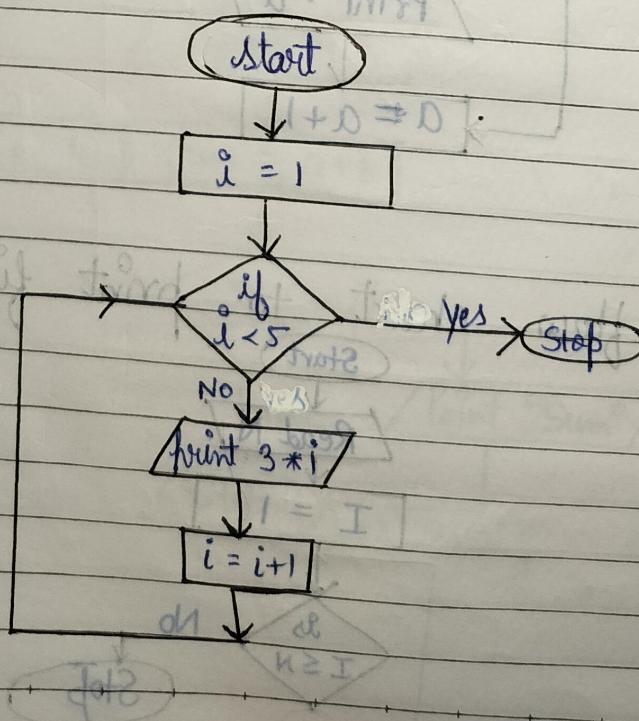
Draw a flow chart to print first N integers.



Q: Draw a flow chart that will calculate the sum of first N integers.



Q: Draw a flow chart to print the first five multiples of 3.



• **Algorithm :** An algorithm is a set of instructions designed to perform specific task.

Write an algorithm to add two numbers.

Step 1. Start

Step 2. Input number a and b

Step 3. Calculate the Sum as

$$\text{Sum} = a + b$$

Step 4. Display the result

Step 5. Stop.

Find an algorithm to find the greatest among 3 nos.

Step 1. Start

Step 2. Input a, b and c

Step 3. Check if a is greater than b, then go to step 4.
Otherwise go to step 5.

Step 4. Check if a is greater than c, then

Display "a is greater."

otherwise, Display "c is greater."

Step 5. Check if $b > c$, then

Display "b is greater."

otherwise, "c is greater."

Step 6. Stop.

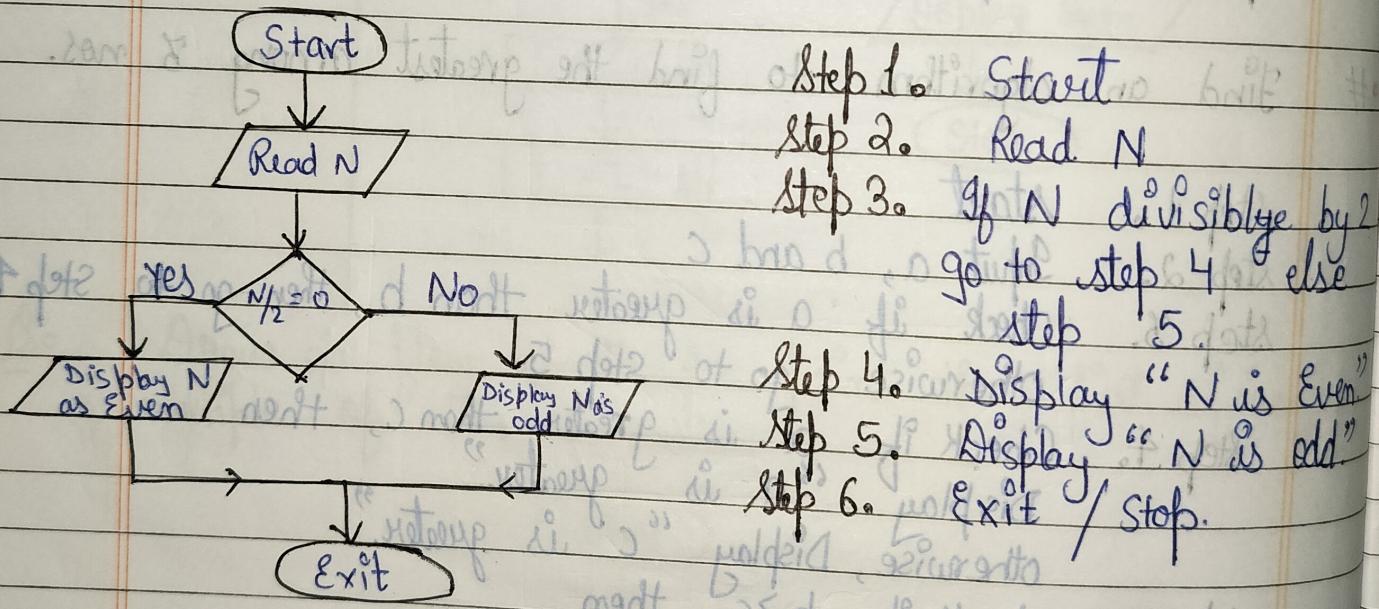
• **Pseudo Code :** A very simple form of program design used in

Step 1. Start

Step 2. Input a, b, c

- Step 3. if $a > b$, go to step 4 otherwise go to step 5.
- Step 4. if $a > c$
Print "a is greater".
Else
Print "c is greater".
- Step 5. if $b > c$, then
Print "b is greater".
- Step 6. Stop.

- # • Draw a flow chart, an algorithm for finding the no. is Even or odd.



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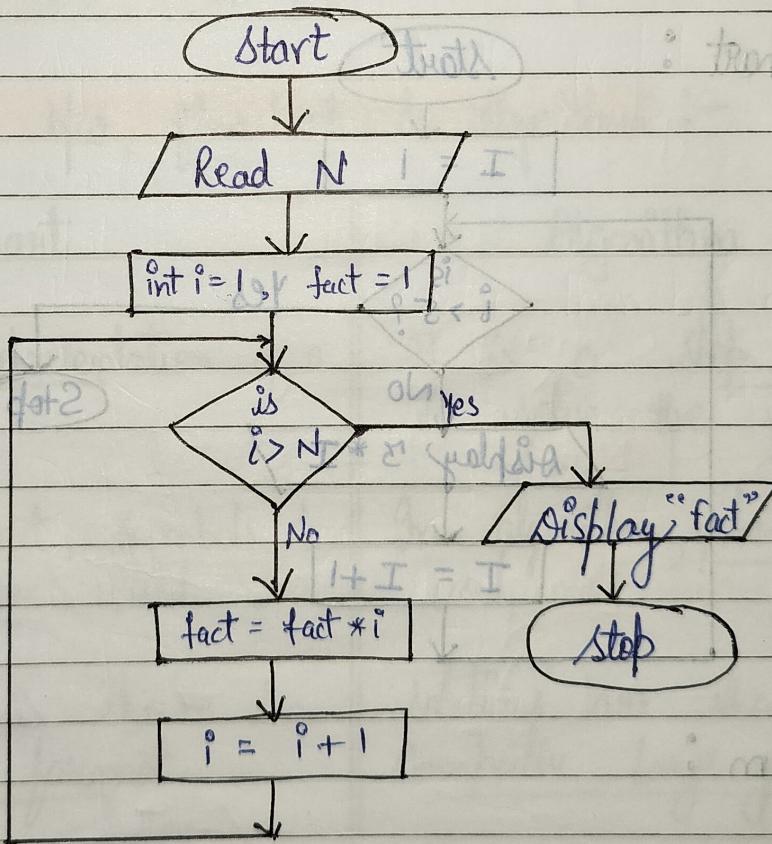
Write an algorithm & flow chart for finding a factorial of a number.

Algorithm :

Step 1. Start.

- Step 2. Input the number N.
 Step 3. Initialize the Counter value as 1 & fact as 1.
 Step 4. Check if $I > N$, if yes then go to step 8
 else go to next step (step 5).
 Step 5. Multiply the factorial value with the Counter value.
 Step 6. Increment the Counter value by 1.
 Step 7. Go to step 4.
 Step 8. Print the "fact".
 Step 9. Stop.

Flow Chart :



Pseudo Code :

- Step 1. Start
 Step 2. Input N

Step 3. $I = 1$, fact = 1

Step 4. If $I > N$, if yes then go to step 8

else go to step 5.

Step 5. fact = fact * I

Step 6. $I = I + 1$

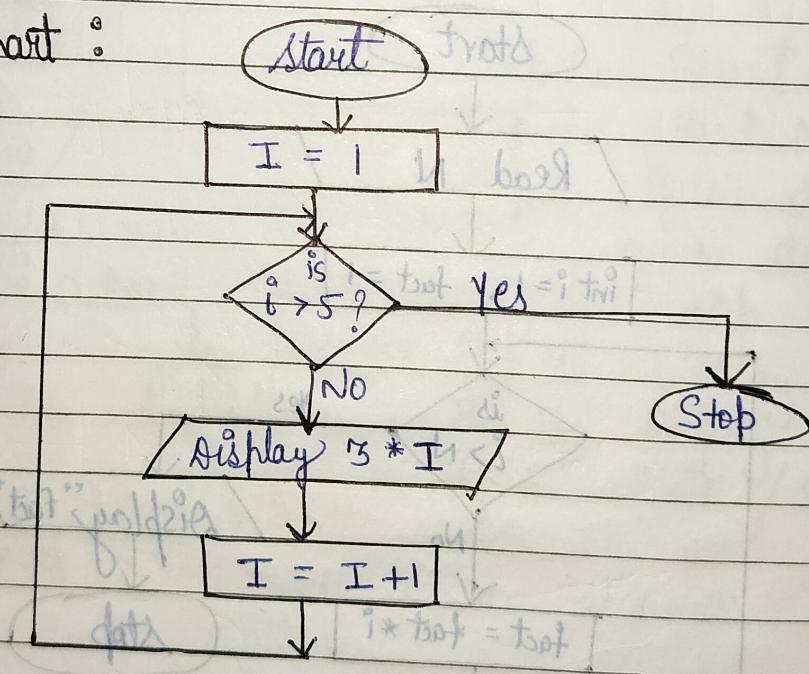
Step 7. Go to step IV

Step 8. Print "fact"

Step 9. Stop

Write an algorithm, flow chart & Pseudo Code for finding a five multiple of 3.

flow chart :



Algorithm :

Step 1. Start

Step 2. Initialise counter value as 1.

Step 3. Check if i less than or equal to 5, if yes then go to next step otherwise go to step 8.7.

Step 4. Print $3 * i$

- Step 5. Increment the Counter value by 1.
 Step 6. Go To Step 3.
 Step 7. Stop.

Ques. Pseudo Code :-

- Step 1. Start
 Step 2. $i = 1$
 Step 3. If $i \leq 5$, if yes go to Step 4 else go to Step 7.
 Step 4. Print $3 * i$
 Step 5. $i = i + 1$
 Step 6. Go to Step 3.
 Step 7. Stop.

Difference b/w flowchart & Algorithm :-

Flowchart

Pictorial representation of a process.

In flowchart, symbols & shapes are used.

Solution is shown in graphic format.

It follows rules to be constructive.

Easy to show branching & looping.

Algorithm

It is a step by step procedure to solve the problem.

In algorithm, plain text are used.

Solutions are shown in non-Computer language, such as English.

It doesn't follow any rules.

Difficult to show branching and looping.