

Algorithm specification & performance  
Analysis :-

- **flow chart** :-

It a planning of program.

It is a graphical representation of program.

It is a pictorial representation of program or algorithm.

It is called a flow chart since it chart a flow of program with the symbol

There are following important symbol use for flow chart:-

i) oval shape ( ) : - An oval represents a start or end point.

ii) Parallelogram [ ] : - A parallelogram represent input/output .

iii) Rectangle [ ] : - A rectangle represent a process

iv) Flow line ↪ ↮ ↮ ↮ : - A flow line shows relationships between representative shapes .

v) Diamond / Decision making symbol  :-

Decision / Diamond symbol represents a decision or switching types of operations

vi) Connector  :- It is used to connect more than one sheet of flow chart.

● Advantages and disadvantages of flow chart :-

Advantage:-

i) Flowchart are better way to communicating the logic of a symbol to all concerned or involve.

ii) With the help of flowchart, problem can be analysed in more effective way.

iii) The flowcharts act as a guide during the systems analysis and program development phase.

iv) Flowchart helps in debugging process.

Disadvantage:-

v) Sometimes, the program logic is quite complicated. In that case, flowchart becomes complex and clumsy.

ii) As the flowchart symbols cannot be typed, reproduction of flowchart becomes a problem.

Ques:- write an algorithm to display your name for 100 times.

Step-1. Let  $x = 1$

2. Print "Swati".
3.  $x = x + 1$
4. If ( $x \leq 100$ )
5. Go to Step 2
6. End it

Start

$x=1$

Print "Swati"

$x=x+1$

if

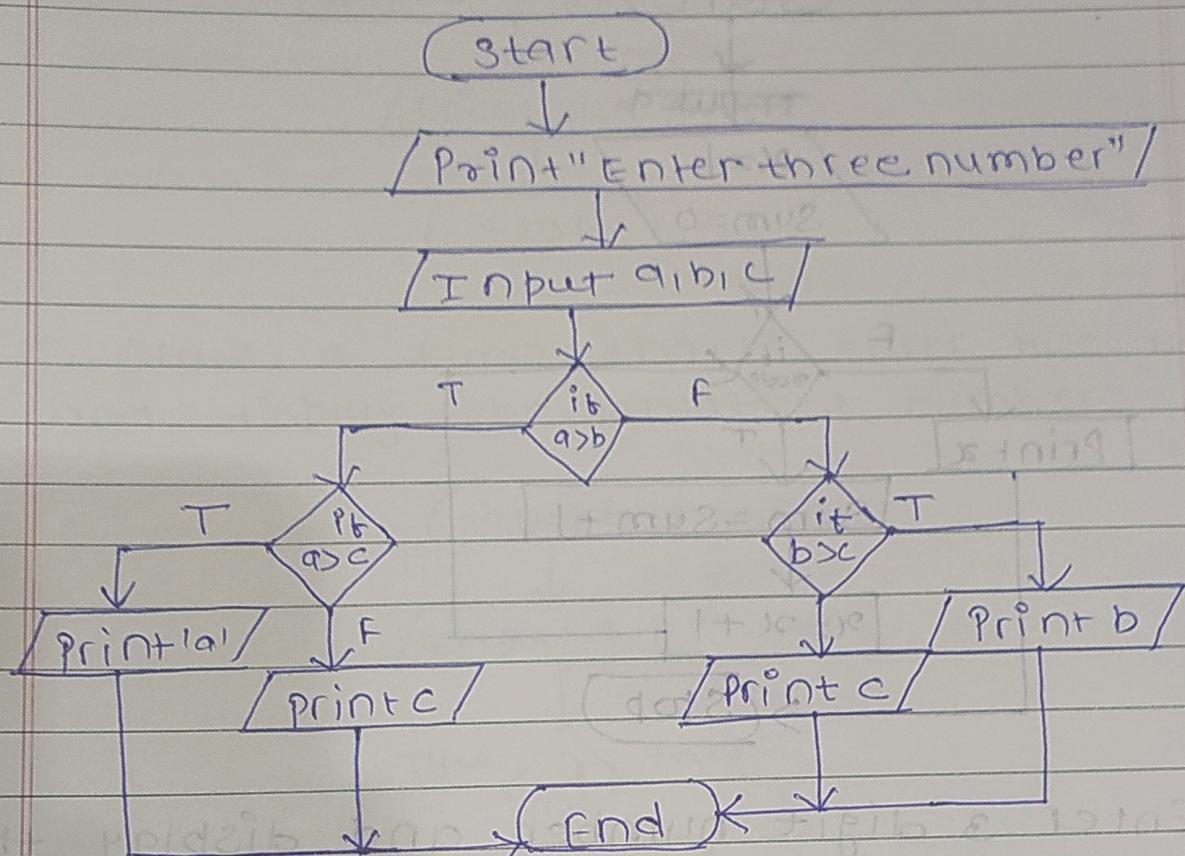
$x \leq 100$

True

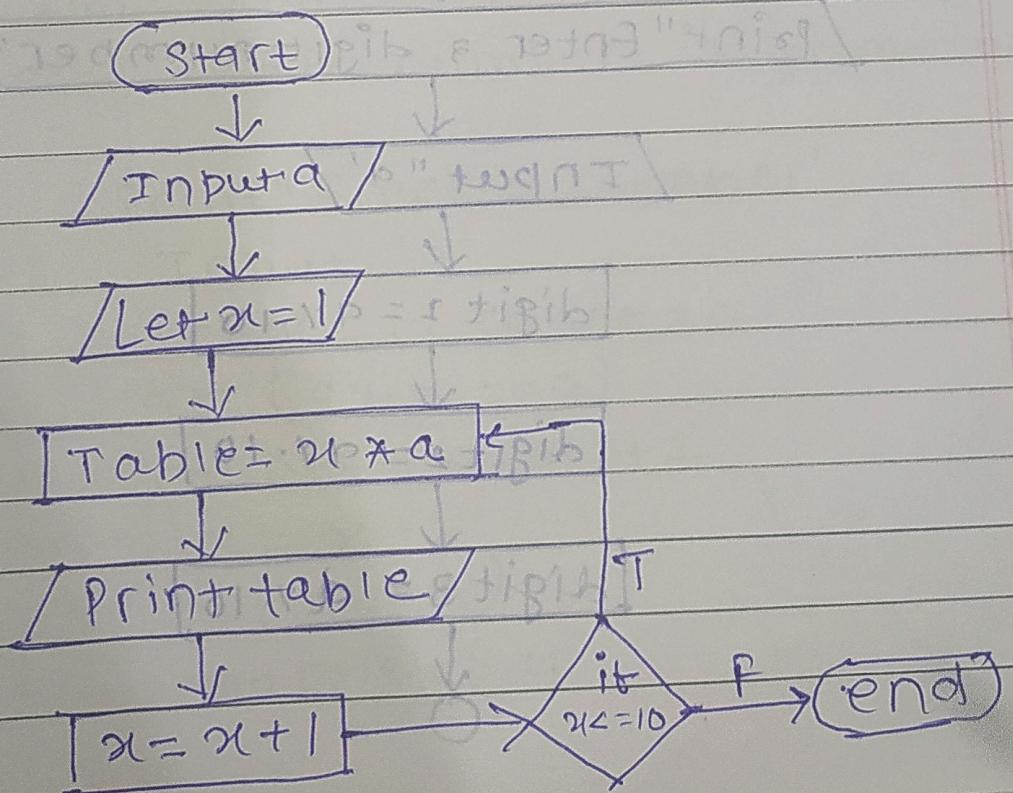
False

End

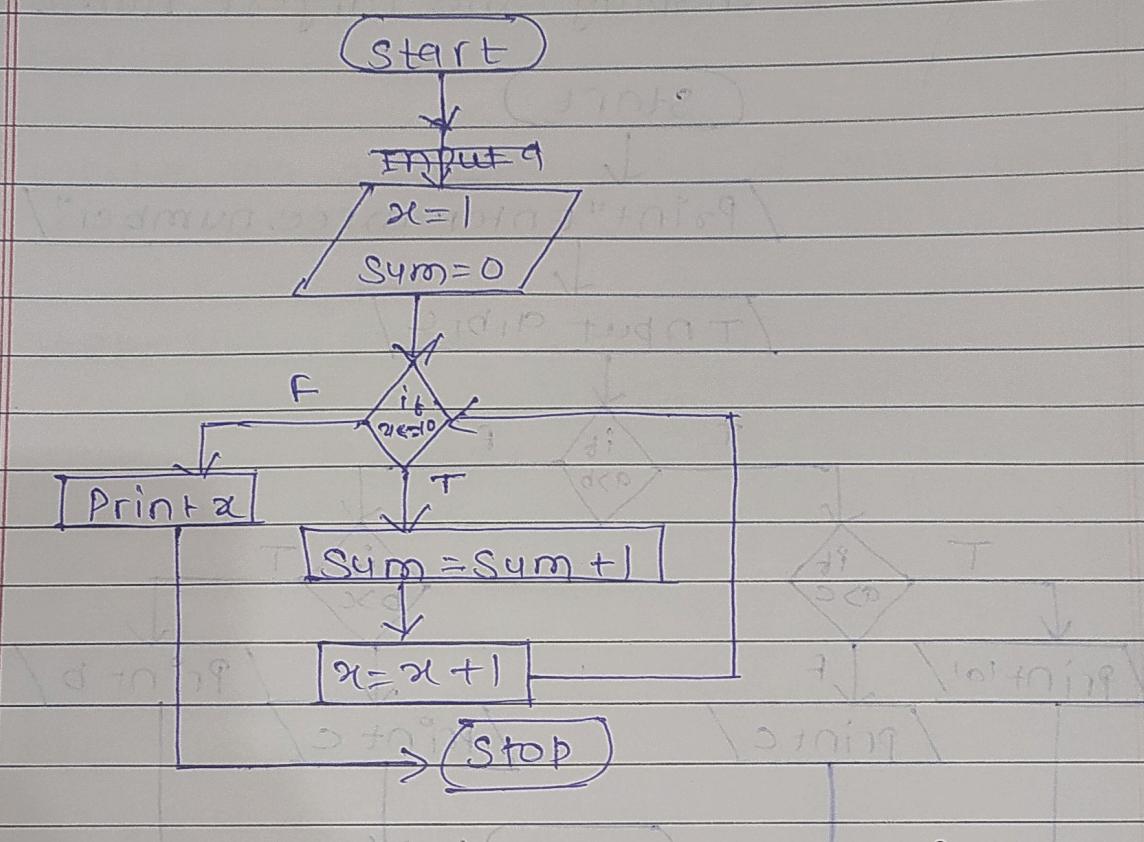
Ques:- Draw flow chart to enter any three number & display the largest number.



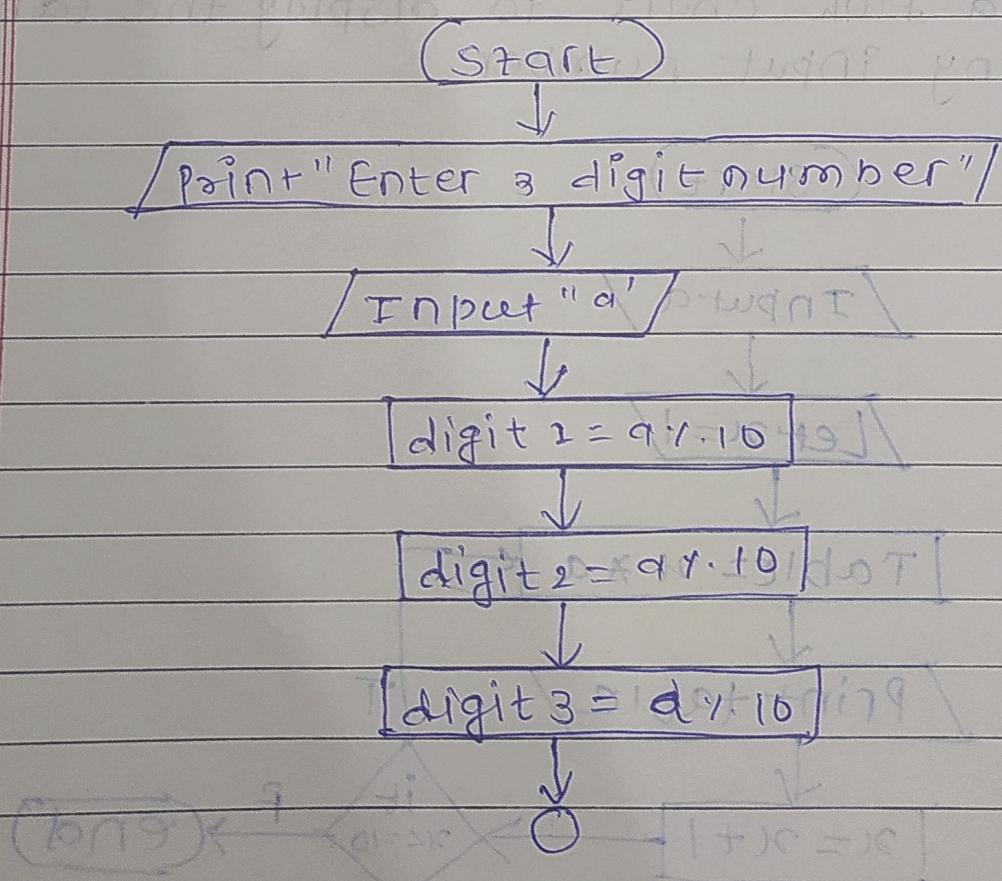
Ques:- Draw a flow chart to display the table of any input number.

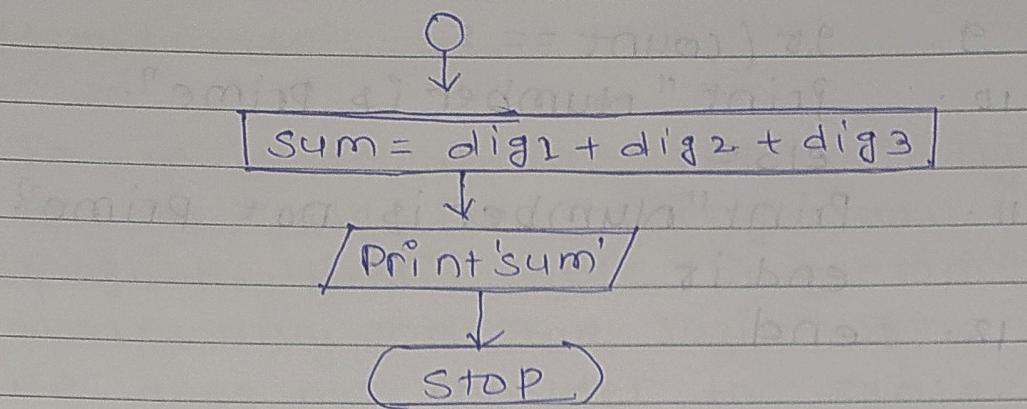


Ques:- Draw a flow chart to sum 1 to 10

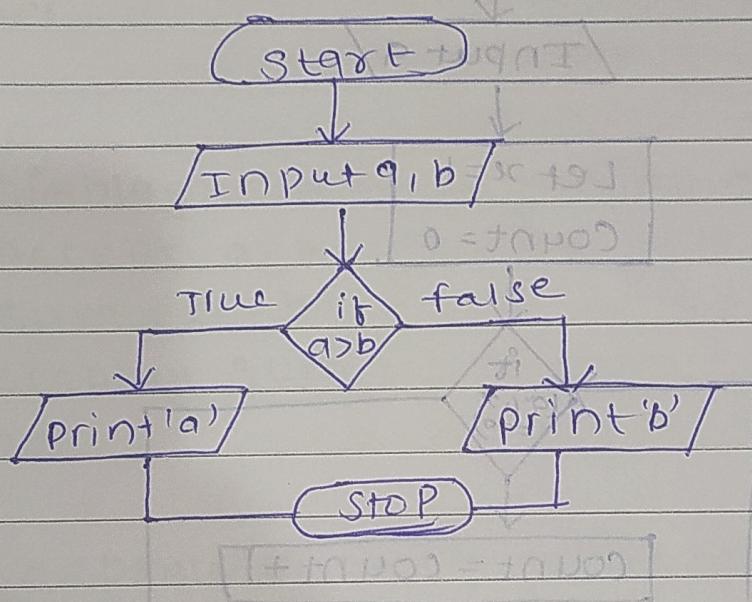


Ques:- Enter a 3 digit number and display the sum of digits of input number.





Ques:- Draw a flow chart enter two number and display the greatest number.



Ques:- Draw flow chart to enter a number and check that number is prime or not

Step-1. Print "Enter a number"

2. Input 'a'

3. Let  $x = 1$ ;  $count = 0$

4.  $gt (a \cdot x == 0)$

5.  $count = count + 1$

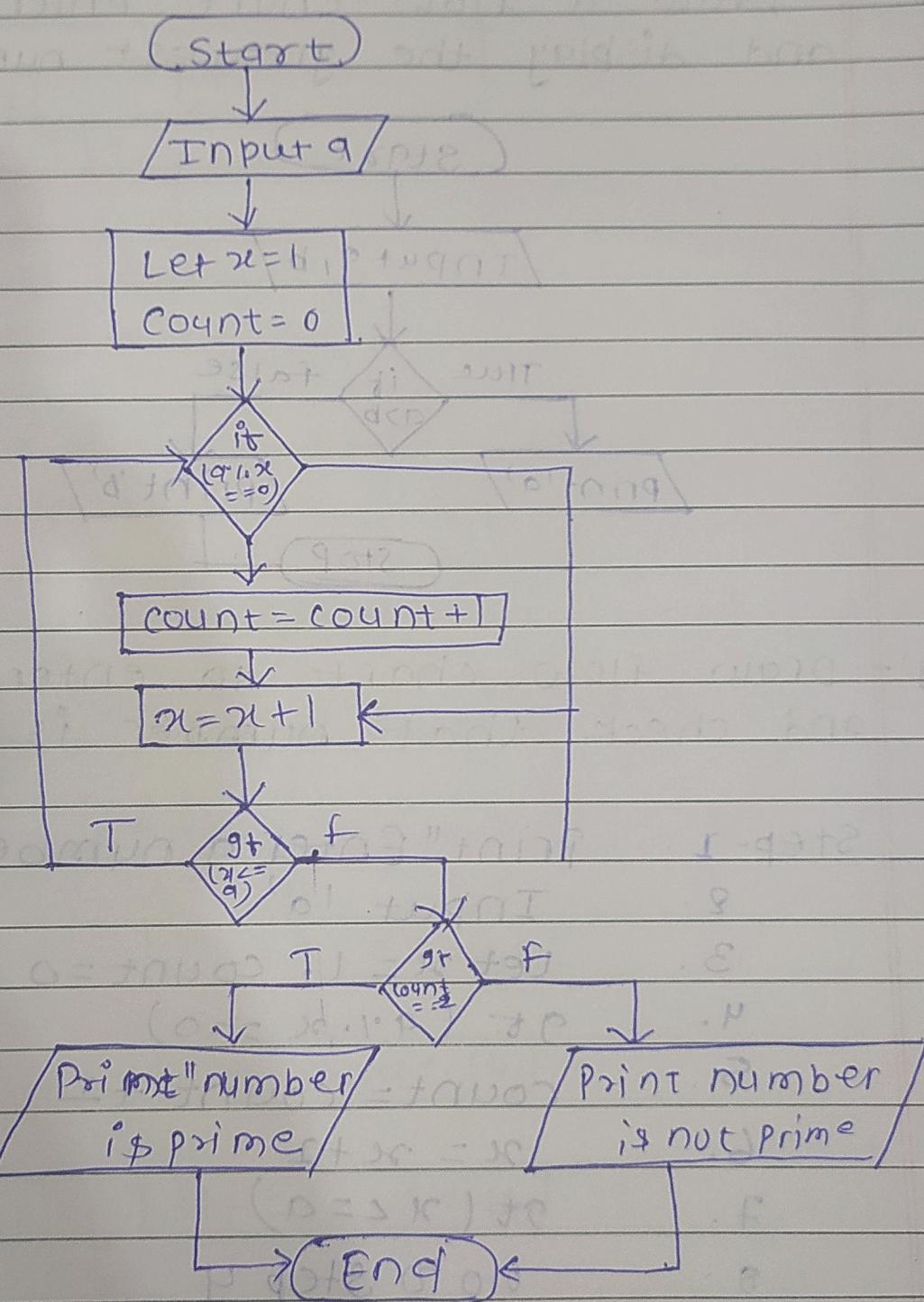
6.  $x = x + 1$

7.  $gt (x <= a)$

8. no to step 4

9.  $\text{gt}(\text{count} == 2)$
10. Print "Number is prime".
11. Else
12. Print "Number is not prime".
13. End if
14. End

Flow chart: —



### Pseudocode:

It is a technique for writing a program of an algorithm using natural language (English, Hindi). Here programmer concentrate only on the logic of a problem. He does not consider the syntax of language.

Ques:- write a pseudocode to add any two number.

Begin       $001|010|02 = AB$

Display "Enter two number"

Accept  $a|b|02 + c|d|02$

$sum = a+b$

Display sum

end

Ques:- write a pseudocode to accept three numbers and display sum and average of input number.

Begin       $b|c|02 + d|e|02$

Display "Enter three number".

Accept  $a|b|02 + c|d|02 + e|f|02$

$Sum = a+b+c$  (i)

Display sum. (ii)

$Average = sum/3$

Display Average

end

Ques: - write a pseudocode to display net salary  
on the basis of following information:  
i) input salary  
ii) DA @ 50% of salary  
iii) HRA @ 20% of salary  
iv) TA @ 20% of salary.

Begin

Display "Enter salary".

Accept Salary

$$DA = (\text{Salary} \times 50) / 100$$

$$HRA = (\text{Salary} \times 20) / 100$$

$$TA = (\text{Salary} \times 20) / 100$$

$$\text{Net Salary} = \text{Salary} + DA + HRA + TA$$

Display Net Salary.

end.

mn2

### Performance analysis : -

It is an analysis phase of an algorithm of a problem. Here developer decides which algorithm is best to solve the given problem in terms of time to execute the algorithm and space required.

There are two way to analyse the performance of an algorithm.

- Time complexity
- Space complexity.

## ix) Time Complexity :-

The minimum time required for an algorithm, which execute successfully and perform the given problem.  
for example:-

Step 1. Print " Enter two number"

2. Input a, b

3. sum = a + b

4. Print sum

Let time required  $t = 1$  sec

Print = 1 sec

input = 1 sec

sum = 1 sec

$t_1 = 1$

$t_2 = 1$

$t_3 = 1$

6 sec.

7 7 20017

20017 20017

Ques:- Write an algorithm to print your name  
for 10 times

Step 1. Let  $x = 1$

2. Print " Swati karmari".

3.  $x = x + 1$

4. go to  $(x \leq 10)$

5. go to Step 2

6. end it

## ii) Space complexity :-

It deals with the space required to execute an algorithm of a problem. It depends on the input size given to the algorithm for solving a particular problem.

for example:-

write an algorithm to adding two number

Step 1. Print "Enter two number"

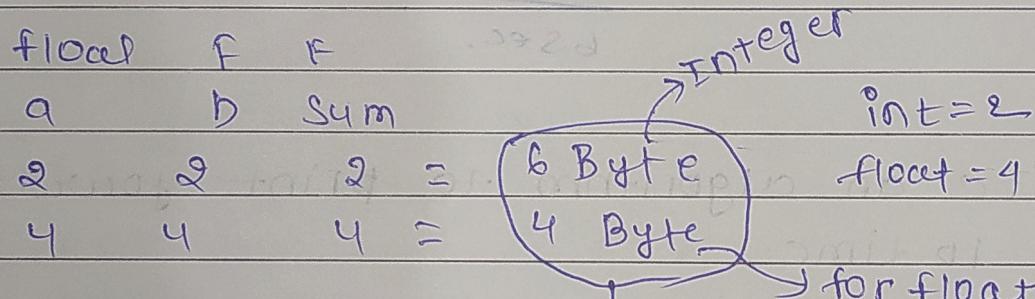
2. Input a, b

3. sum = a + b

4. Print sum

5. end.

Space required for above algorithm.



Space required

### Efficiency of Algorithm :-

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