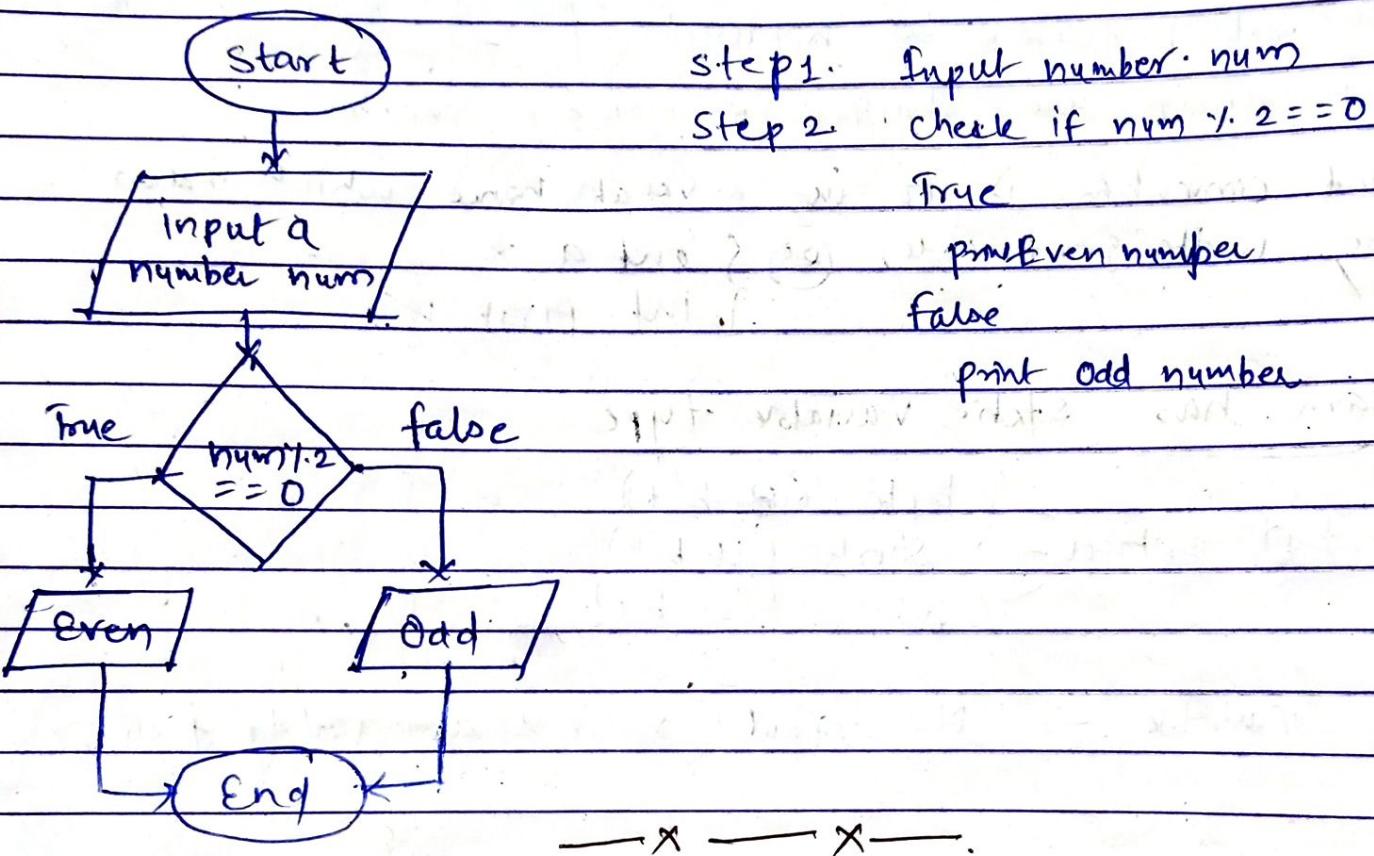


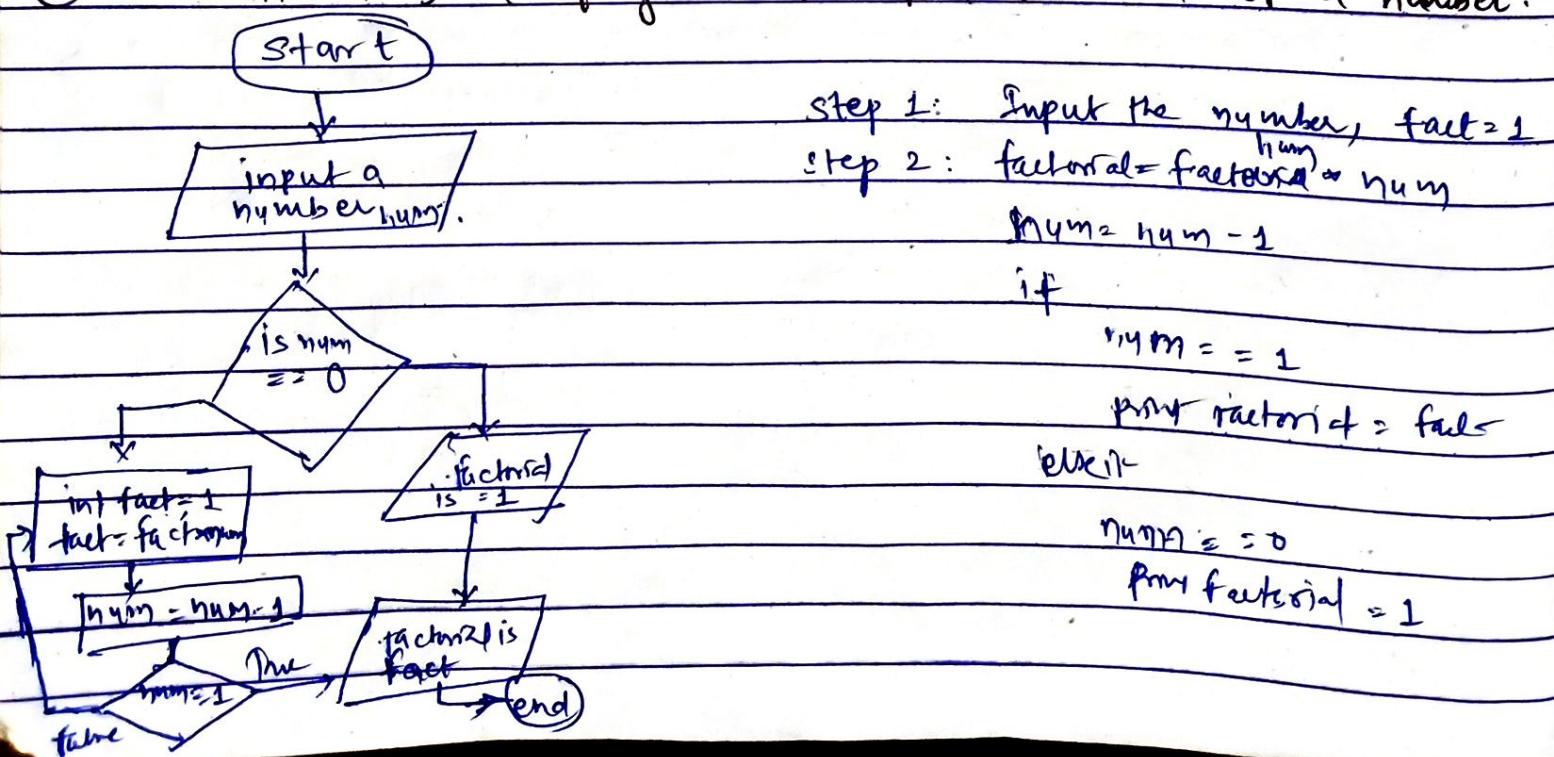
## ④ Assignment

Tarun Kumar Soni  
CDAC JUHU  
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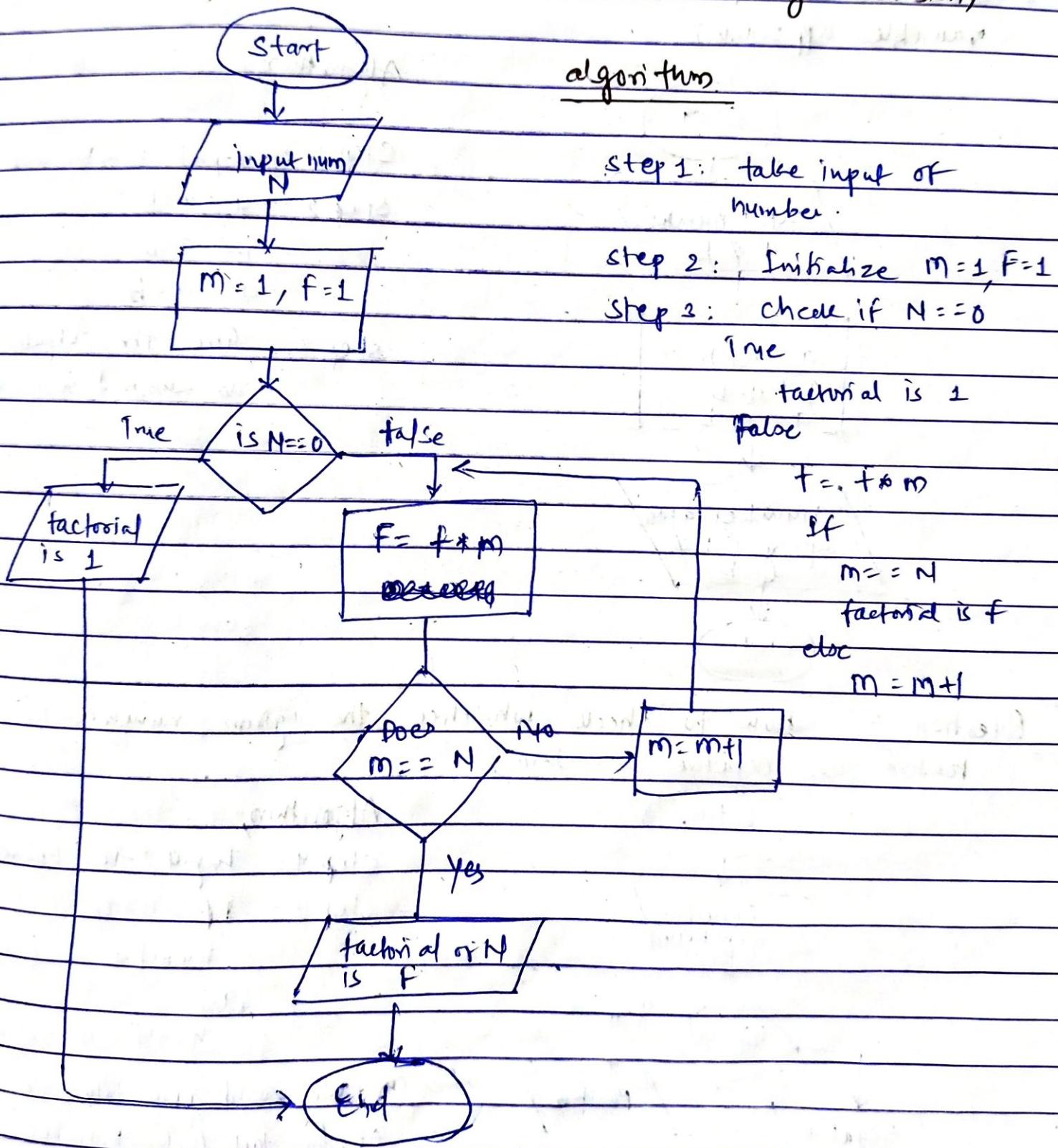
- ① Check if given number is even or odd;



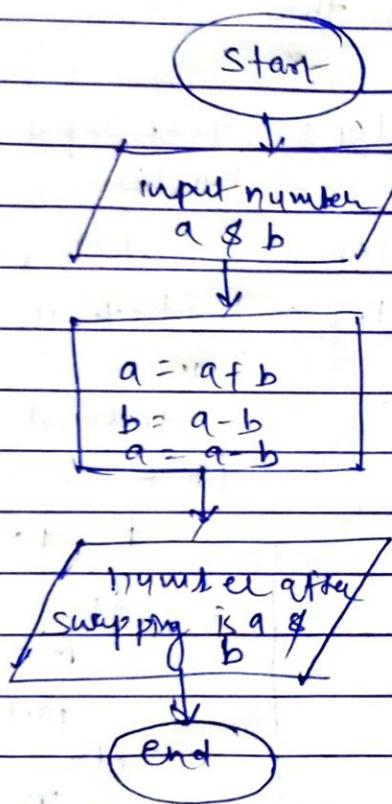
- ② Write a Java program to find factorial of a number.



Question 3 ) find a factorial of a number using recursion;



Question 4: Swap two numbers without using the third variable approach;



Algorithm;

Step 1: Input number a & b

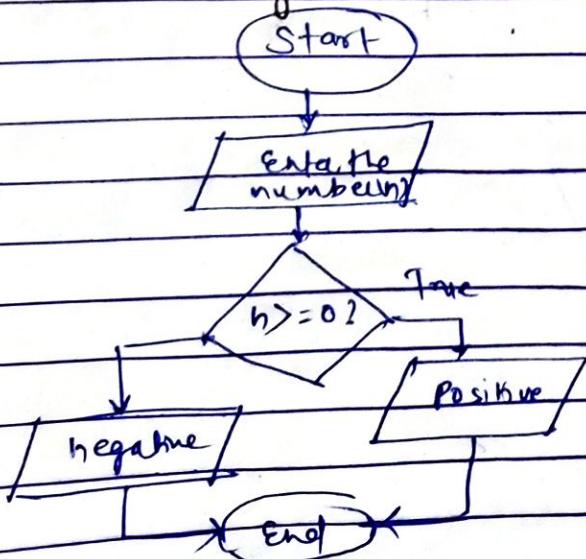
Step 2:  $a = a + b$

$b = a - b$

$a = a - b$

Step 3: Give the output as swapped numbers.

Question 5: How to check whether the given number is positive or negative in Java?



Algorithm;

Step 1: Input the number..

Step 2: If  $n >= 0$

number is positive

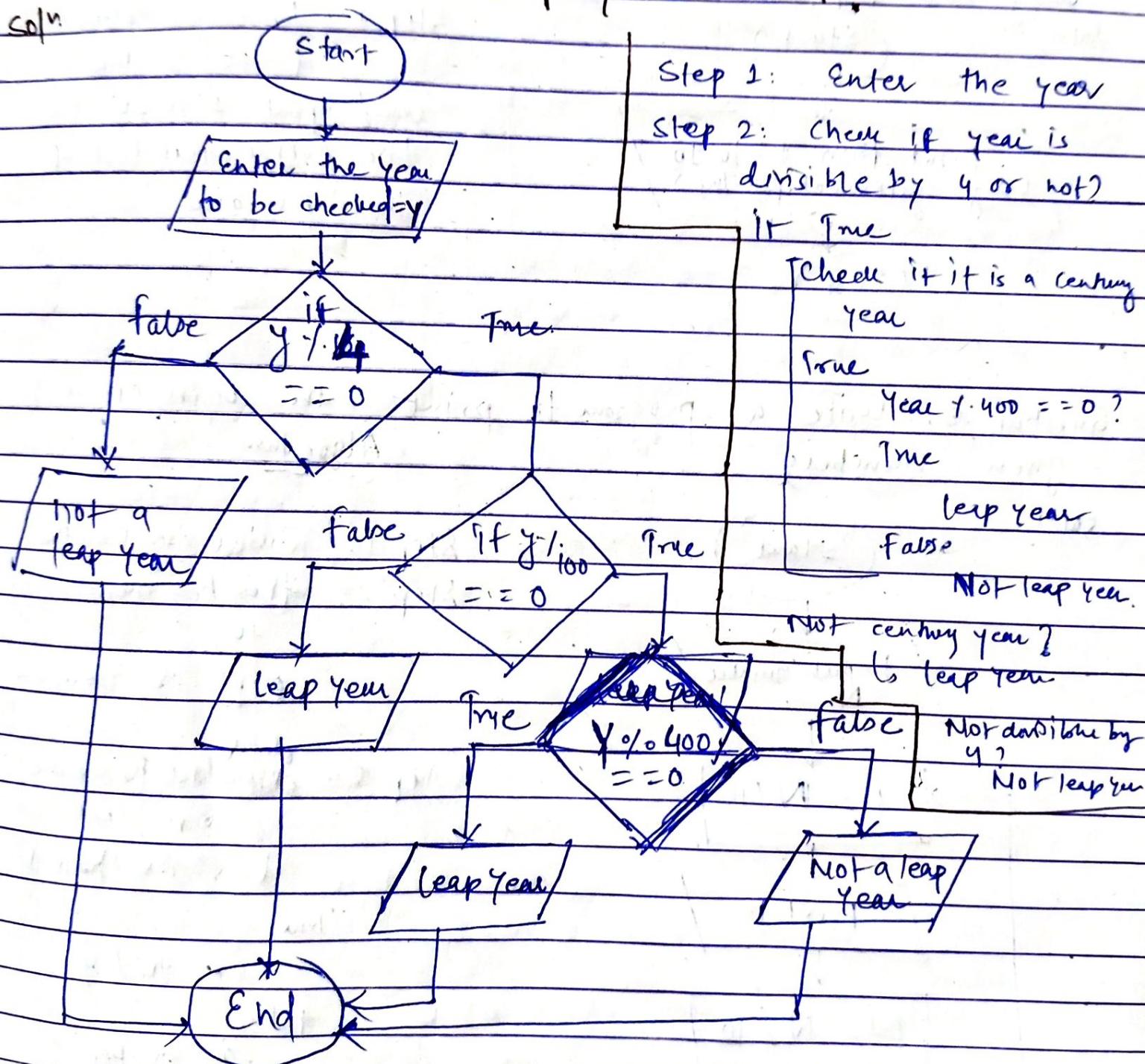
else

number is negative.

(\*) We could also take care of the fact that number must not be string, or other character type except int, float.

Question 6: Write a Java program to find whether a given number is leap year or not?

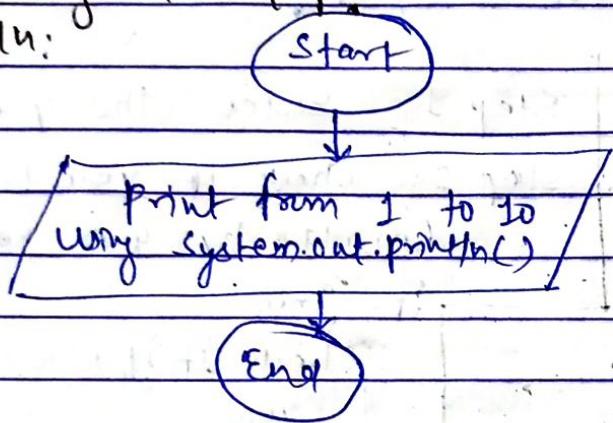
Sol:



① logic: if a year is a century year (ends with 00)  
 It must also be divisible by 400; ② 2000 was leap year but 1800 was not;

Question 7: Java program to print 1 to 10 without using the loop?

Soln:

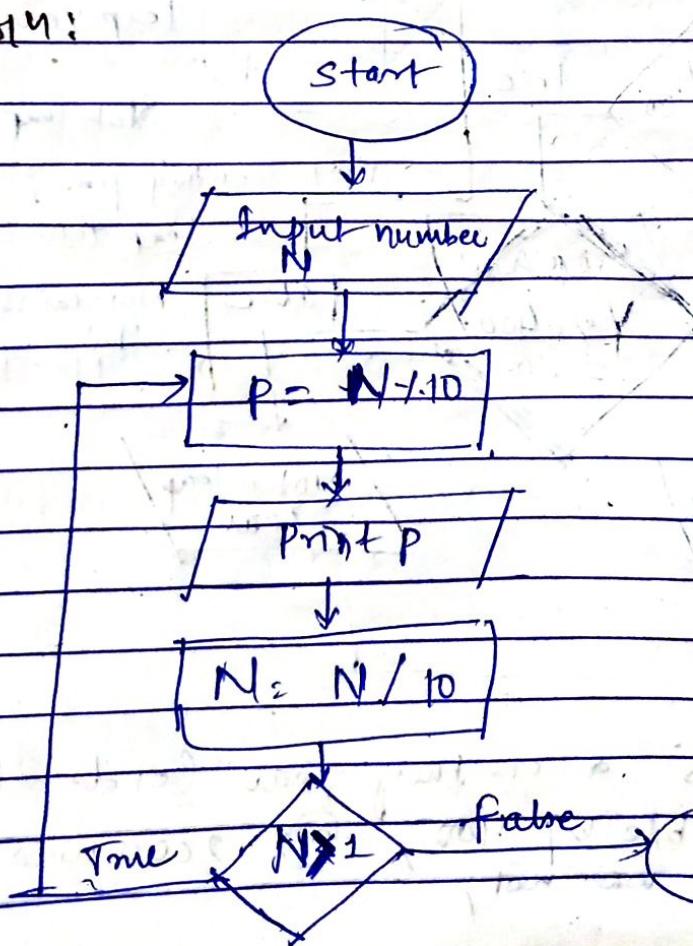


Algorithm

Step 1. by using `System.out.println()` we could print 1 to 10 in the output terminal of the program.

Question 8: Write a program to print the digits of a given number.

Soln:



Algorithm

Step 1: Enter the number  
Step 2: find the modulus by 10;  
print the remainder

Step 3 divide  
check if the number by 10 & check if it is less than 1  
True

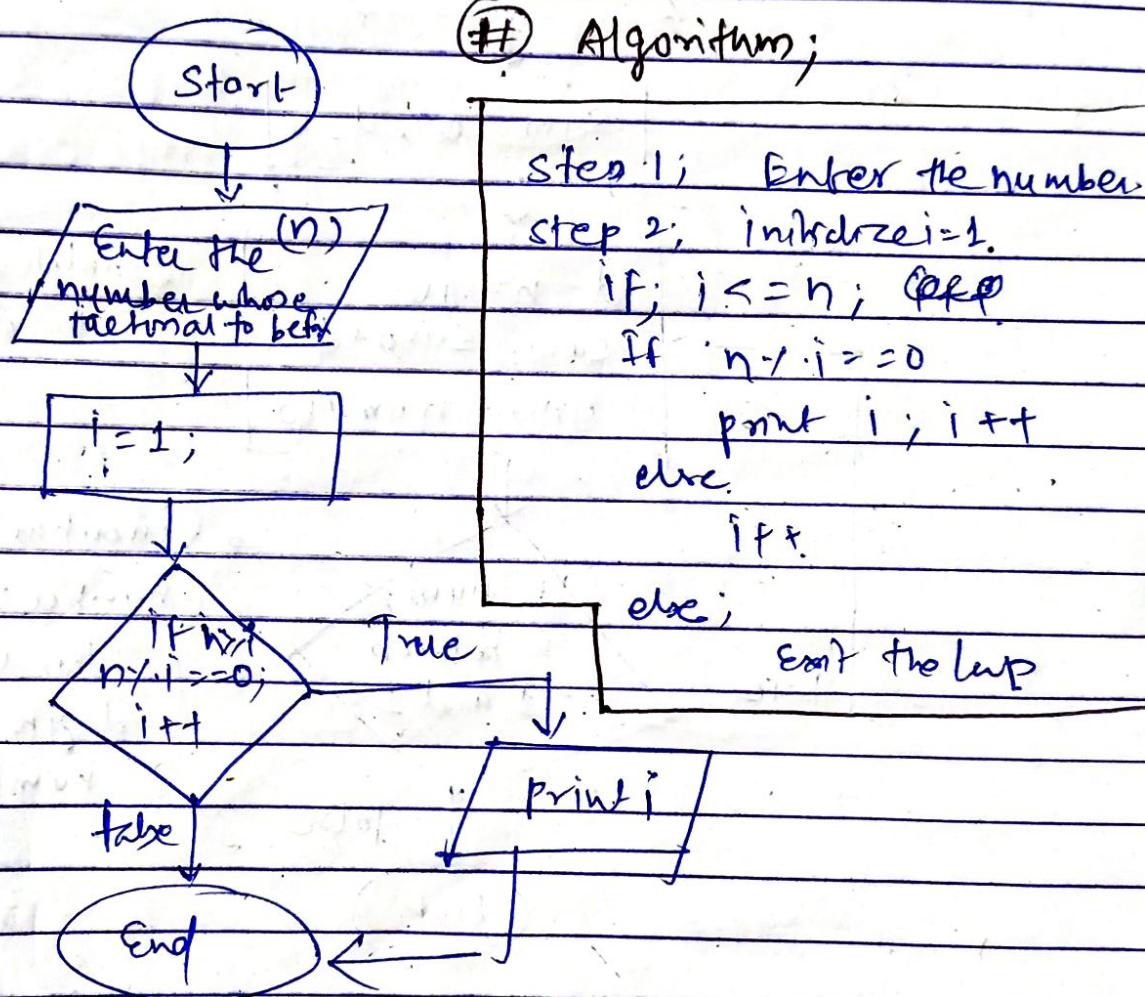
exit the loop  
false

go to step -2

⑨ write a java program to print ~~all~~ the factors, digits of a given number.

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### # Algorithm;



Step 1: Enter the number  
Step 2: initialize  $i=1$ .  
If  $i \leq n$ ;  $\text{loop}$   
If  $n \% i == 0$   
    print  $i$ ;  $i++$   
else;  
     $i++$ .  
else;  
    Exit the loop

⑩ write a java program that finds the sum of digits of a given number;

Algorithm: Step 1. Enter number n

Step 2.  $sum = 0$ ,  $d = 0$  [Initialization]

Step 3  $d = n \% 10$

$sum = sum + d$ ,  $num = num / 10$

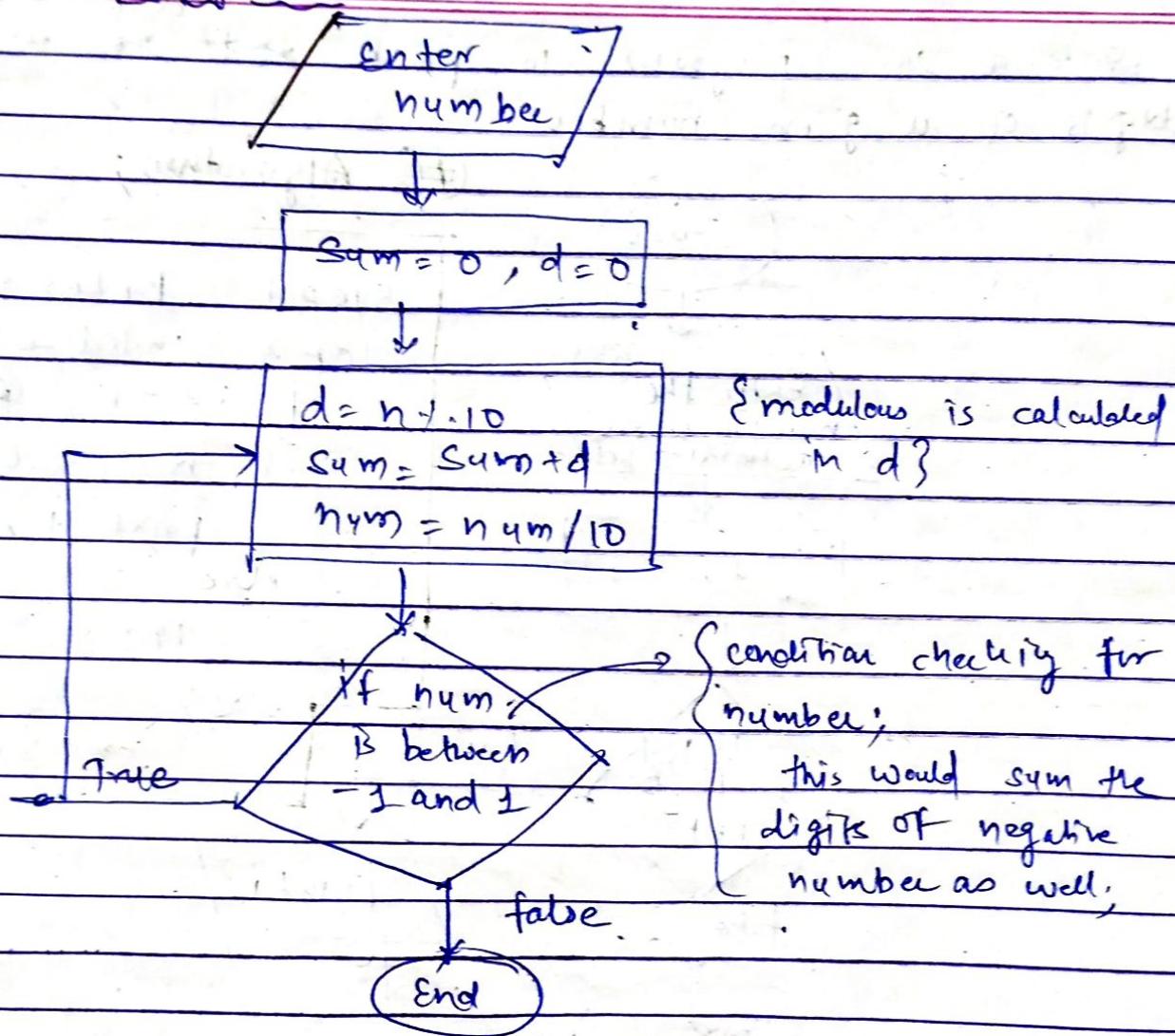
Step 4: if ( $num > 1$  and  $num < 1$ )

    go to step 3

Step 5: else exit the loop

## flow chart Program-10

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(11) Write a Java program to find the smallest of 3 numbers; ( $a, b, c$ )

Algorithm Step 1: Enter numbers  $a, b, c$

Step 2: check if  $a > b$

True

check  $a > c$

True

print  $a$  is greatest number

false

print  $c$  is greatest number

false

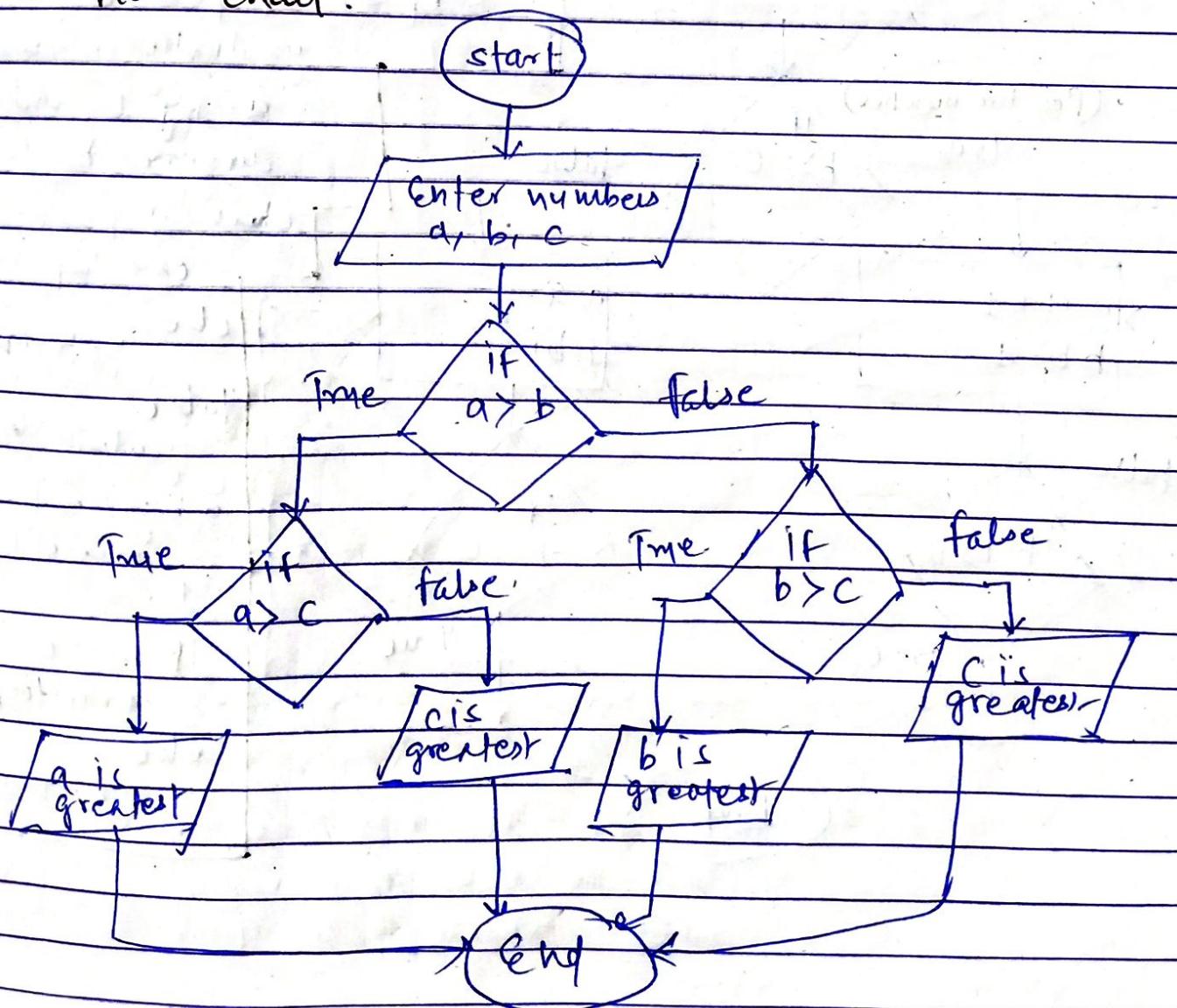
check if  $b > c$

True

$b$  is greatest number  
false

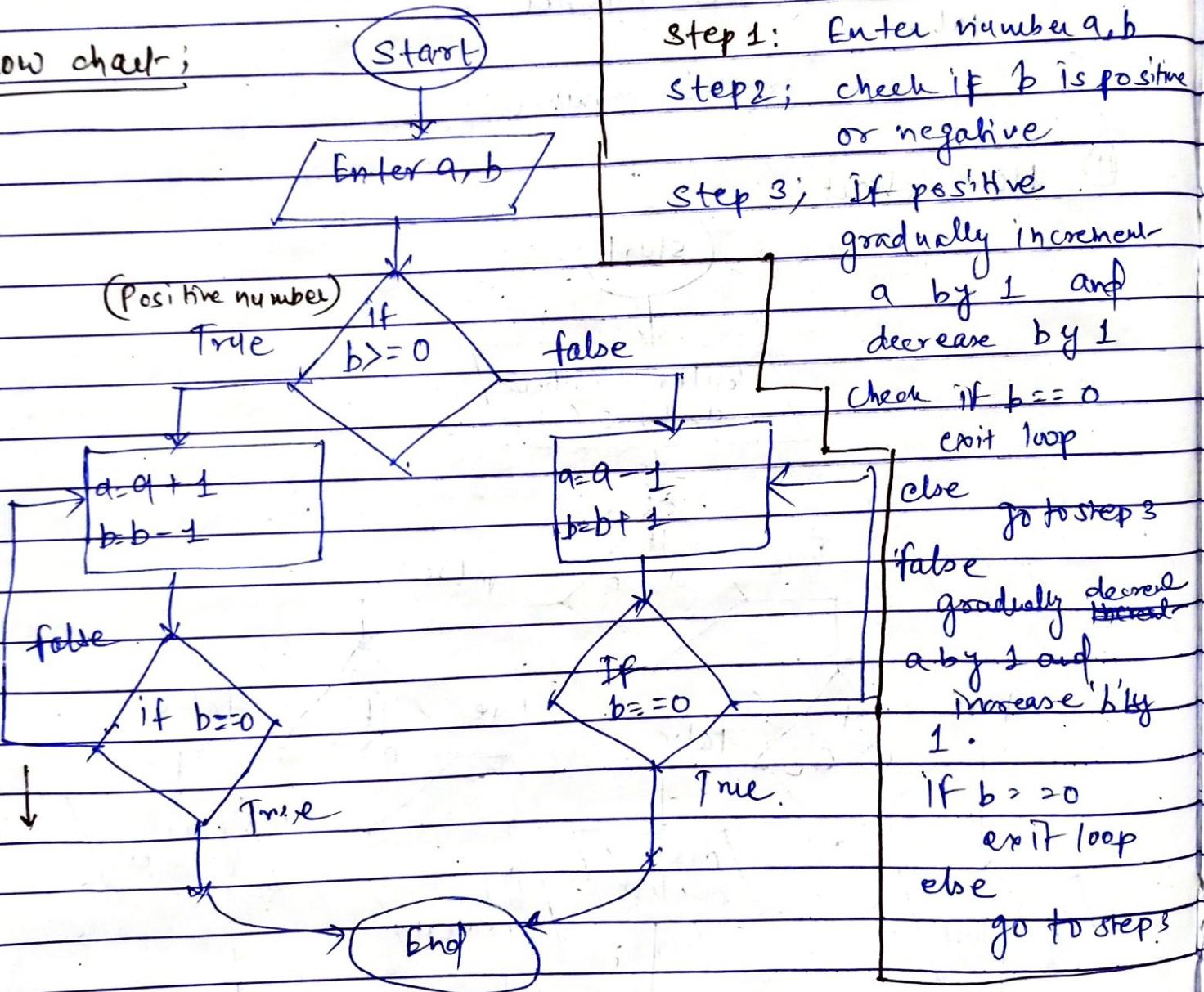
$c$  is greatest number.

# flow chart:



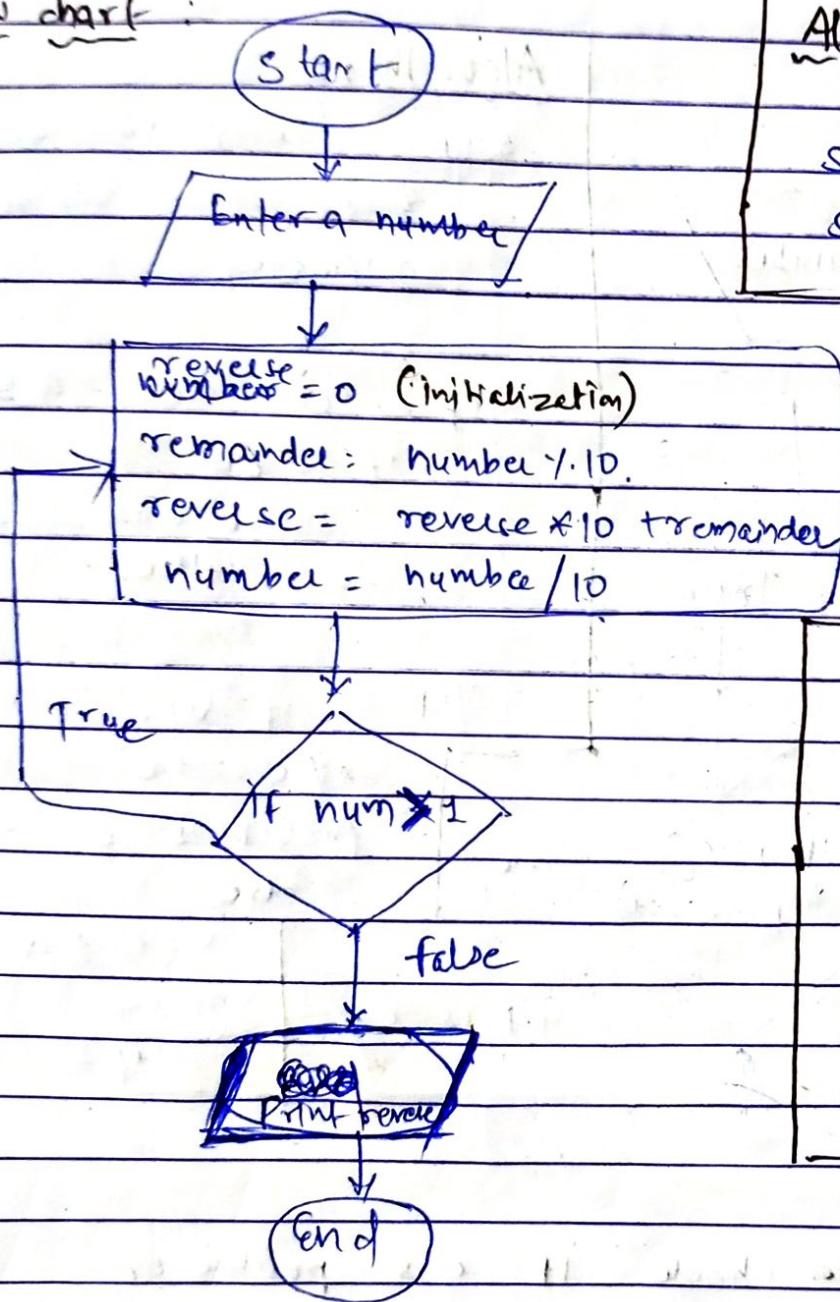
(12) How to add two numbers without using arithmetic operators in Java?

flow chart;



(13) Write a Java program to reverse a number;

Flow chart:



Algorithm

Step 1: Enter a number.  
Step 2: initialize number.  
reverse = 0

Step 3: remainder = number % 10  
reverse = reverse \* 10 + remainder  
number = number / 10.

Step 3: check if num  $\geq 1$

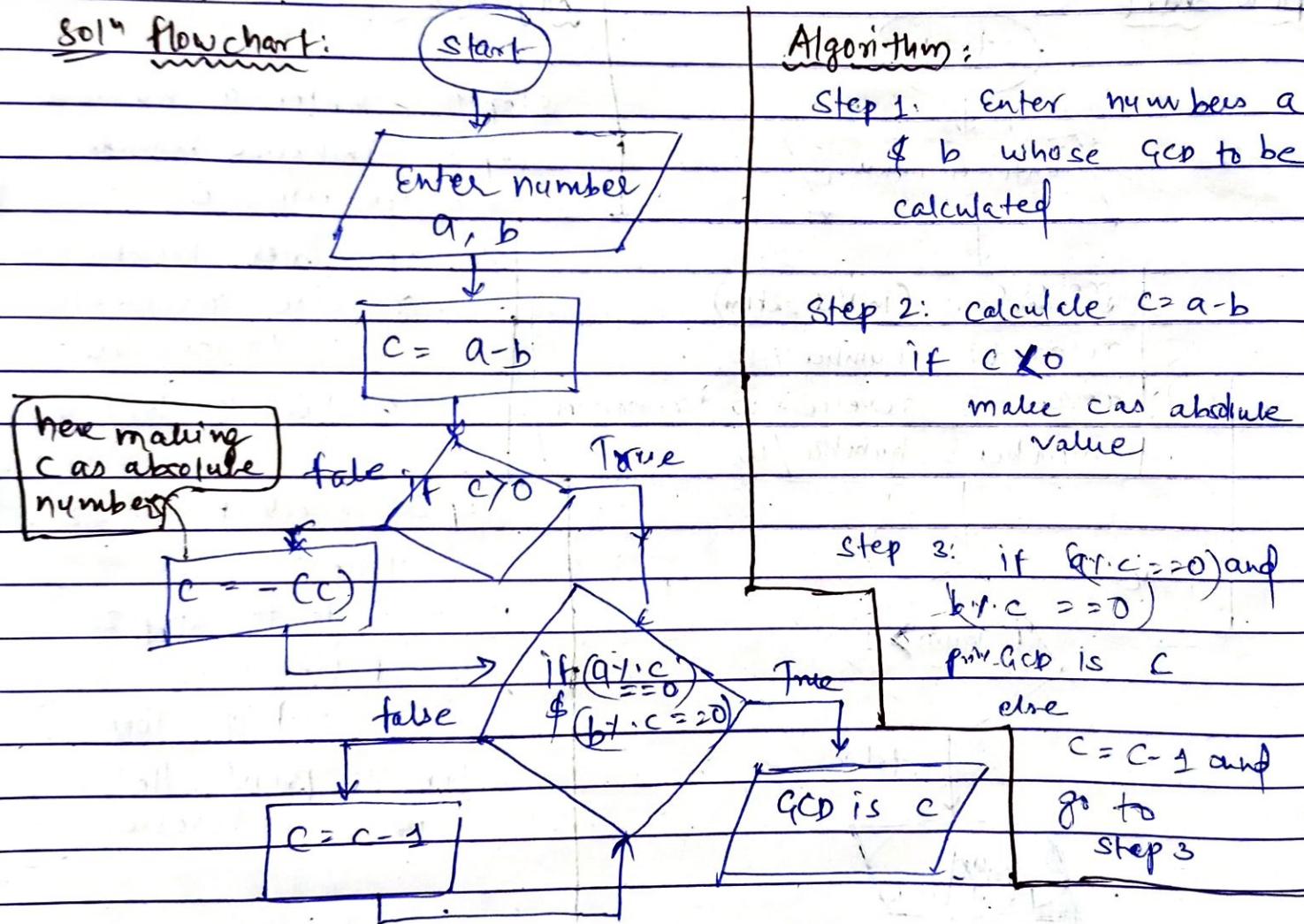
True:  
go to step 2  
false

end the loop

Step 4: print the  
reverse

(14) Write a Java program to find the GCD of two numbers?

Soln flowchart:



Algorithm:

Step 1: Enter numbers a & b whose GCD to be calculated

Step 2: calculate  $c = a - b$   
if  $c \neq 0$

make c as absolute value

Step 3: if ( $a \mod c == 0$ ) and  
 $b \mod c == 0$ )

prev GCD is c

else

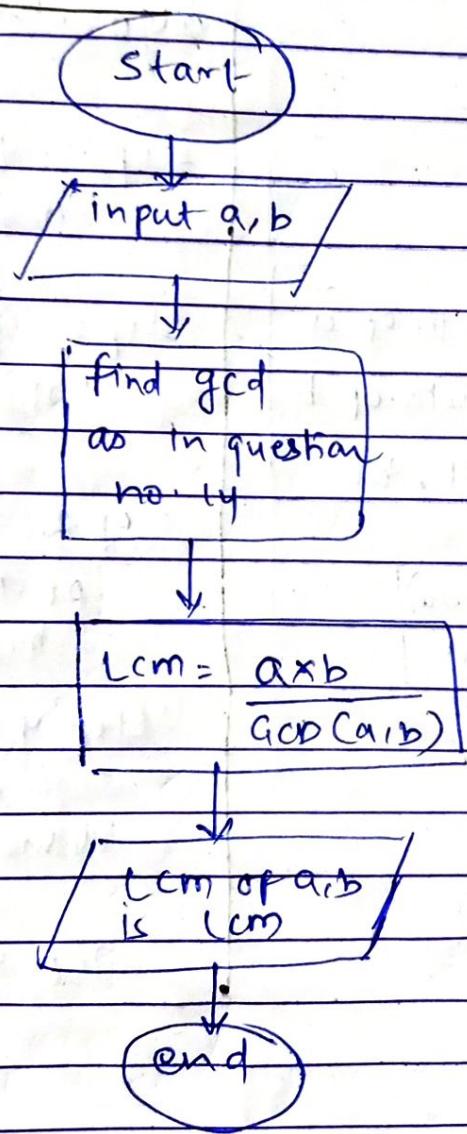
$c = c - 1$  and

go to step 3

Note: I need to check if c is positive or not because I have to check mod value the GCD is a number which divides fully by the all given numbers.

(15) write a Java program to find lcm of two given numbers flowchart:

Solution:



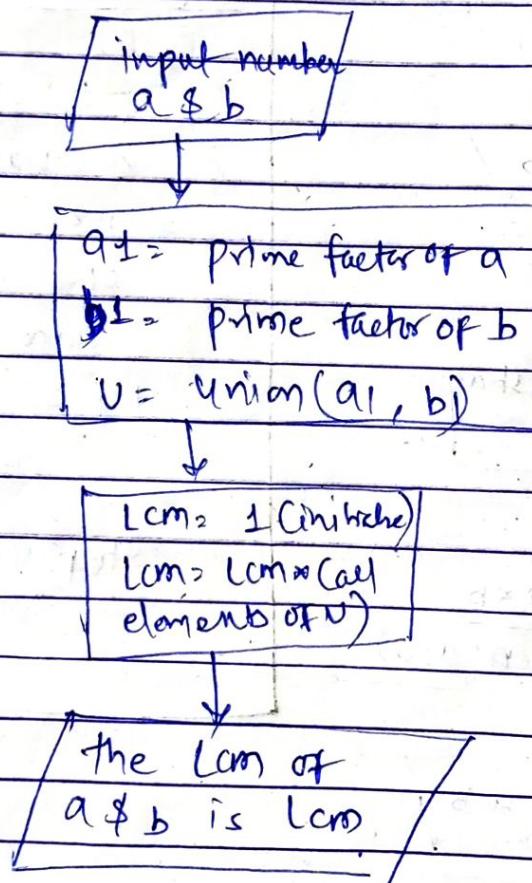
Algorithm:

Step 1: Input both numbers a, b  
Step 2: find the GCD of a & b by same method as (4)  
Step 3: process Lcm  $(a \times b) / GCD$

Step 4: Print GCD & the Value of Lcm

(16) Write a Java program to find the Lcm of two numbers using Prime factors method?

Sol flow chart:



algorithm:

Step 1: take numbers a & b as input

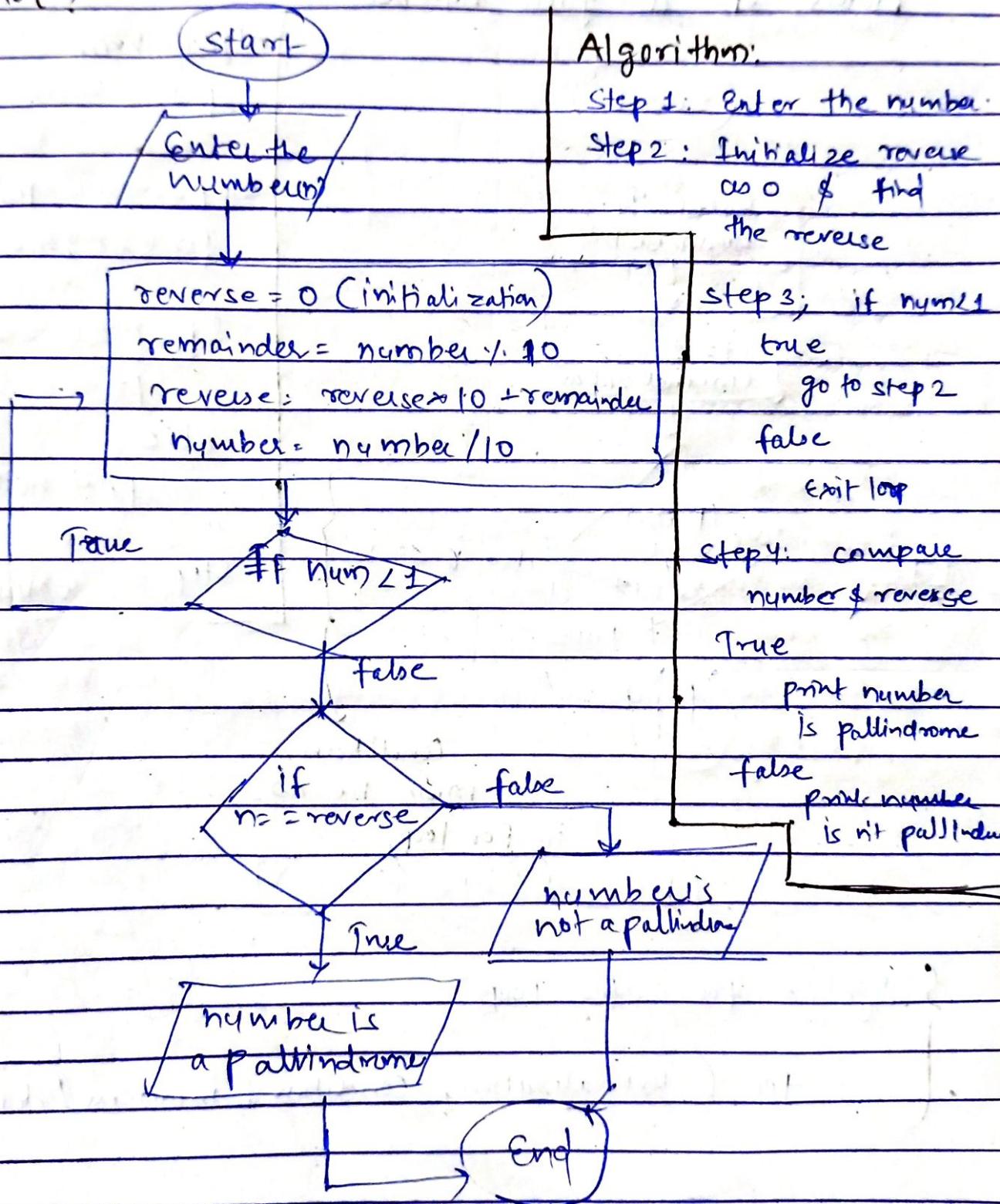
Step 2: find prime factors of a & b individually

Step 3: find the union of a1 & b1 & store these elements.

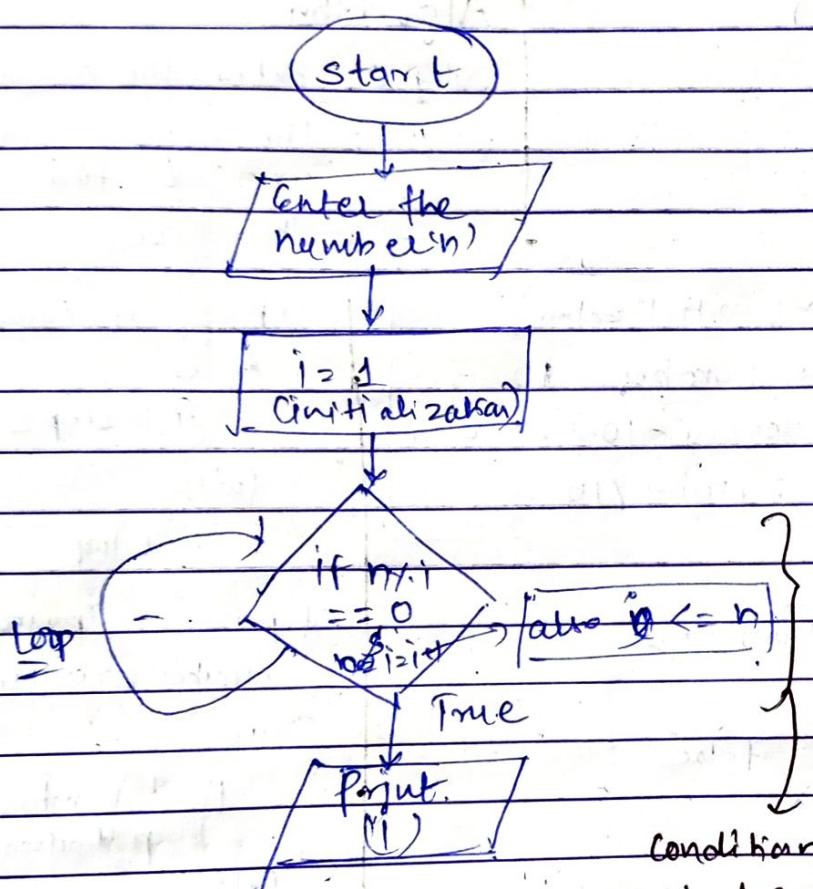
Step 4: initialize Lcm=1 & multiply the elements of union

Step 5: print the Lcm

(17) Check whether the given number is palindrome or not?



(18) Write a java program to print all the prime factors of a given number.



algorithm:

Step 1: Enter the number(n)

Step 2: use for loop  
`for(i=1; i <= n; i++)`

If  $n \% i == 0$

print.(i)

else

print nothing.

Step 3: exit loop.

Condition  
must be as

in for loop;

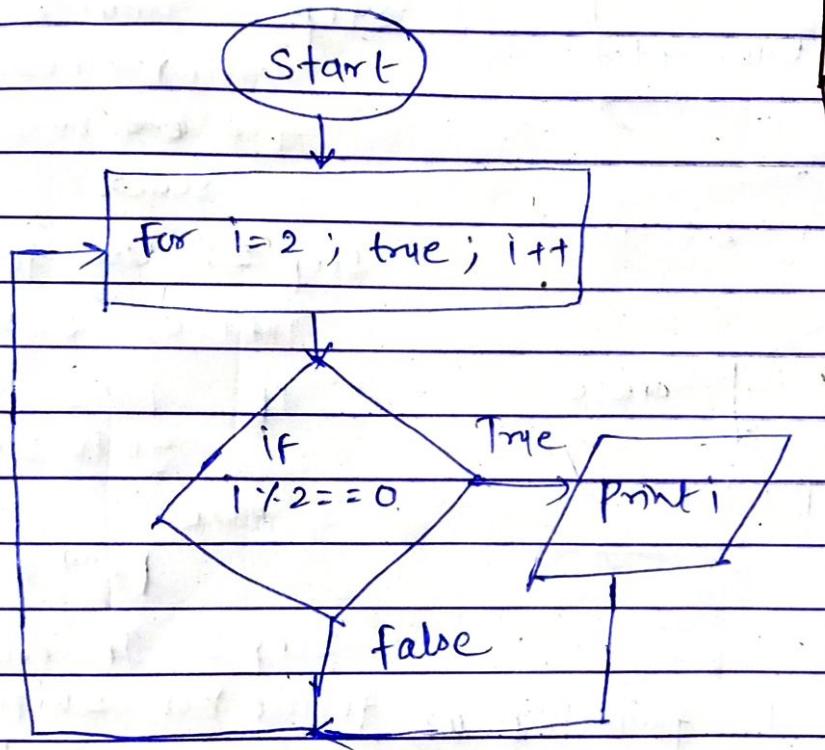
`for (i=1; i <= n; i++)`

{ Syntax for "for loop"

`for (initialization; condition; increment/decrement)`

- (19) To print the following Even number series;  
2, 4, 6, 8, 10 ...

- (#) Assuming I need to print infinite loop.)



algorithm  
step 1: Enter the number till which need

to print even number;

Step 2: use for loop.

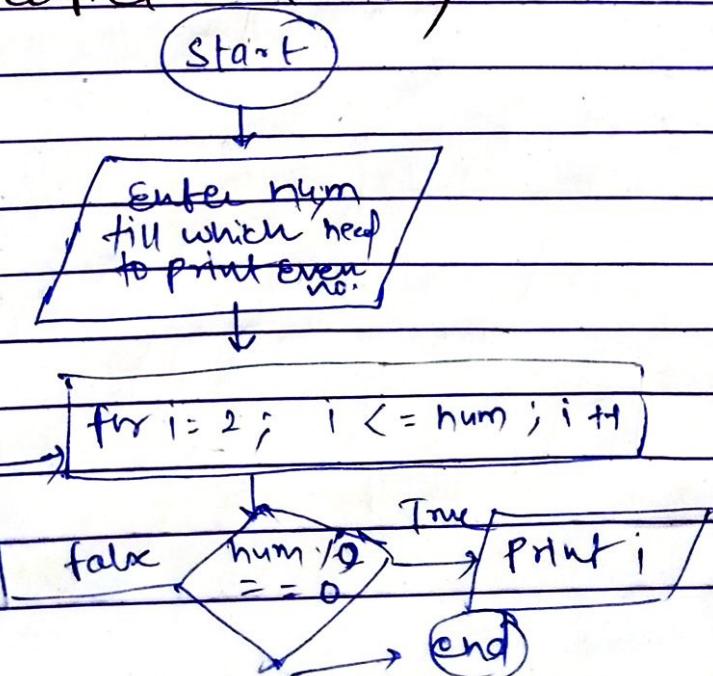
(int i=2; i <= num;  
i++)

if num % i == 0  
print i

else go to step 2.

Step 3: If condition becomes false  
go out of the loop

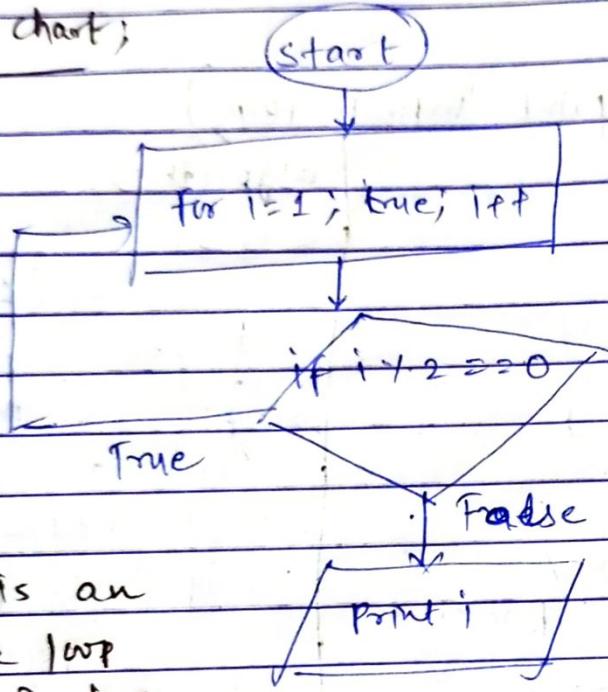
- # Assuming if I need to print even number till a specified number;



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(20) To print the following series of odd number series

flow chart;



Algorithm:

Step 1: Enter the number of i need to find odd number series.

Step 2: Use for loop  
 $int i = 0; i <= n; i++$

if  $i \% 2 == 0$   
go to step 2  
else  
print i

∴ It is an infinite loop  
thus it has no end;

↳ we could make it finite loop as follows not satisfies  
question (19);

Step 3: If condition  
not satisfied  
exit the loop.