Assignment 1

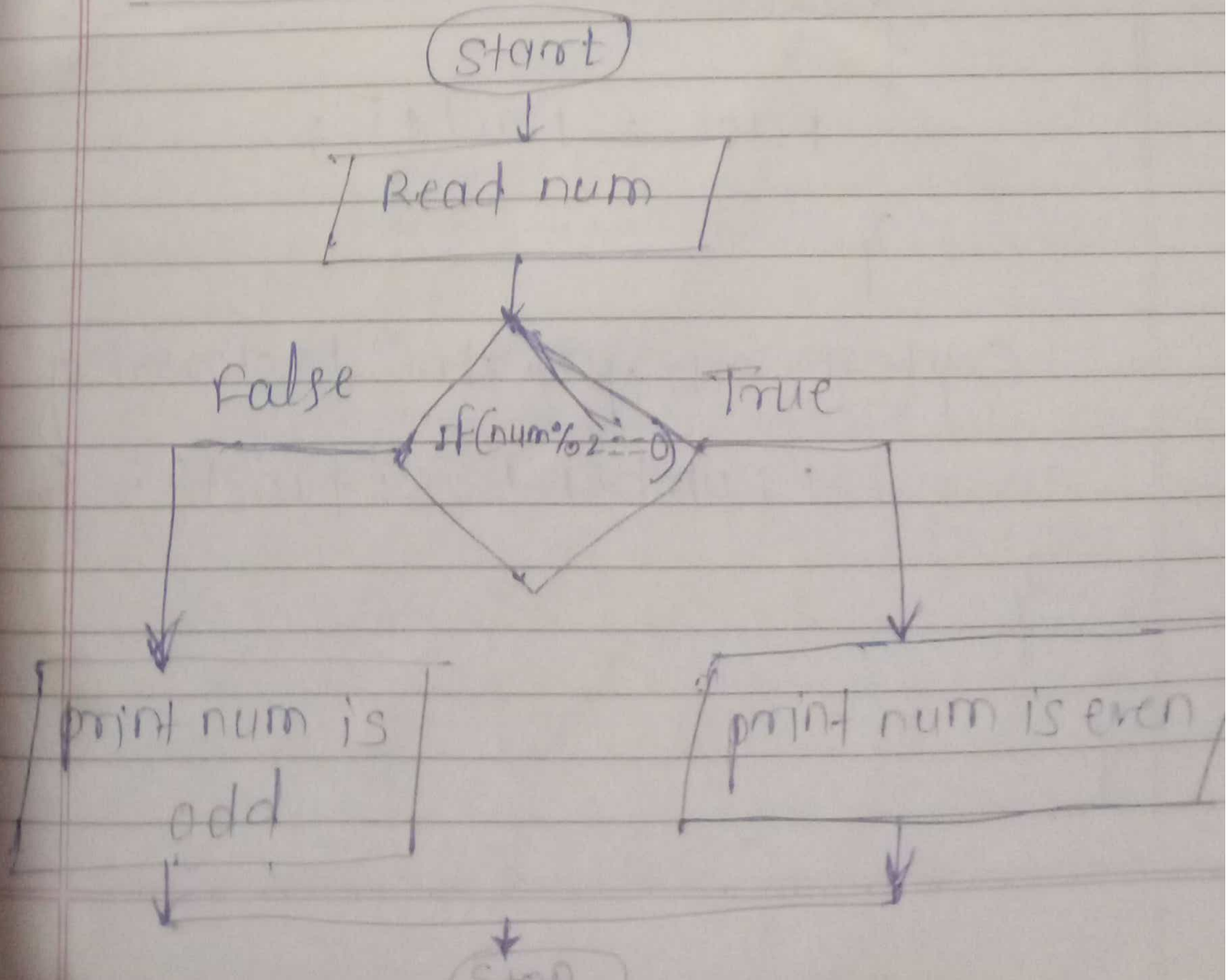
Write algorithm and flowchart for the following

Q. 1 Check if the given number is even or odd.

→ algorithm :-

i) Start
ii) read num
iii) if (num % 2 == 0)
then print number is ~~odd~~. even
else,
print number is odd.
iv) stop.

flowchart



Q.2 Write a java program to find the factorial of a given number

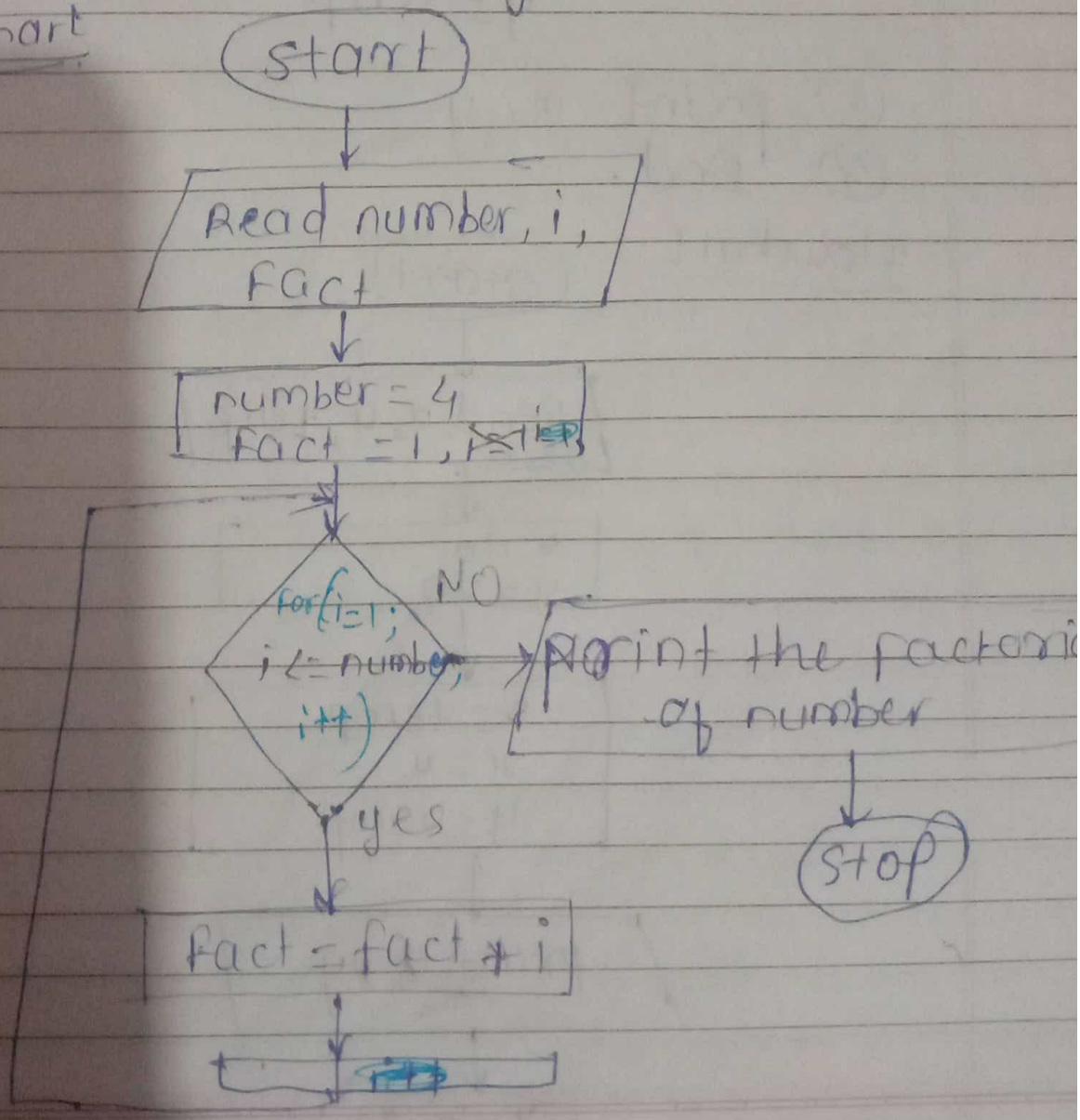
→

```
import java.lang.*;
class Factorial() {
public static void main(String[]
                        args)
{  int number=4;
   int i , fact=1;
   for(i=1; i<=number; i++)
      {
         fact = fact*i;
      }
System.out.println("factorial of"
      +number+" is:"+fact);
}
}
```

algorithm

(1) Start
(2) Input :- Read number, i, fact, of ;
(3) Initialization : fact = 1; number 4 ;
(4) process: use for loop upto condition
for (i=1 ; i <= number ; i++)
(5) fact = fact * i (if cond" is true)
(6) cond" is false then control goes out of for loop & print the factorial of number
(7) stop the program.

flowchart



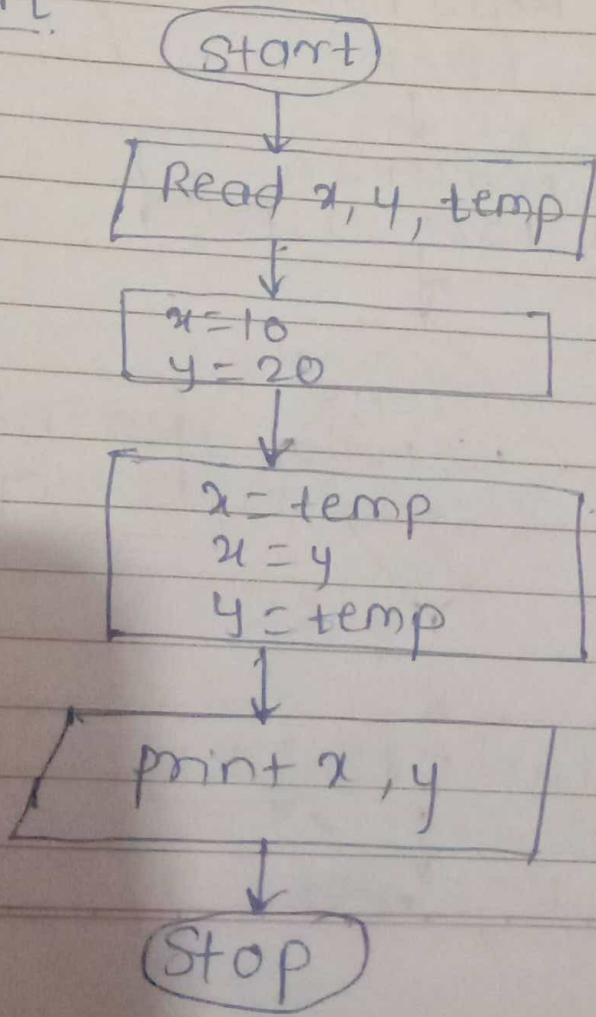
Q.3 Swap two numbers without using the third variable approach

algorithm

1. Start
2. Define x, y, temp.
3. Enter x, y
4. print x, y
5. process

   x = temp
   x = y
   y = temp
6. print x, y
7. End.

Flowchart



~~program~~

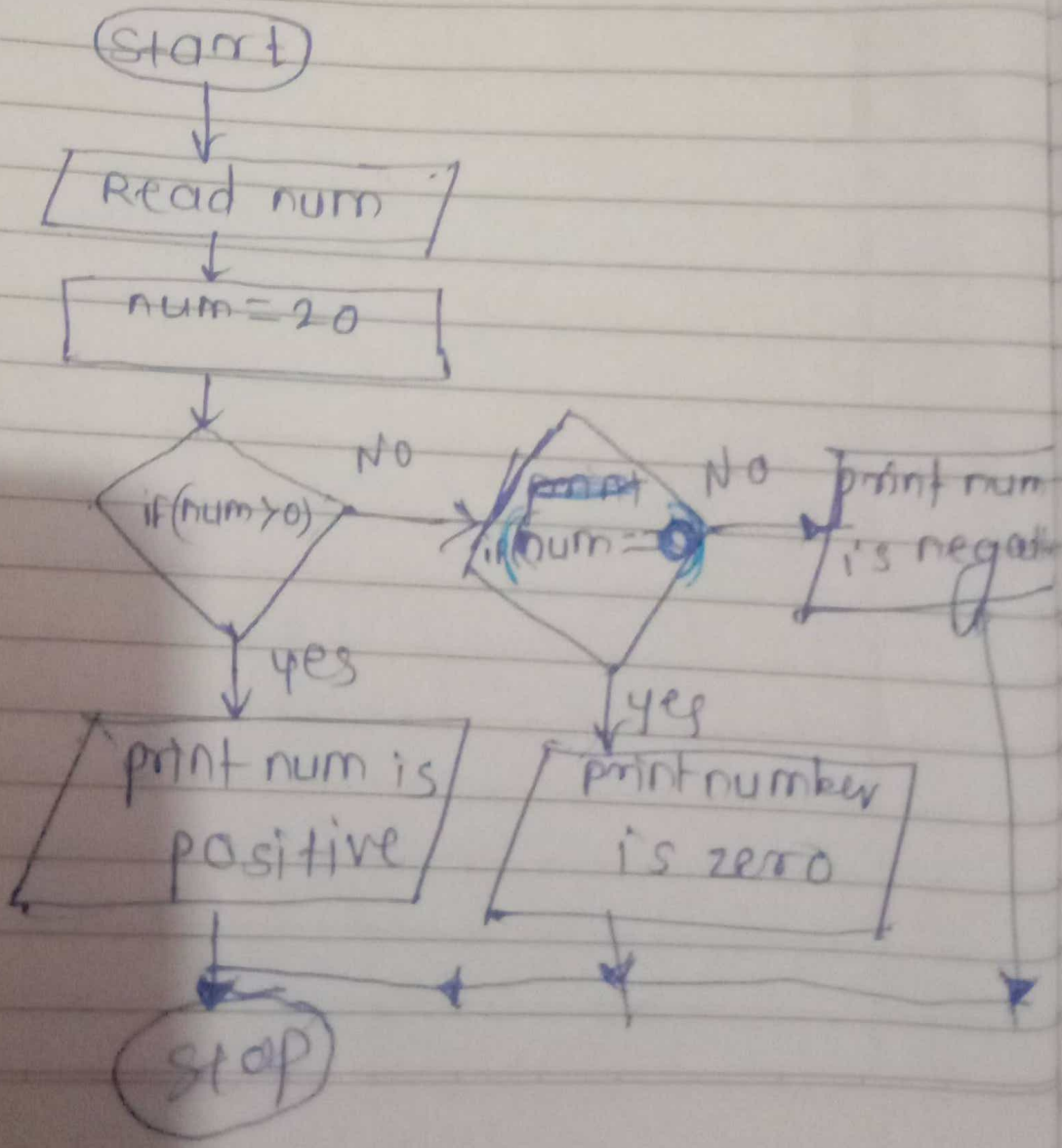
```
import java.lang.*;
class swap{
public static void main(String[]
      args)
{
    int x, y, temp
    x = 20
    y = 40

    System.out.println("numbers Before swappi
          x is "+x" and y= "+y);

     x = temp;
     x = y   ;
     y = temp;

    System.out.println("numbers after
      swapping x ="+x"and y="+y
  }
}
```

5 How to check weither given number is positive or negative in java?

algorithm:

1. Start
2. Read a num.
3. num = 20
4. condition: if (num > 0) (T)
   print positive number
5. else if (num == 0)
   print number is zero
7. else:
   print number is negative.
8. Stop

Flowchart:



program :-

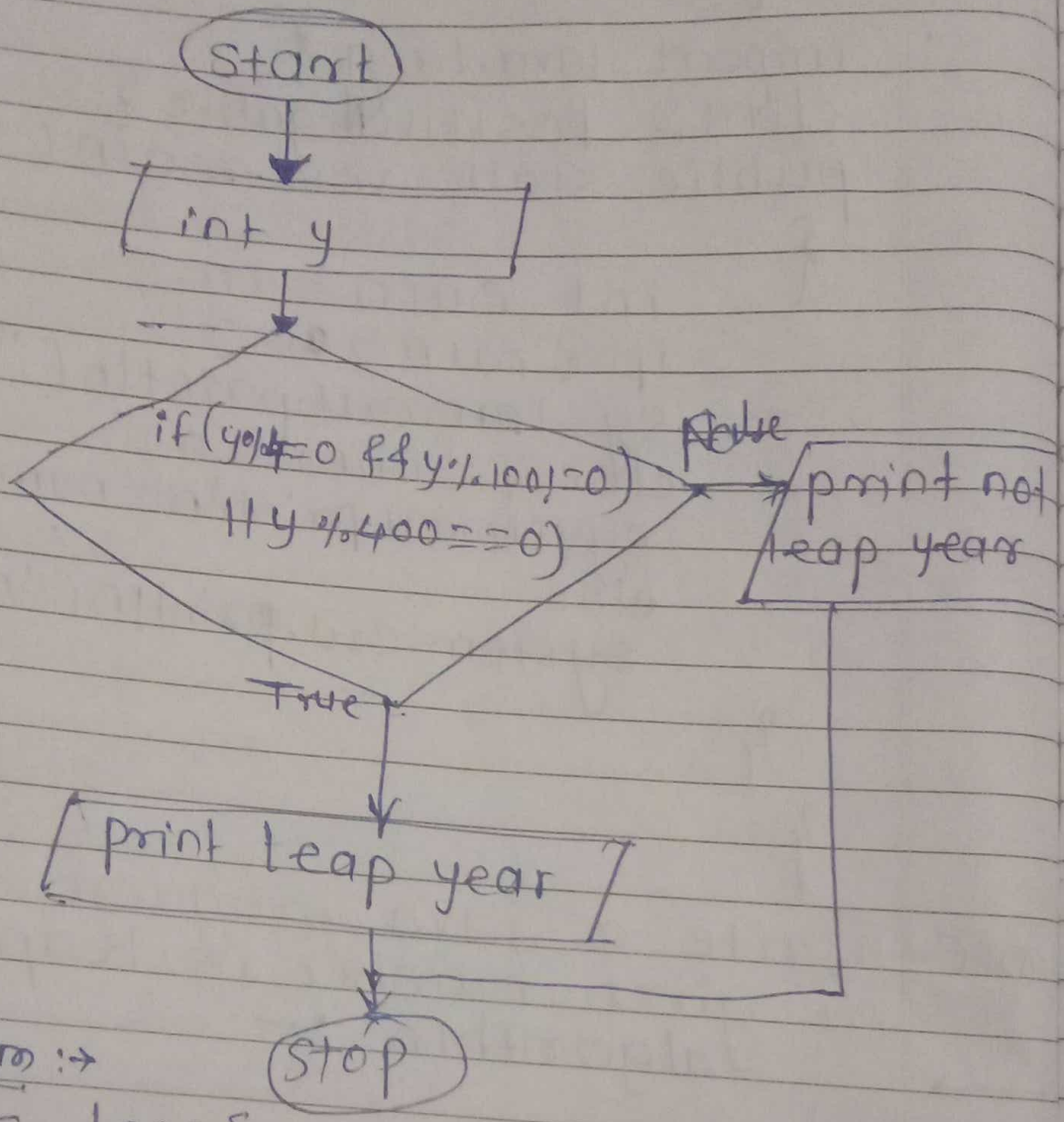
```
import java.lang.* ;
class positivenegative {
public static void main ( string[] args)
{
    int num = 20 ;
    if (num > 00 )
    system.out.println ("number is positi
    else if (num == 0)
     system.out.println("number is zero");
     else
      system.out.println("number is negative"
  }
}
```

.6 Write a java program to find weithu a given number is leap year or Not

→ algorithm :-

① start
② int y
③ take year from user
④ if (y % 4 != 0 && y % 100 != 0) || y % 400 =
   print leap year
⑤ else
   print not leap year
⑥ stop

Flowchart :

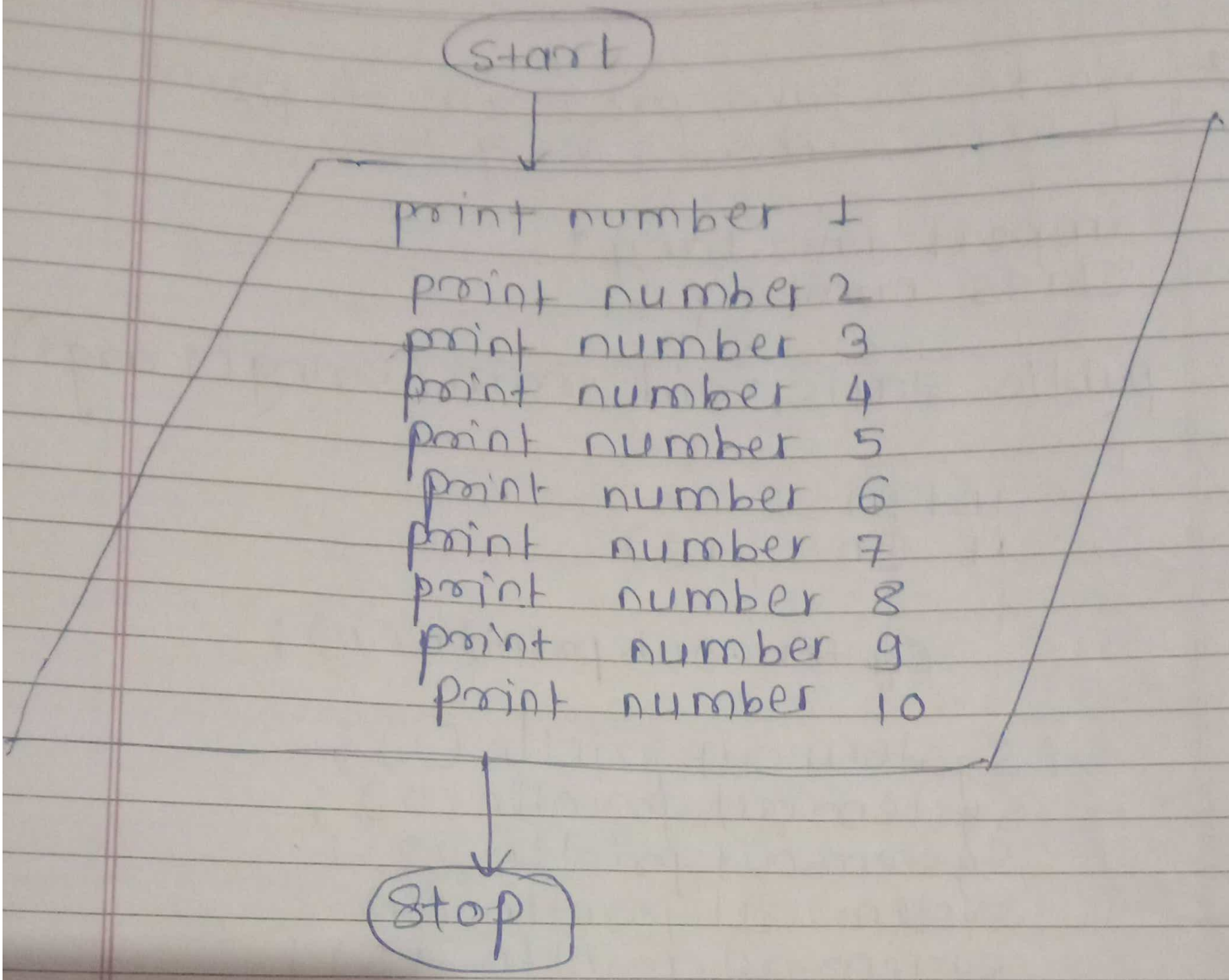


Program :-

```
class Leap{
public static void main(String[] args)
{
    int y ;
    if ( y%.4==0 && y%.100!=0 || y %400==0)
      System.out.println("Leap year") ;
    else
      System.out.println (" Not leap year");
}
}
```

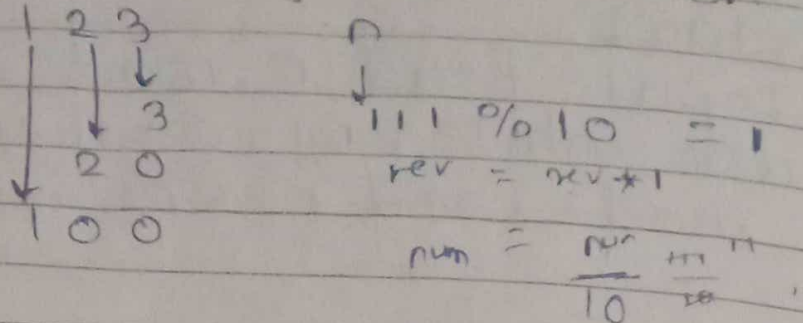
Q.1 Write a java program to print 1 To 10 without using loop.

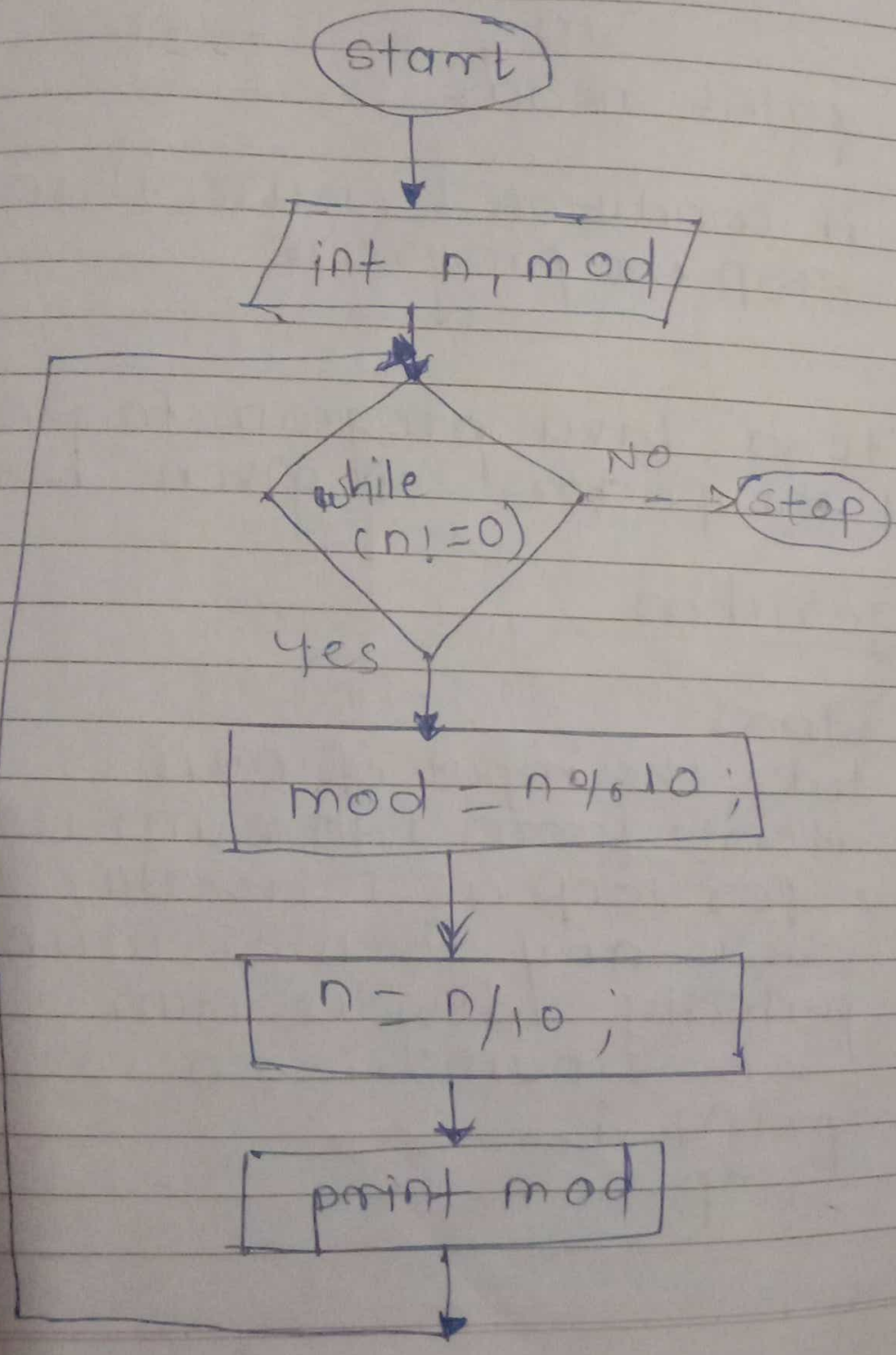
```
import java.lang.*;
Class number {

public static void main (String [] args)
{
    int n ;
    if (n <=10)
    {
        System.out.println(n);

    System.out.println(1);
    System.out.println(2);
    System.out.println(3);
    System.out.println(4);
    System.out.println (5);
    System.out.println (6);
    System.out.println (7);
    System.out.println(8);
    System.out.println(9)
    }
}
}
```


Start
print number 1
print number 2
print number 3
print number 4
print number 5
print number 6
print number 7
print number 8
print number 9
print number 10
Stop

1.8 Write a java program to print the digit of a given number

→





algorithm :→

① start
② Input : Read n, mod
③ use while (n!=0) if yes go to ④
④ mod = ~~mod~~ n%10

$$n = \frac{n}{10}$$

print mod.

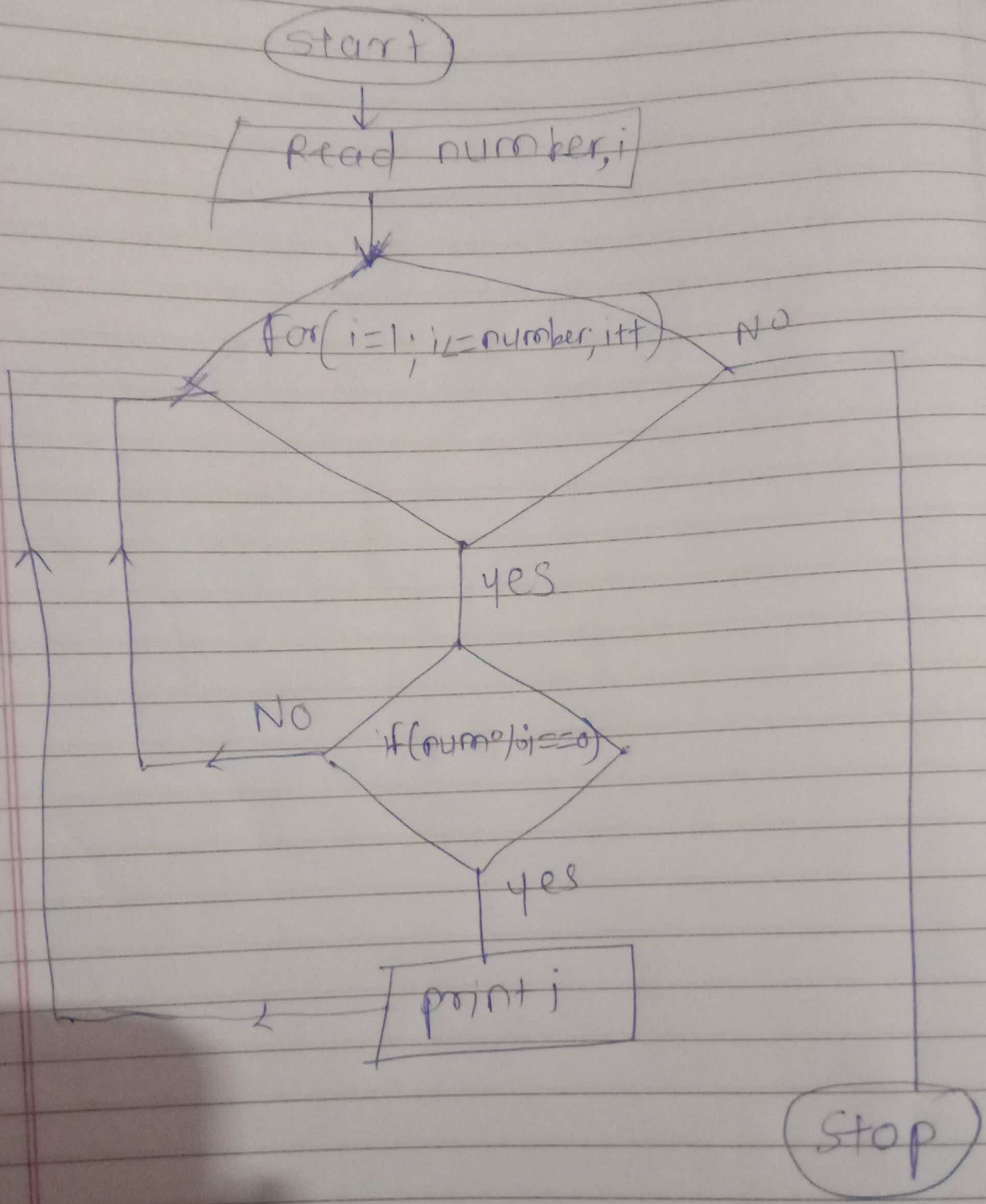
⑤ if condition is false then stop the program

Q.9 Write a java program to print all the factors of given Number

→

algorithm

① start
② take the input of num
③ iterate from 1 to num using a for loop as i iterator
④ check any given 'i' with if it perfectly devides num
i.e num%i==0
⑤ print i
⑥ stop


start
Read number, i
for(i=1; i<=number; i++)
NO
yes
NO
if(num%i==0)
yes
print i
Stop

```
class factor{
public static void main(string[] args)
{   int num=10;
    System.out.println("factors of"+num+
                "are");

    For (int i=1 ; i<=num ; i++)
    {
        if (num % i==0)
        System.out.println(i+" ");
    }
}
}
```

Q.10) Write a java program to find the sum of the digit of the given number

→

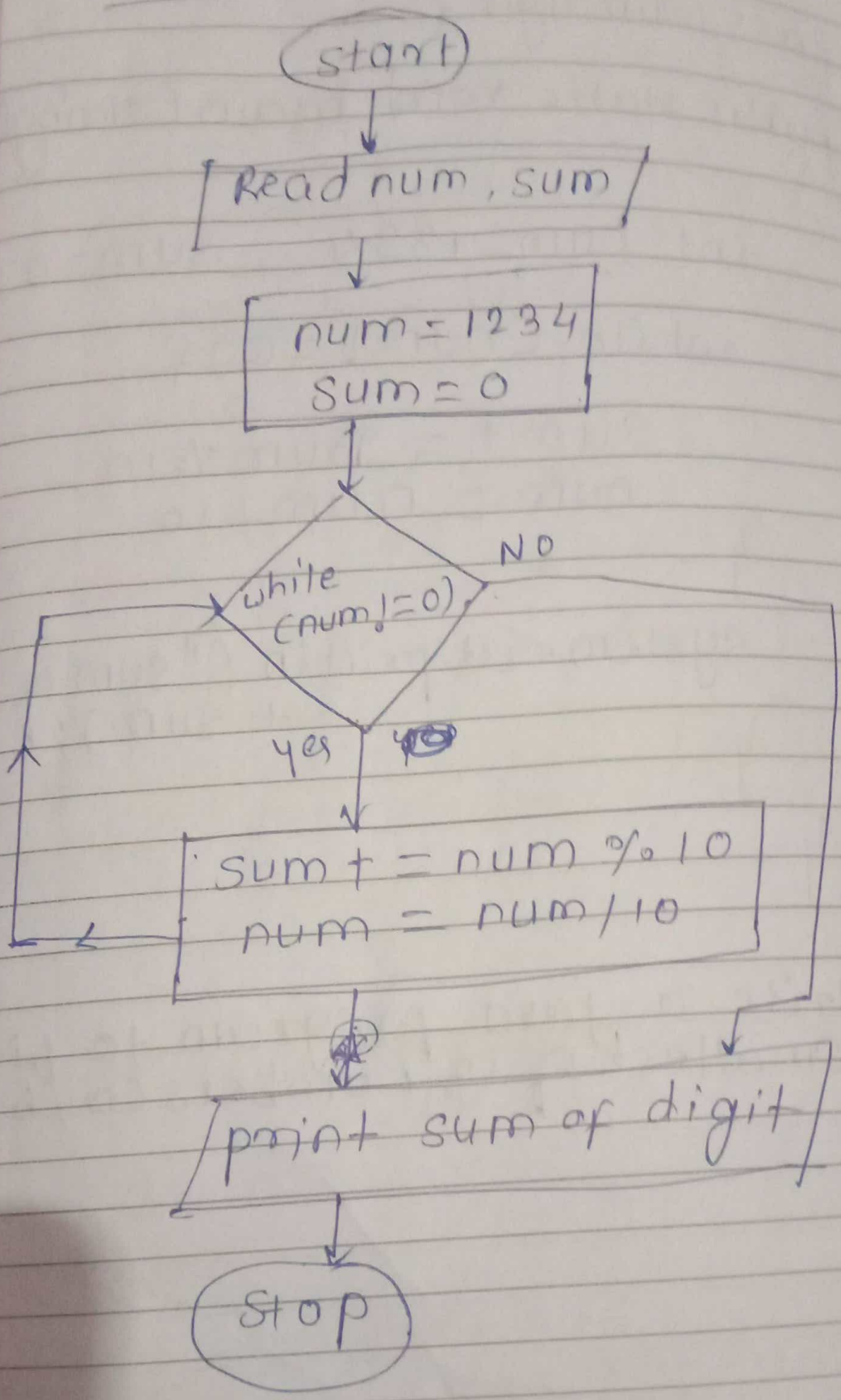
eg i/p num = 1 2 3 4

o/p 1+2+3+4 = 10

algorithm:

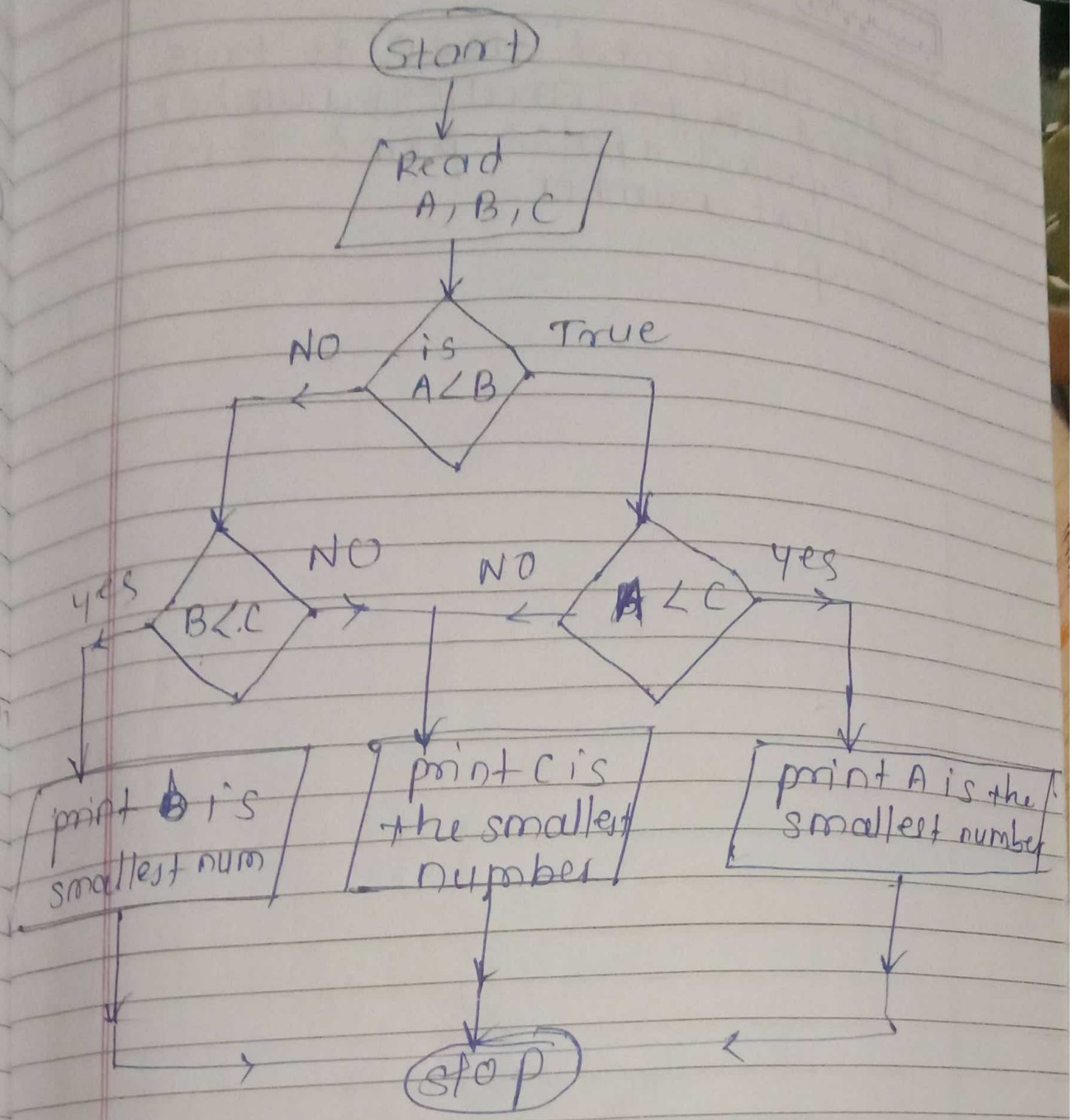
① start
② Input : num , sum
③ Initialization sum=0
④ process : while (num != 0) {
    sum += num % 10;
    num = num / 10;
⑤ print sum.
⑥ stop

Flowchart :


start
Read num, sum
num = 1234
Sum = 0
while (num != 0)
NO
yes
sum + = num % 10
num = num / 10
print sum of digit
Stop

```
class sumdigit {
public static void main(String[] args)
{
    int num=1234 , sum=0;
    while (num!=0){
        sum+= num%10;
        num = num/10
    }
    System.out.println ("sum of digi
                        + sum);
}
}
```

Q.11 Write a java program to find smallest of 3 numbers (a, b, c)



algorithm :

① start
② Input : Read A, B, C
③ process : if (A<B) is true then go to ④ . and cond^n is false then go to ⑤
④ if (A<C) check cond^n if cond is true then print A is the smallest number

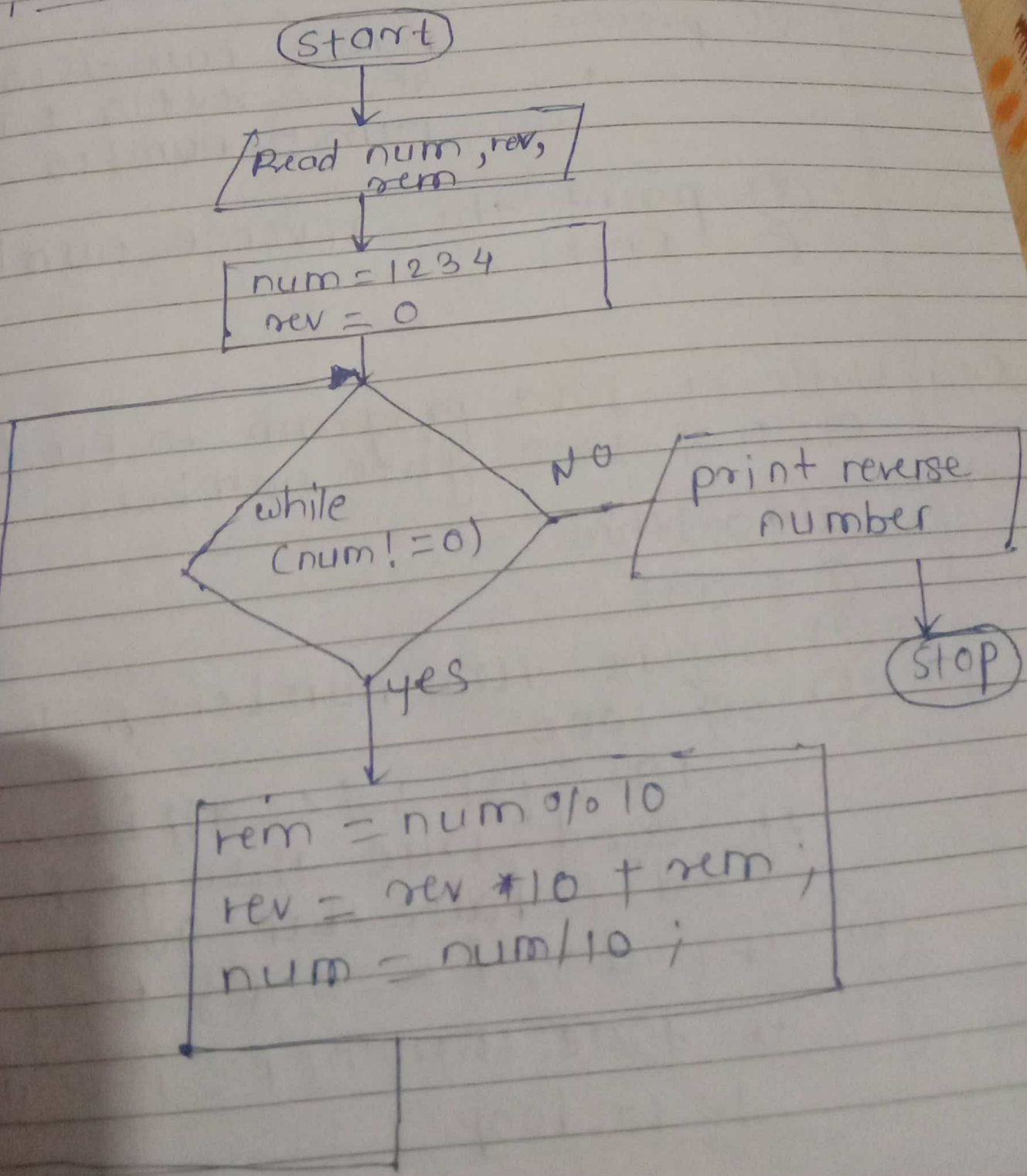
(5) then check cond^{n} (B < C) is true then print B is smallest number if cond^{n} is false print C is smallest number.

(6) stop.

Q.13 Write a java program to reverse a given number.

```
rem = num % 10
reverse = reverse * 10 + rem;
num /= 10;
```

Flowchart.



algorithm :

① start
② Input read or take number = 1234
rev = 0, rem
③ use while(n1 != 0) if true then go to ④ and false then go to ⑤

④ process : rem = num % 10
rev = rev * 10 + rem;
num = num / 10

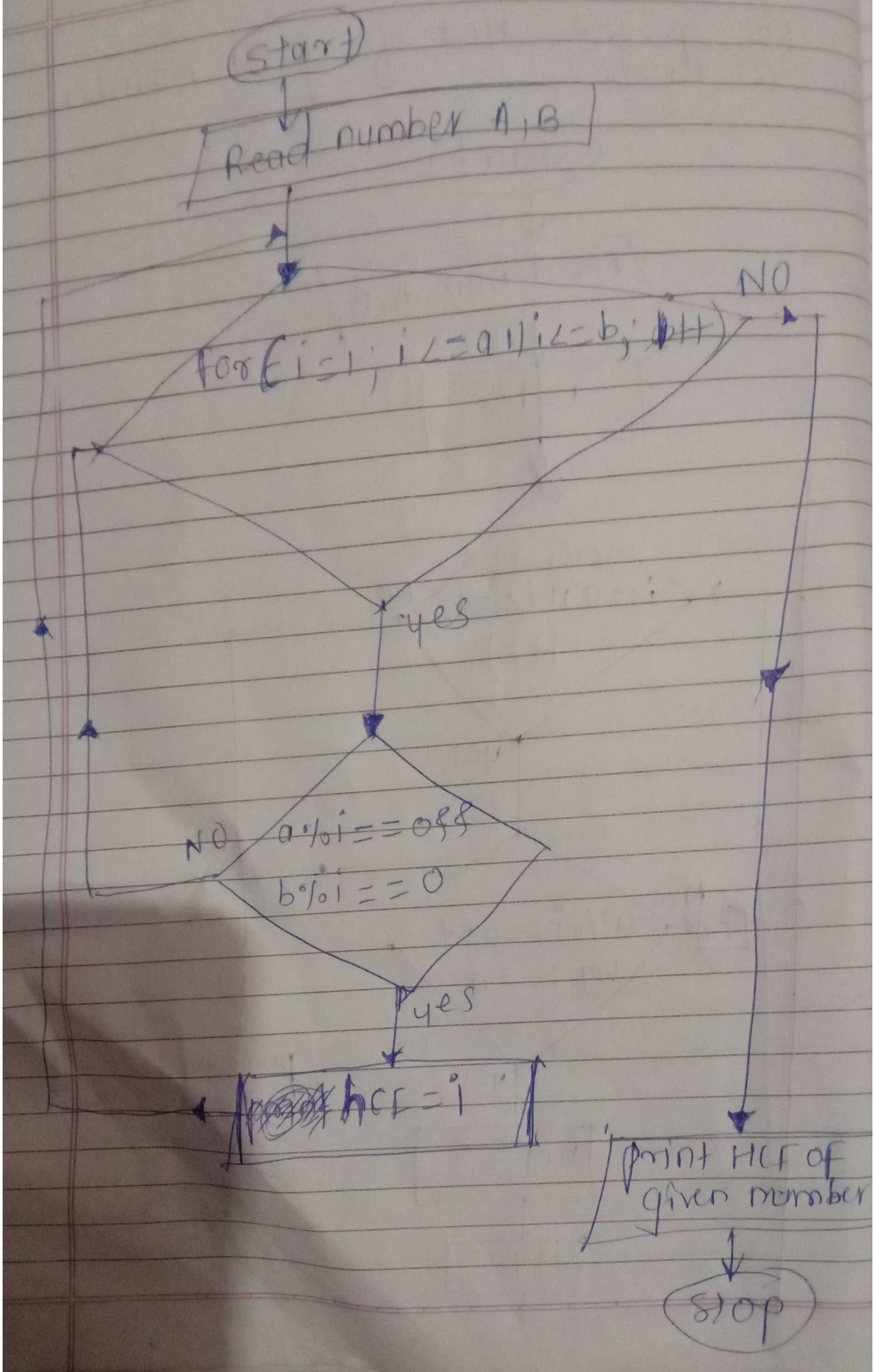
⑤ print the reverse number.
⑥ End.

Q.14 Write a java program to find the GCD of two given numbers.

→

algorithm

① start
② define two numbers A, B
③ set loop
for(i=1 ; i<=a || i<=b ; i++)
If cond' true then go for ④ if cond' is false then go for ⑤
④ if (a % i == 0 && b % i == 0)
if true then hcf = i or if false go to loop


start
Read number A, B
for(i=1; i<=a||i<=b; i++)
NO
yes
NO
a%i==0&&
b%i==0
yes
hcf=i
print HCF of
given number
stop

(b)

palindrome number.