Q.1) write a algorithm and flow chart for check the given no. is even or odd

START

Read : number

If number%2==0

No

Yes

print " number is even "

print "nummber is odd

END
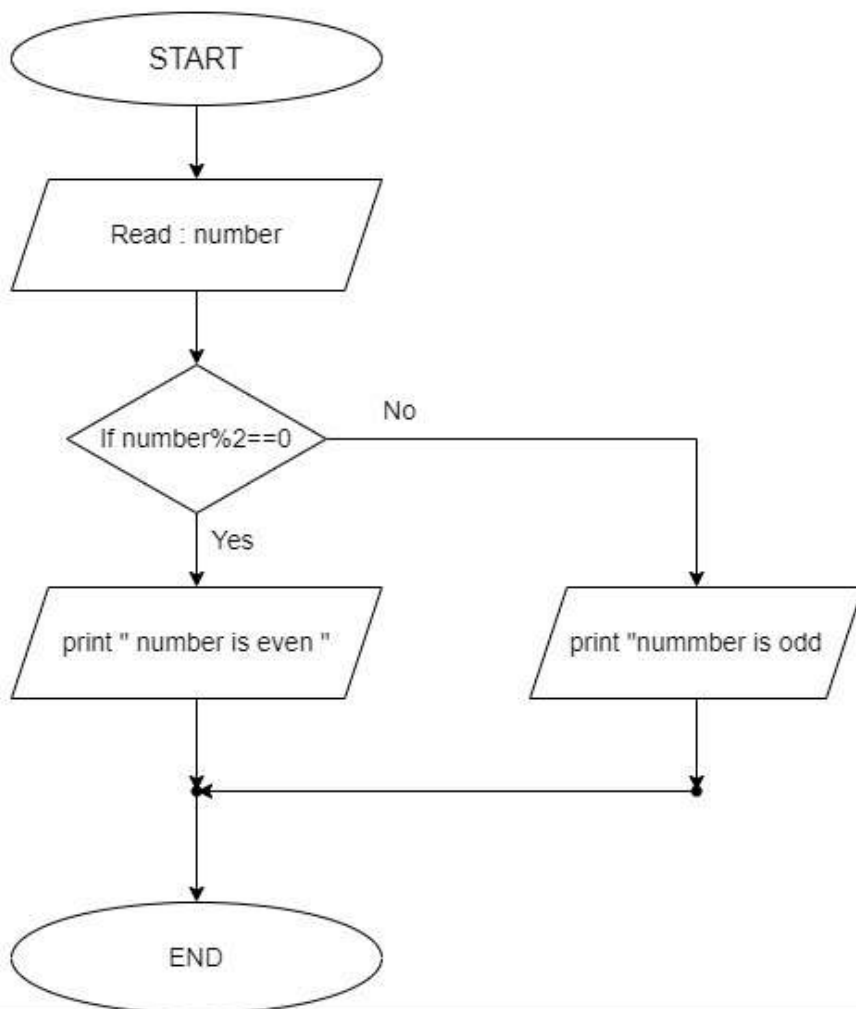
Algorithm

step1: START
step2: Read number form user
step3: cheak number%2==0
      if false goto step 5
      if true goto next step 4
step4: print "number is even"
      goto step 6
step5: print "number is odd
step6: END

Q.2) write a algorithm and flow chart for Factorial of a given number.

```
        ┌─────────────┐
        │    START    │
        └─────────────┘
               │
        ┌──────────────┐
       /  Read : num=8  /
      └──────────────┘
               │
        ┌──────────────┐
        │ Define Fact =1, │
        │      i=1      │
        └──────────────┘
               │
         ◇ while i<=num ◇ ──── false ────┐
               │                          │
              true                        │
               │                          │
        ┌──────────────┐          ┌──────────────┐
        │ Fact=Fact * i │         / println : Fact /
        └──────────────┘          └──────────────┘
               │                          │
        ┌──────────────┐          ┌─────────────┐
        │    i=i+1     │          │     END     │
        └──────────────┘          └─────────────┘
```
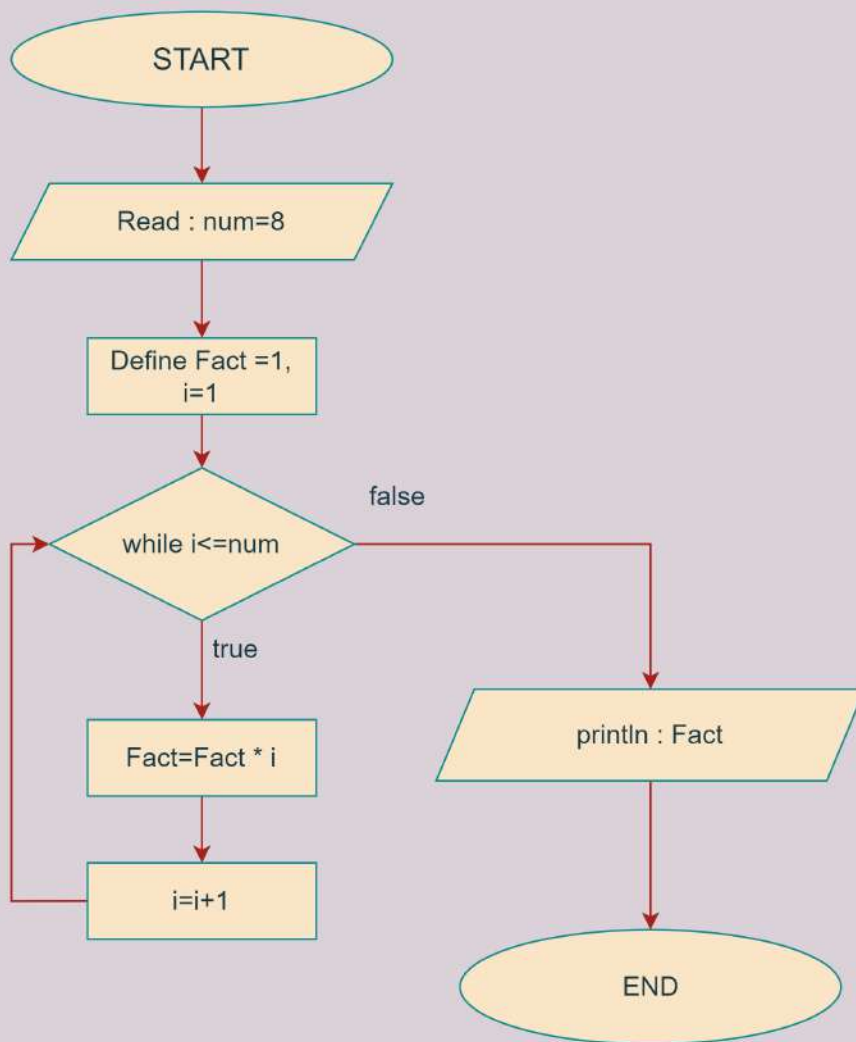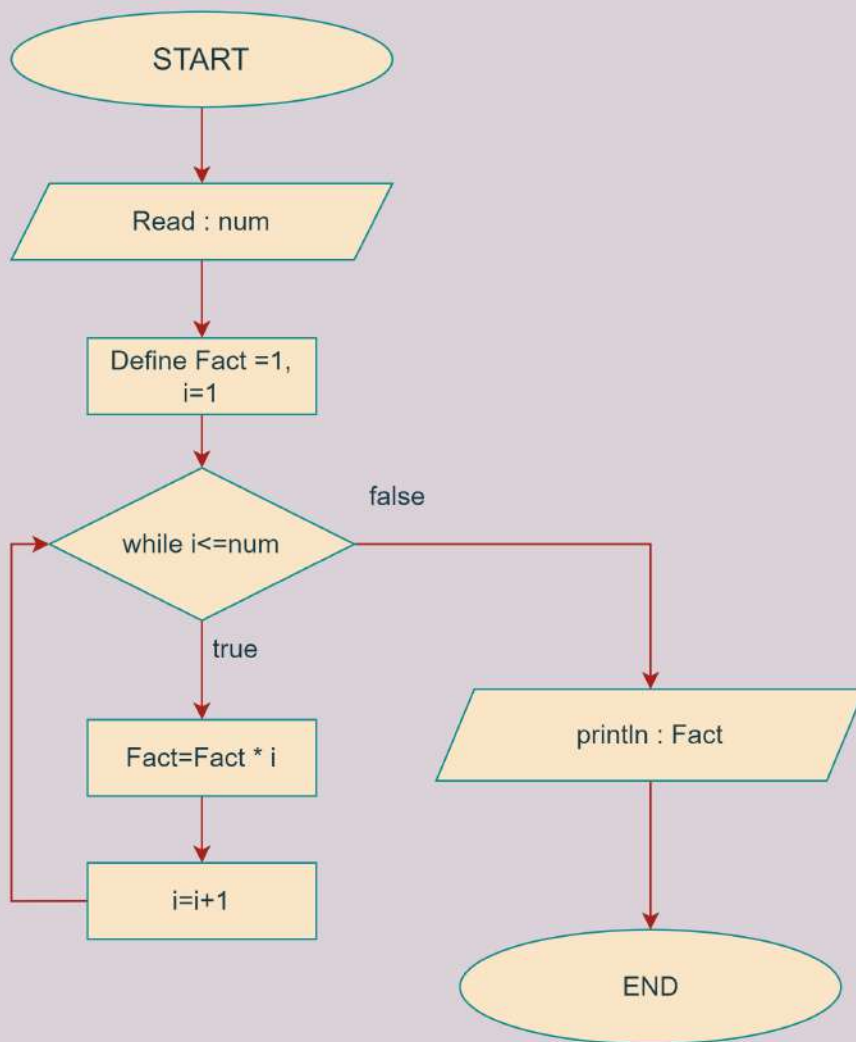
Algorithm

step1: START
step2: Read num=8
step3: Define Fact=1, i=1
step4: check while (i<=num)
      if false goto step 7
      if true goto next step
step5: Fact = Fact * i
step6: increment i by 1
      goto step 4
step7: Println : Fact
step8: END

output=40320

Q.3) write a algorithm and flow chart for Factorial of a number using recursion.

```
              START

                |
                v

            Read : num

                |
                v

          Define Fact =1,
               i=1

                |
                v

    while i<=num  ---false--->
        |
       true
        |
        v                         println : Fact
   Fact=Fact * i                        |
        |                               v
        v                             END
     i=i+1
```

Algorithm

step1: START

step2: Read num

step3: Define Fact=1, i=1

step4: check while (i<=num)
        if false goto step 7
        if true goto next step

step5: Fact = Fact * i

step6: increment i by 1
        goto step 4

step7: Println : Fact

step8: END

Q.4) write a algorithm and flowchart for Swap two numbers without using the third variable approach.

Algorithm

START

Read : n1, n2

n1 = n1+n2
n2 = n1-n2
n1 = n1-n2

Print: n1, n2

END
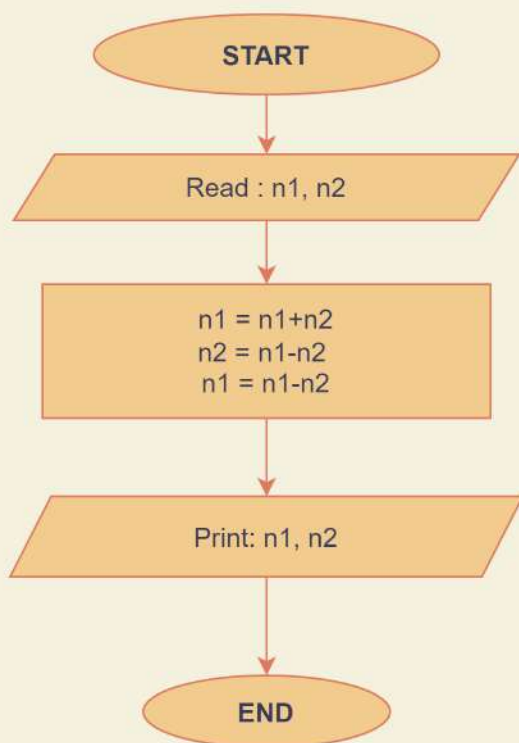
step1: START
step2: Read n1, n2
step3: Add n1+n2 & store in n1
step4: Sub n1-n2 & store in n2
step5: Sub n1-n2 & store in n1
step6: Print : n1, n2
step7: END

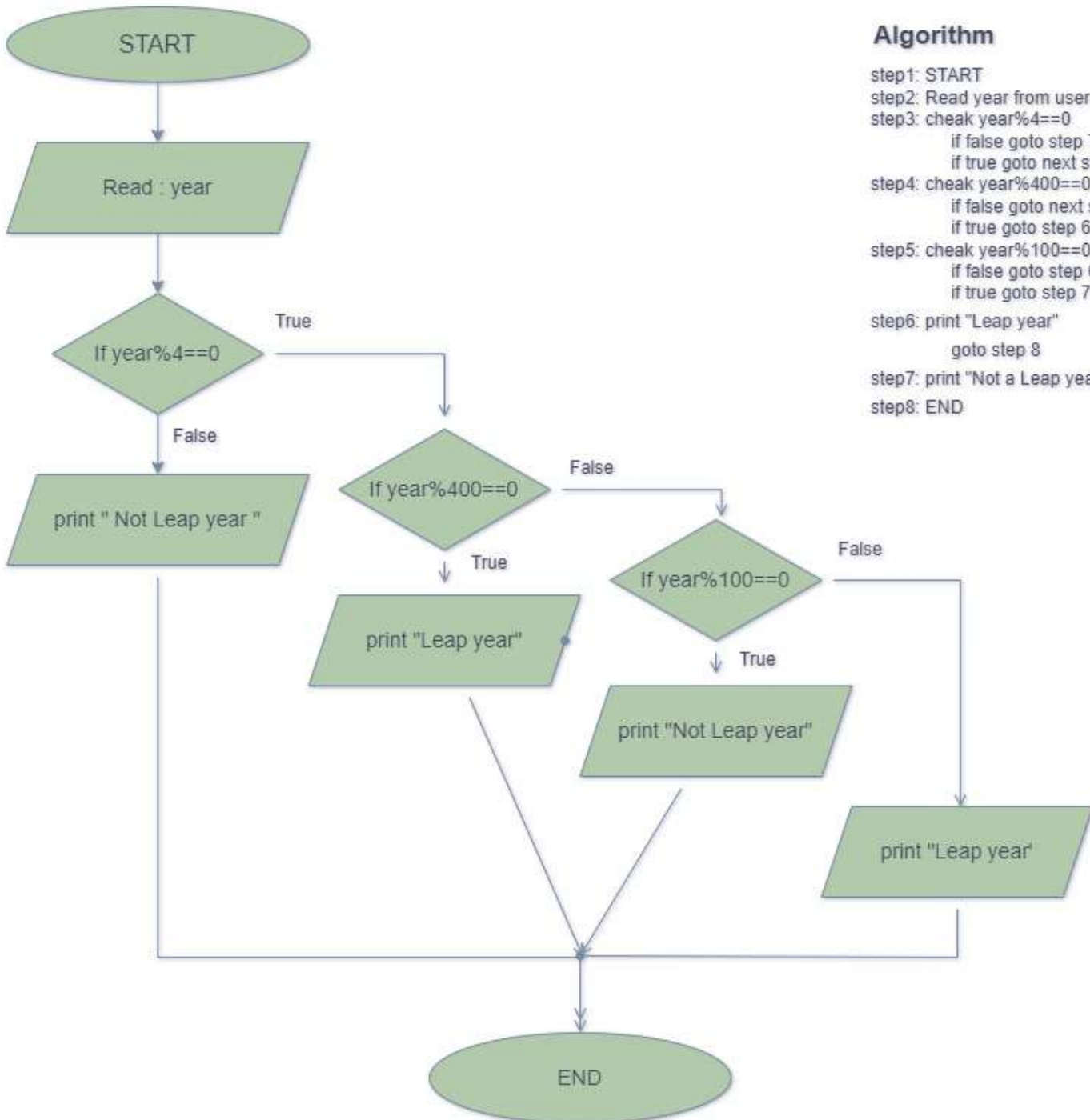**Q.5) write a algorithm and flowchart for check whether the given number is positive or negative.**
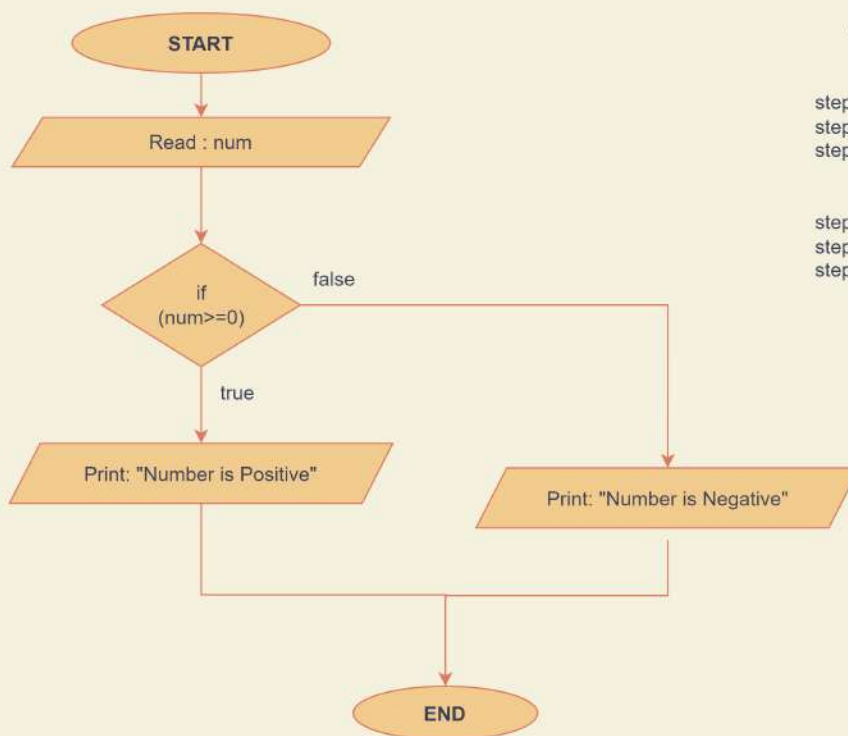
Algorithm

```
START
```

```
Read : num
```

```
if
(num>=0)
```

false

true

```
Print: "Number is Positive"
```

```
Print: "Number is Negative"
```

```
END
```

step1: START
step2: Read num
step3: check (num>=0)
     if false goto step 5
     if true goto next step
step4: Print :"Number is positive"
step5: Print :"Number is Negative"
step6: END

Q6 Write a java program find wheather a given year is leap year or not

START

Read : year

If year%4==0 — True

False

print " Not Leap year "

If year%400==0 — False

True

print "Leap year"

If year%100==0 — False

True

print "Not Leap year"

print "Leap year"

END

Algorithm

step1: START
step2: Read year from user
step3: cheak year%4==0
    if false goto step 7
    if true goto next step 4
step4: cheak year%400==0
    if false goto next step 5
    if true goto step 6
step5: cheak year%100==0
    if false goto step 6
    if true goto step 7
step6: print "Leap year"
    goto step 8
step7: print "Not a Leap year
step8: END

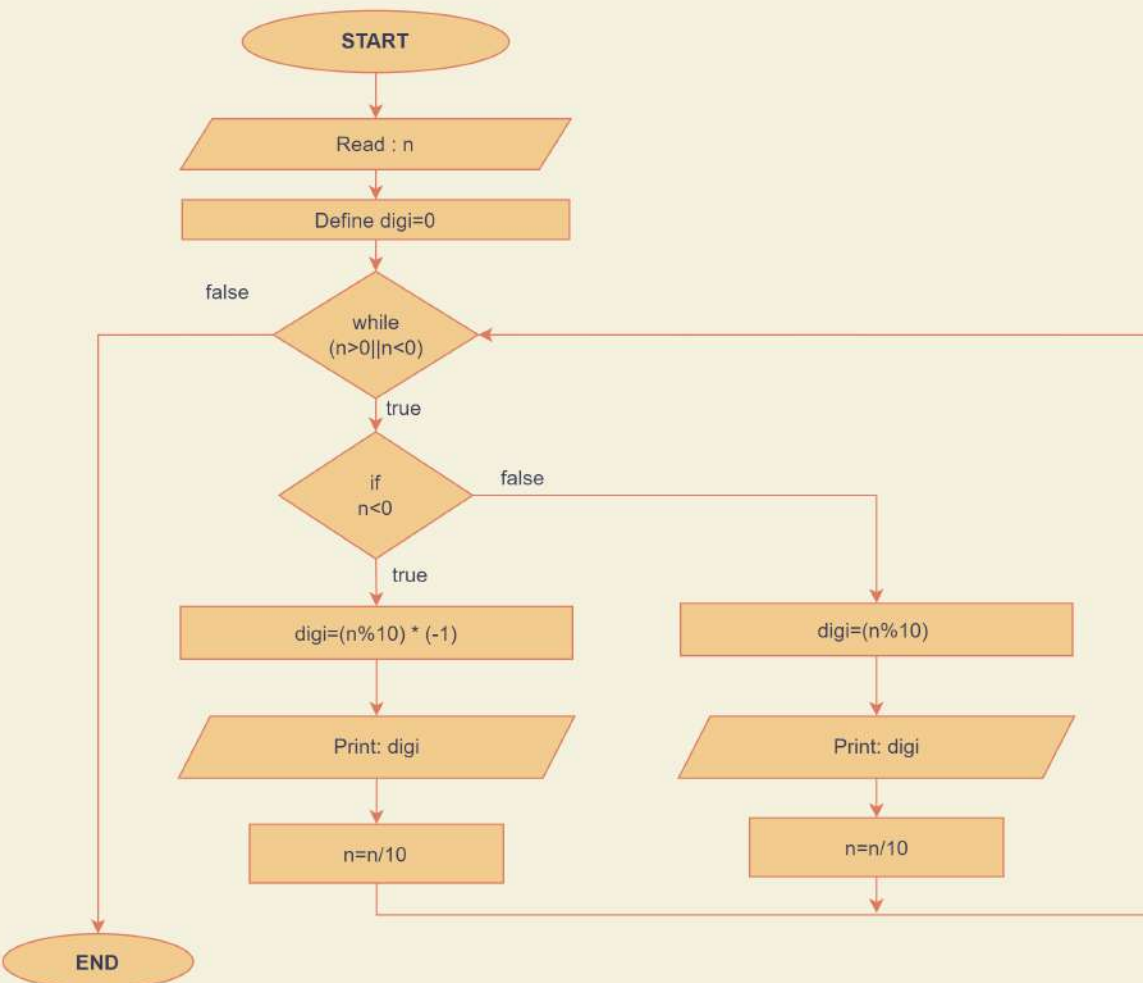**Q.7) write a algorithm and flowchart for Print 1 to 10 number Without using Loop.**

Algorithm

START

Read : num=1

if
(num<=10)

False

true

Print: num

num++

END
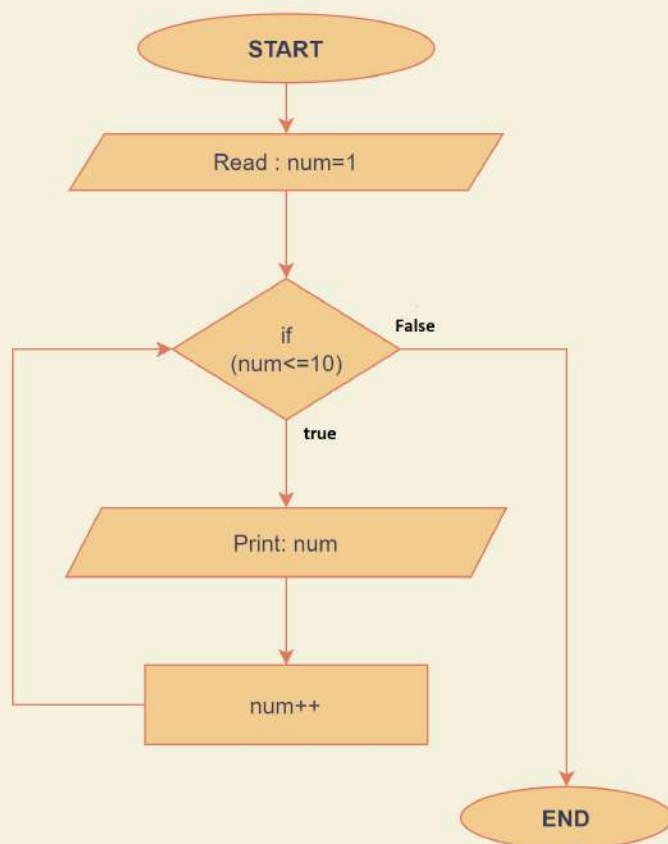
step1: START
step2: Read num=1
step3: check (num<=10)
        if false goto step 6
        if true goto next step
step4: Print :num
step5: increment num by 1
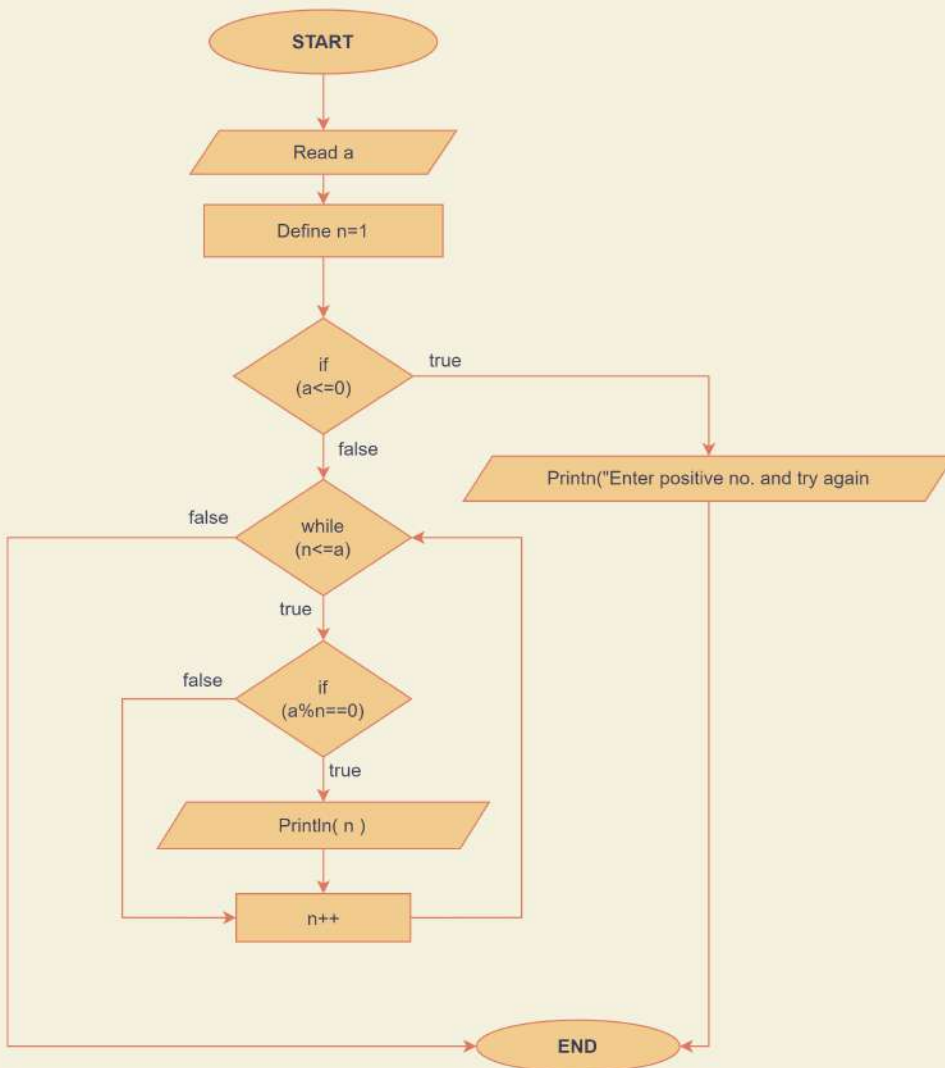   and goto step 3
step6: END

Q.8) write a algorithm and flowchart for Print the digits of a given number.

START

Read : n

Define digi=0

while
(n>0||n<0)

false

true

if
n<0

false

true

digi=(n%10) * (-1)

digi=(n%10)

Print: digi

Print: digi

n=n/10

n=n/10

END

Algorithm

step1: START
step2: Read n
step3; Define digi=0
step4: check while (n>0||n<0)
    if false goto step 12
    if true goto next step
step5: check n<0
    if false goto step 9
    if true goto next step
step6: digi=(n%10) * (-1)
step7: Println : digi
step8: n=n/10
    and goto step 4
step9: digi=(n%10)
step10: Println : digi
step11: n=n/10
    and goto step 4
step12: END

Q.9) write algorithm and flowchart for To print all the factors of the given number.
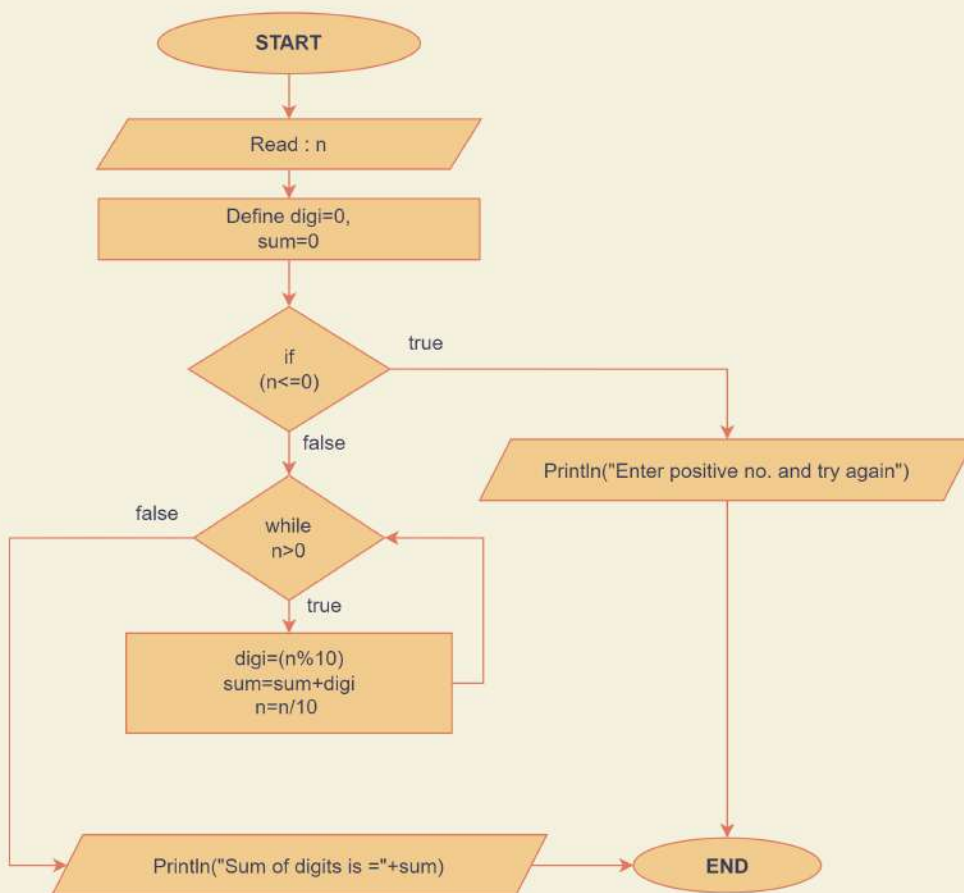
Algorithm

```
START

Read a

Define n=1

if
(a<=0)  ──true──→  Printn("Enter positive no. and try again

  false
   ↓
while
(n<=a)  ──false──

  true
   ↓
if
(a%n==0)  ──false──

  true
   ↓
Println( n )

n++

END
```

step1: **START**
step2: Read a
step3: Define n=1
step4: check (a<=0)
      if false goto step 6
      if true goto next step
step5: Println("Enter positive no. and try again")
      and goto step 10
step6: check condition while (n<=a)
      if false goto step10
      if true goto next step
step7: check (a%n==0)
      if false goto step 9
      if true goto next step
step8: Println(n)
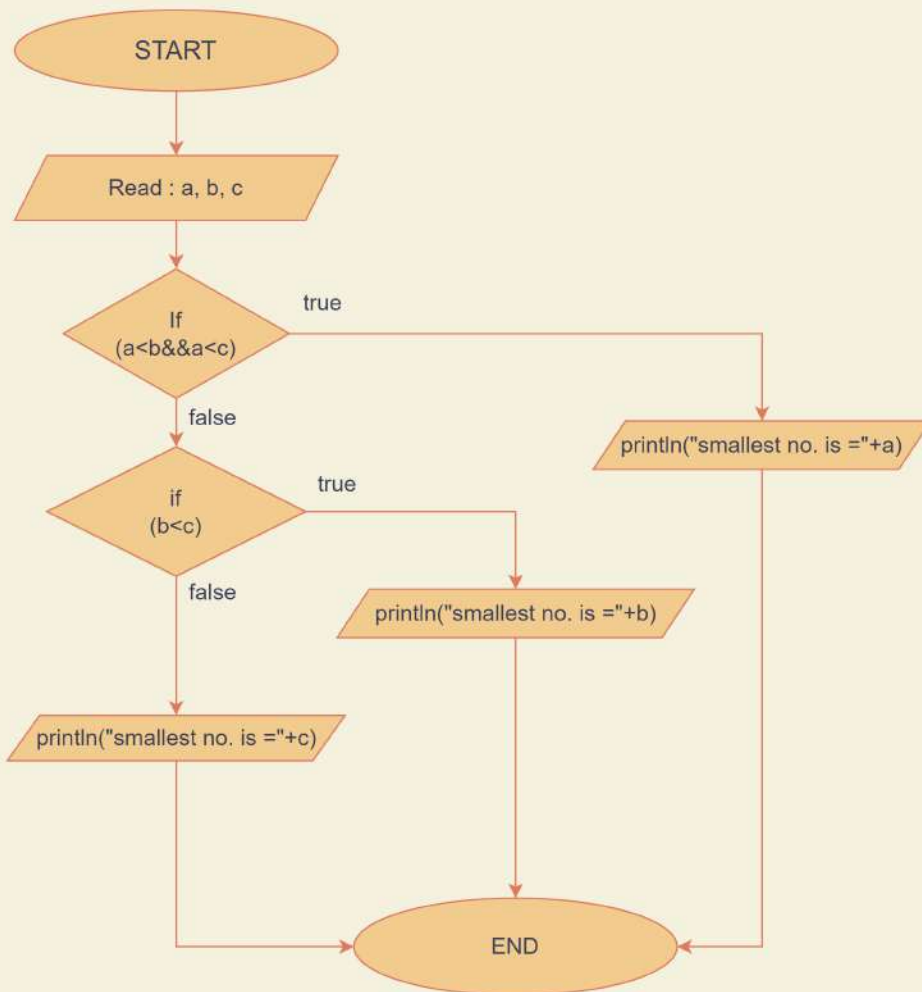step9: increment n by 1
      and goto step 6
step10: **END**

Q.10) write a algorithm and flowchart for Find the sum of the digits of given number.

START

Read : n

Define digi=0,
sum=0

if
(n<=0)

true

false

while
n>0

false

true

digi=(n%10)
sum=sum+digi
n=n/10

Println("Enter positive no. and try again")

Println("Sum of digits is ="+sum)

END

Algorithm

step1: START
step2: Read n
step3; Define digi=0, sum=0
step4: check (n<=0)
        if false goto step 6
        if true goto next step
step5: Println("Enter positive no. and try again")
        and goto step 9
step6: check while (n>0)
        if false goto step 8
        if true goto next step
step7: digi=(n%10)
        sum=sum+digi
        n=n/10
        and goto step 6
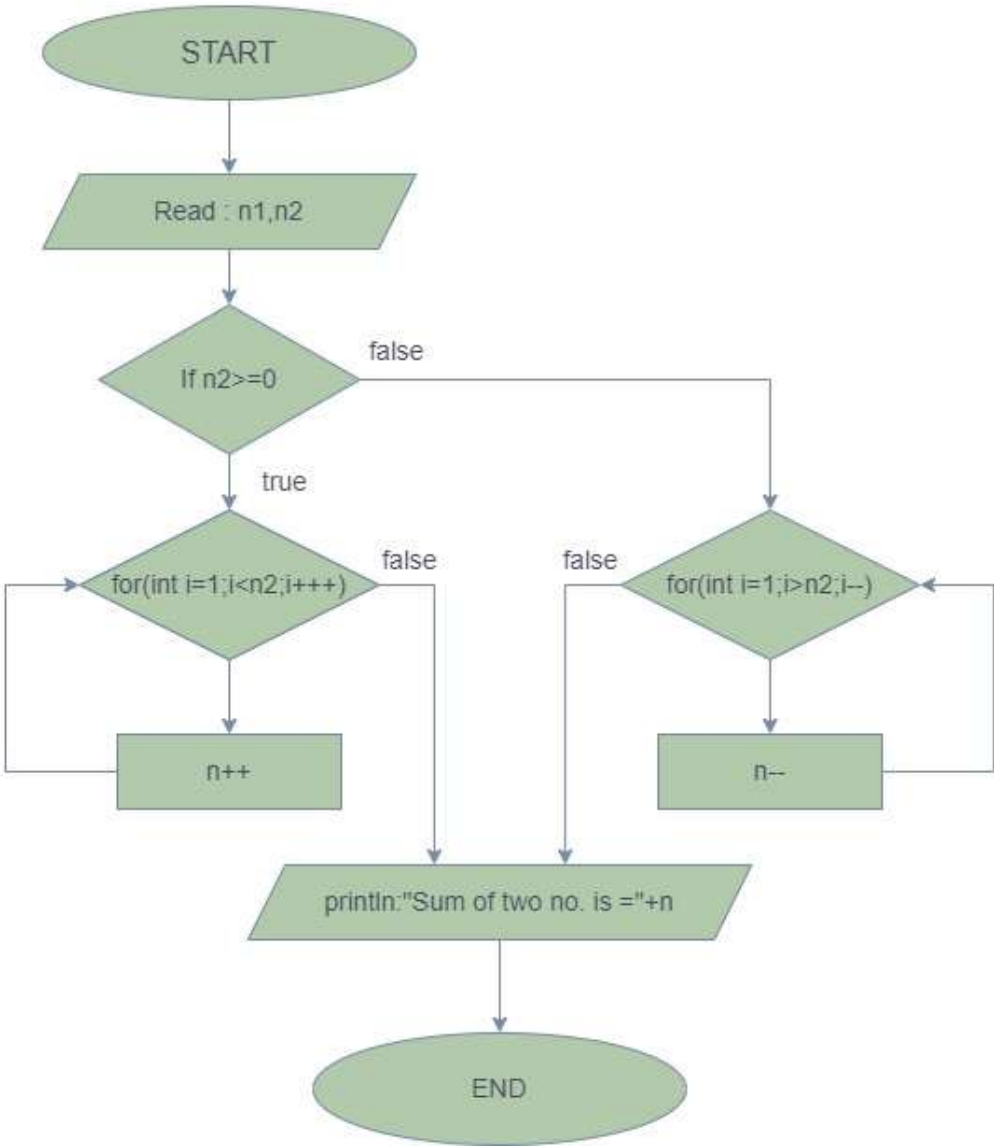step8: Println("Sum of digits is ="+sum)
step9: END

Q.11) write algorithm and flow chart for To Find the smallest of 3 numbers (a,b,c).

START

Read : a, b, c

If
(a<b&&a<c)

true → println("smallest no. is ="+a)

false

if
(b<c)

true → println("smallest no. is ="+b)

false

println("smallest no. is ="+c)

END

Algorithm

step1: START
step2: Read a, b, c
step3: check (a,b&&a<c)
    if false goto step 5
    if true goto next step
step4: Println("smallest no. is ="+a)
    and goto step 8
step5: check condition (b<c)
    if false goto step 7
    if true goto next step
step6: Println("smallest no. is ="+b)
    and goto step 8
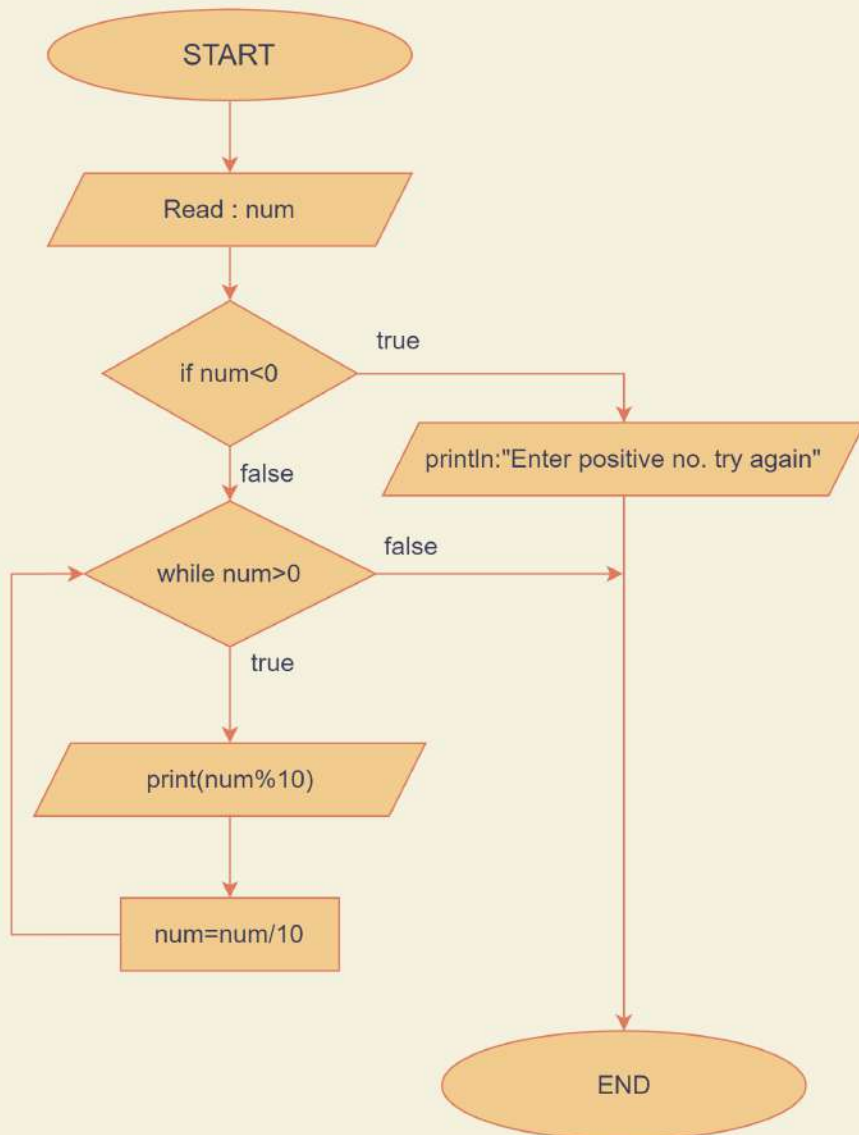step7: Println("smallest no. is ="+c)
step8: END

Q.12) write a algorithm and flow chart for add two numbers without using the arithmetic operators

START

Read : n1,n2

If n2>=0

false

true

for(int i=1;i<n2;i++)

false

n++

false

for(int i=1;i>n2;i--)

n--

println:"Sum of two no. is ="+n

END

Algorithm

step1: START
step2: Read n1, n2
step3: check n2>=0
　　　　if false goto step 6
　　　　if true goto next step
step4: define the i=1, take loop upto i<n2 and
　　　　check condition i<n2
　　　　if false goto step 8
　　　　if true goto next step
step5: increment n1 by 1
step6: define the i=1, take loop upto i<n2 and
　　　　check condition i>n2
　　　　if false goto step 8
　　　　if true goto next step
step7: decrement n1 by 1
step8: Println:"Sum of two no. is="+n1
step9: END

**Q.13) write a algorithm and flow chart for Reverse a given number.**

Algorithm

```
START

Read : num

if num<0 ──true──→ println:"Enter positive no. try again"
   │false
while num>0 ──false──→
   │true
print(num%10)
   │
num=num/10

END
```

step1: START
step2: Read num
step3: check num<0
      if false goto step 5
      if true goto next step
step4: println: "Enter poditive no. try again"
      goto step 8
step5: check num>0
      if false goto step 8
      if true goto next step
step6: Print (num%10)
step7: num/10 and store num
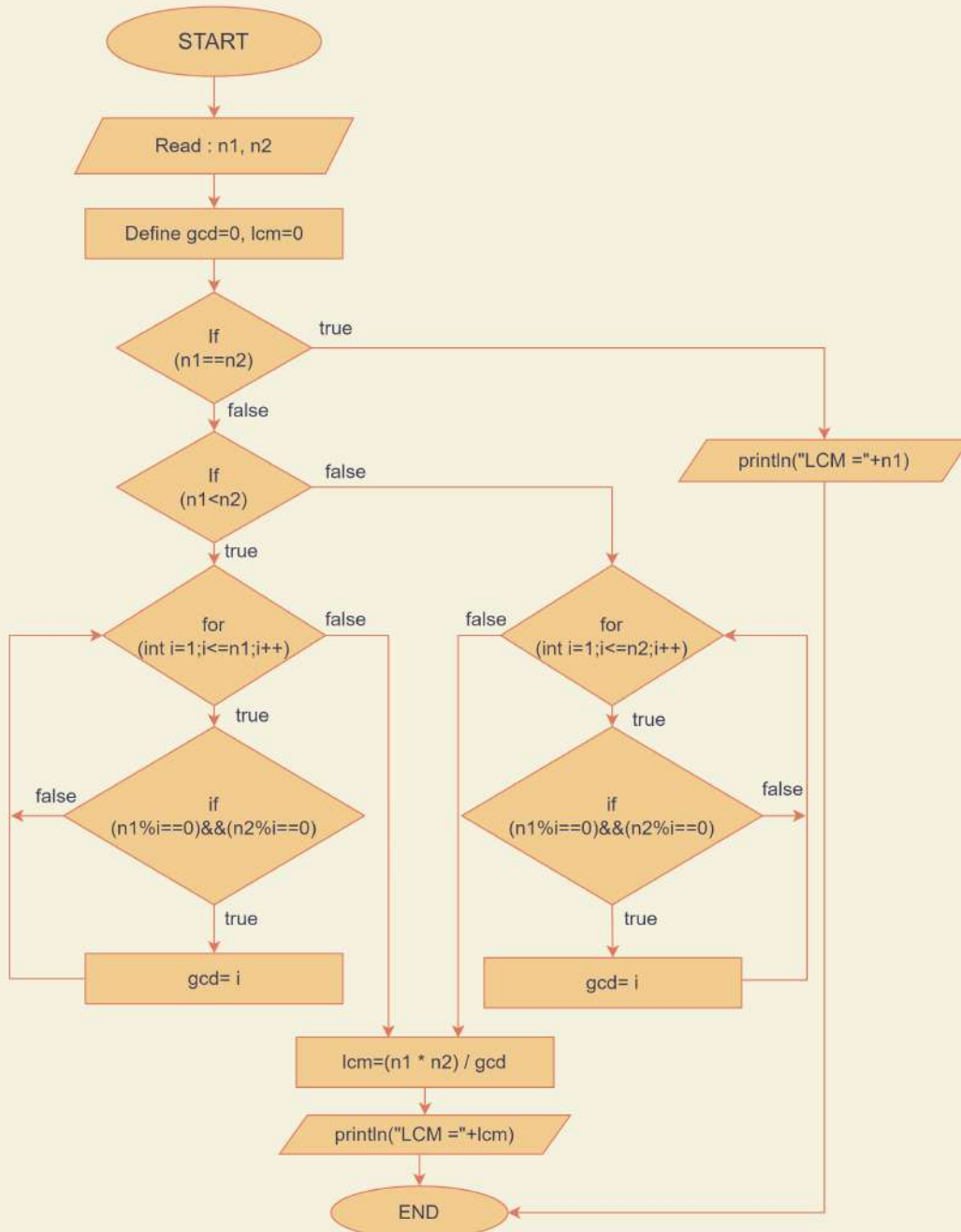   goto step 5
step8: END

Q.14) write algorithm and flowchart for To Find the GCD of two given numbers.
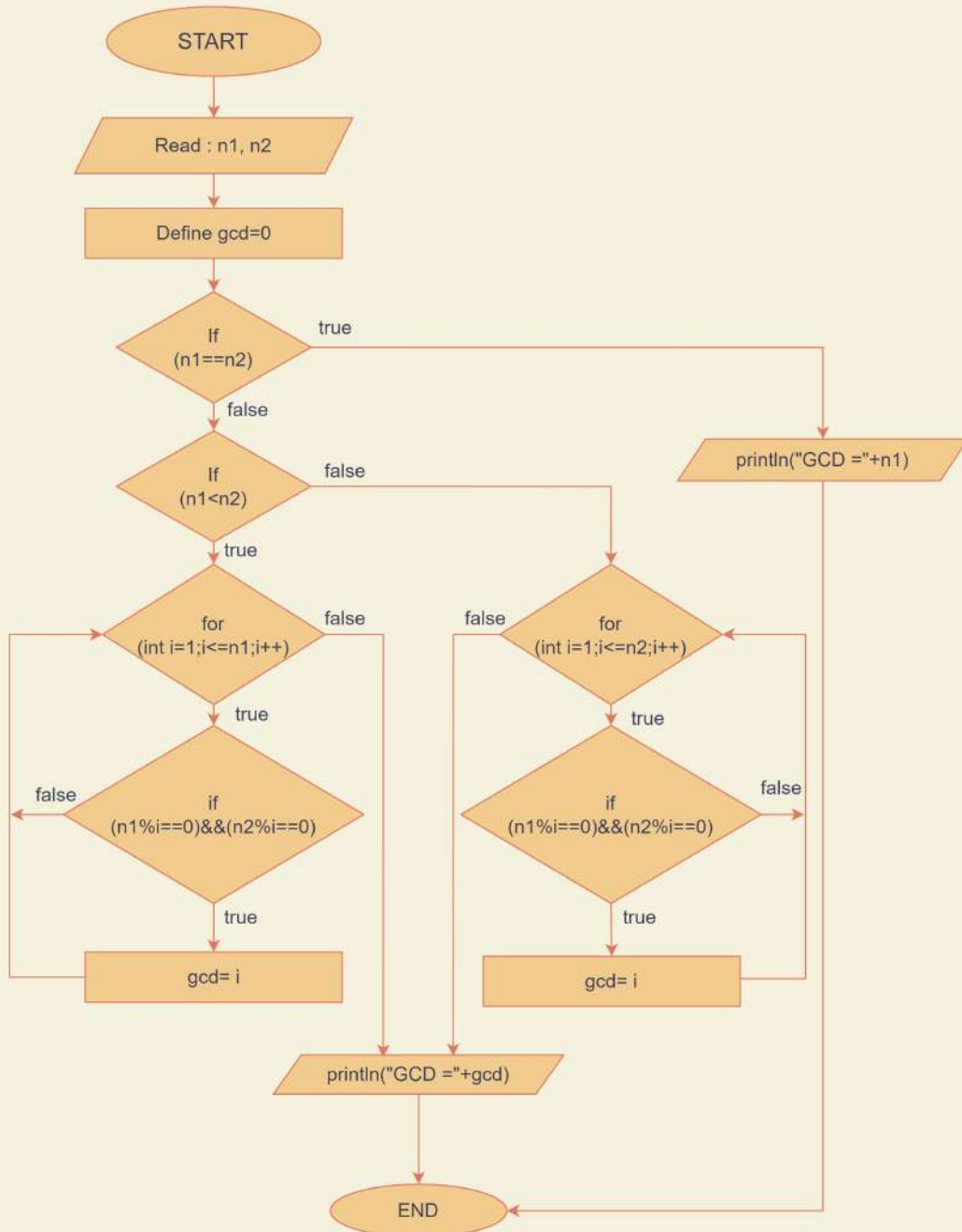
Algorithm

step1: **START**
step2: Read n1, n2
step3: Define gcd=0
step4: check (n1==n2)
if false goto step 6
if true goto next step
step5: Println("GCD ="+a)
    and goto step 14
step6: check condition (n1<n2)
        if false goto step 10
        if true goto next step
step7: Define i=1, check(i<=n1), inc i++
        if false goto step 13
        if true goto next step
step8: check (n1%i==0)&&(n2%i==0)
        if false goto step 7
        if true goto next step
step9: store gcd= i
        and goto step 7
step10: Define i=1, check(i<=n2), incre i++
        if false goto step 13
        if true goto next step
step11: check (n1%i==0)&&(n2%i==0)
        if false goto step 10
        if true goto next step
step12: store gcd= i
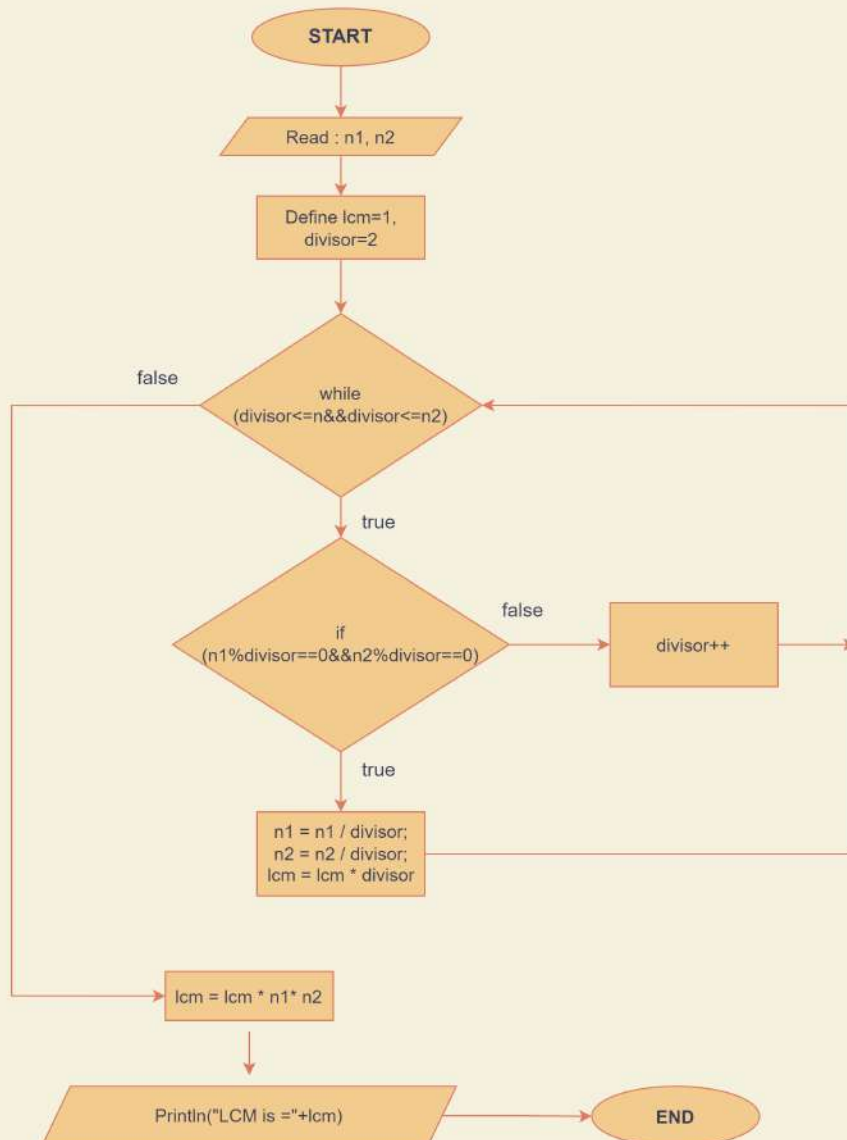   and goto step 10
step13: Println("GCD ="+gcd)
step14: **END**

Q.15) write algorithm and flowchart for To LCM of two given numbers.

Algorithm

step1: **START**

step2: Read n1, n2

step3: Define gcd=0, lcm=0

step4: check (n1==n2)
      if false goto step 6
      if true goto next step

step5: Println("LCM ="+n1)
      and goto step 14

step6: check condition (n1<n2)
      if false goto step 10
      if true goto next step

step7: Define i=1, check(i<=n1), inc i++
      if false goto step 13
      if true goto next step

step8: check (n1%i==0)&&(n2%i==0)
      if false goto step 7
      if true goto next step

step9: store gcd= i
      and goto step 7

step10: Define i=1, check(i<=n2), incre i++
      if false goto step 13
      if true goto next step

step11: check (n1%i==0)&&(n2%i==0)
      if false goto step 10
      if true goto next step

step12: store gcd= i
      and goto step 10

step13: lcm=(n1 * n2) / gcd

step14: Println("LCM ="+lcm)

step15: **END**

Q.16) write algorithm and flowchart for To LCM of two given numbers using the Prime factors method.

START

Read : n1, n2

Define lcm=1, divisor=2

while
(divisor<=n&&divisor<=n2)

false

true

if
(n1%divisor==0&&n2%divisor==0)

false → divisor++

true

n1 = n1 / divisor;
n2 = n2 / divisor;
lcm = lcm * divisor

lcm = lcm * n1* n2

Println("LCM is ="+lcm) → END

Algorithm

step1: START
step2: Read n1, n2
step3: Define lcm = 1, divisor = 2
step4: check condition while (divisor<=n1&&Divisor<=n2)
    if false goto step 8
    if true goto next step
step5: check (n1%divisor==0&&n2%divisor==0)
    if false goto step 7
    if true goto next step
step6: n1 = n1 / divisor;
    n2 = n2 / divisor;
    lcm = lcm * divisor;
    and goto step 4
step7: increment divisor++
    and goto step 4
step8: lcm =lcm * n1 * n2
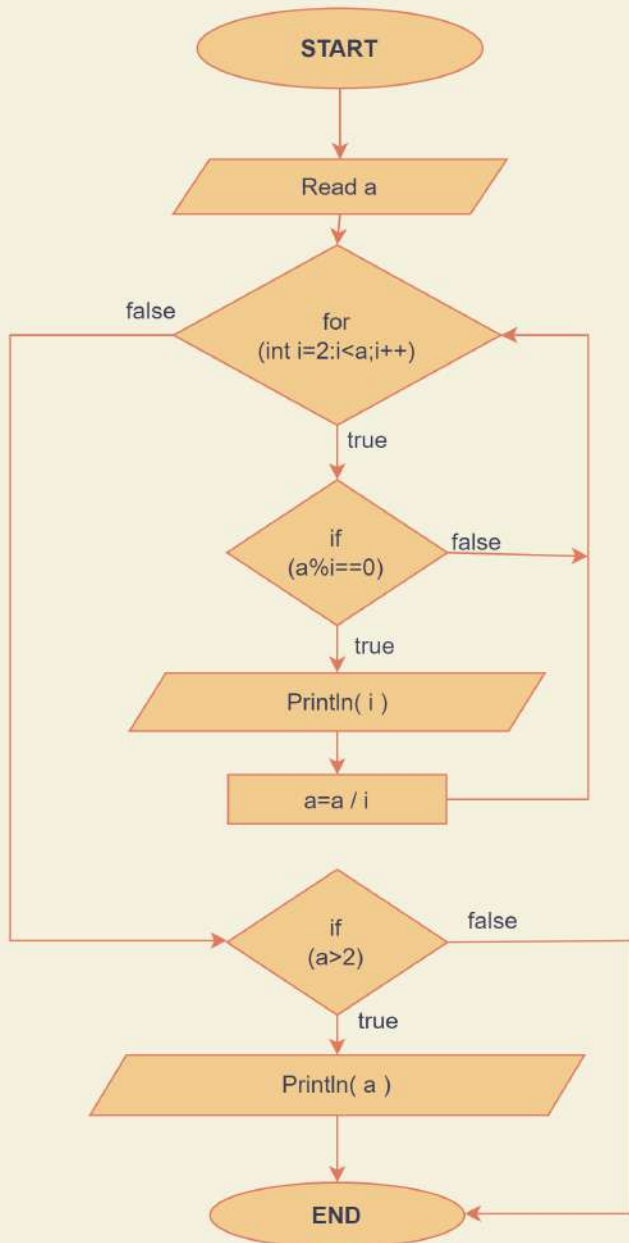step9: Println("LCM is ="+lcm)
step10: END

Q.17) write a algorithm and flowchart for check the given no. is Palindrome or NOT
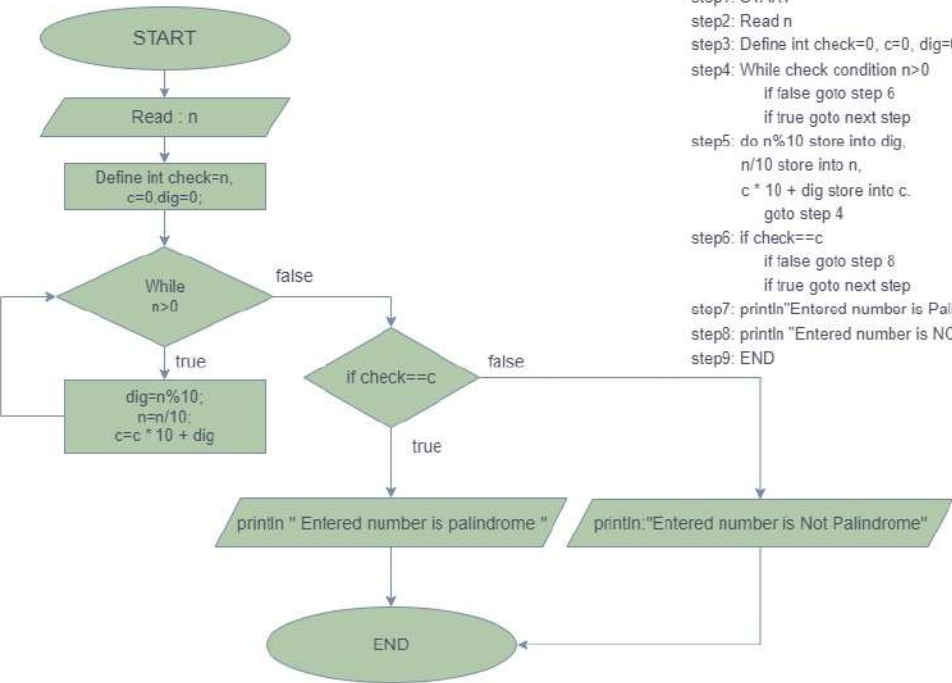
Algorithm

step1: START
step2: Read n
step3: Define int check=0, c=0, dig=0
step4: While check condition n>0
     if false goto step 6
     if true goto next step
step5: do n%10 store into dig,
     n/10 store into n,
     c * 10 + dig store into c.
     goto step 4
step6: if check==c
     if false goto step 8
     if true goto next step
step7: println"Entered number is Palindrome"
step8: println "Entered number is NOT Palindrome"
step9: END

```
           START

           Read : n

      Define int check=n,
        c=0,dig=0;

           While          false
            n>0
              |
            true
              |
        dig=n%10;            if check==c    false
        n=n/10;                              
        c=c * 10 + dig         true
              |                  |
   println " Entered number is palindrome "    println:"Entered number is Not Palindrome"
              |                                          |
                          END
```

Q.18) write algorithm and flowchart for To print all the Prime factors of the given number.

Algorithm

START

Read a

for (int i=2;i<a;i++) — false

true

if (a%i==0) — false

true

Println(i)

a=a / i

if (a>2) — false

true

Println(a)

END

step1: **START**
step2: Read a
step3: Define i=2 and check conditon(i<a) and i++
      if false goto step 7
      if true goto next step
step4: check (a%i==0)
      if false goto step 3
      if true goto next step
step5: Println(i)
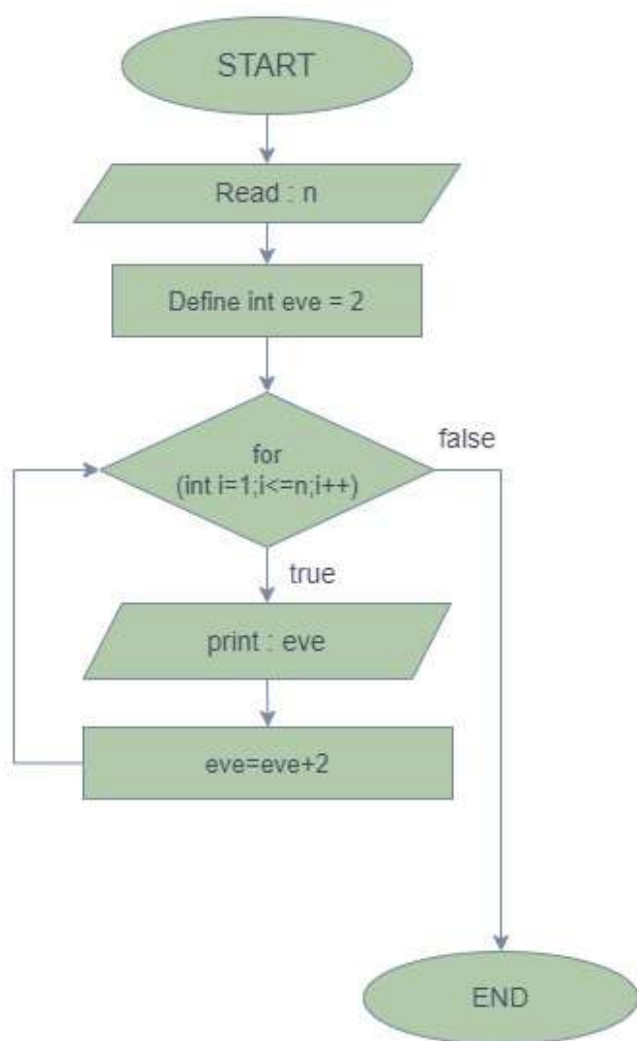step6: a = a / i and goto step 3

step7: check (a>2)
      if false goto step 9
      if true goto next step
step8: Println(a)
step9: **END**

Q.19) write a algorithm and flowchart for To print the EVEN number series 2 4 6 8 10 ....n

START

Read : n

Define int eve = 2

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

false

true

print : eve

eve=eve+2

END

Algorithm

step1: START
step2: Read n
step3: Define int eve=2
step4: for int i=1 check condition i<=n and increment i++
        if false goto step 7
        if true goto next step
step5 print : eve
step6: increment eve=eve+2
step7: END

Q.20) write a algorithm and flowchart for To print the ODD number series 1 3 5 7 9 .... n

START

Read : n

Define int odd = 1

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

false

true

print : odd

odd=odd+2

END
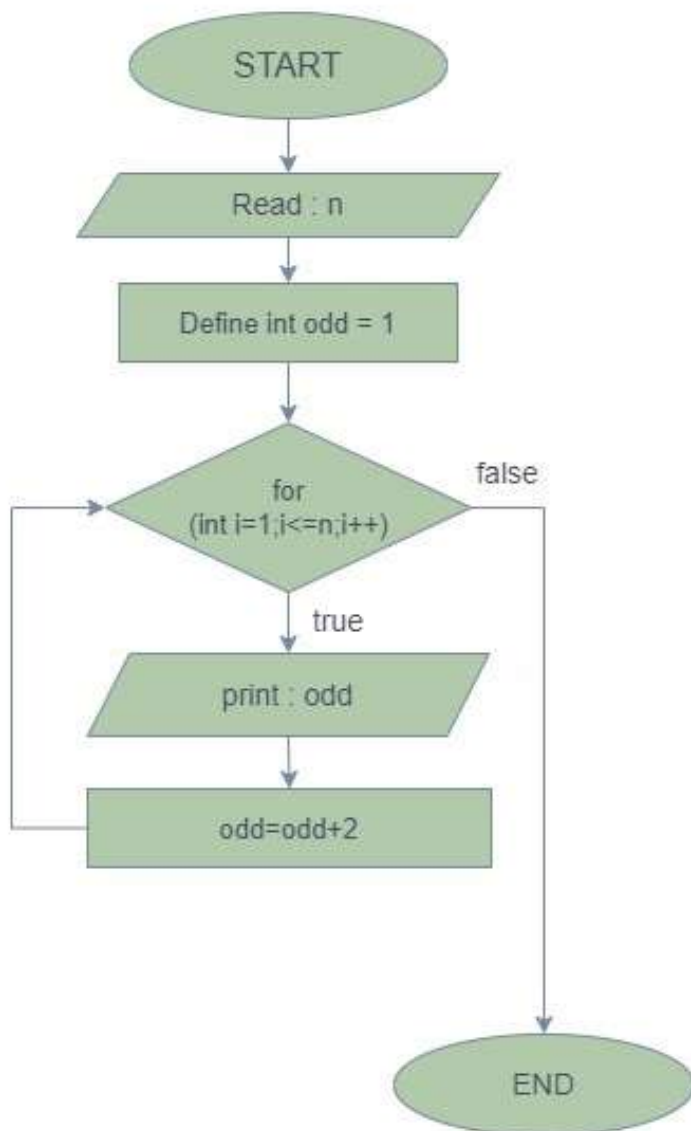
Algorithm

step1: START
step2: Read n
step3: Define int odd=1
step4: for int i=1 check condition i<=n,and increment i++
      if false goto step 7
      if true goto next step
step5: print : odd
step6: increment odd=odd+2
      goto step 4
step7: END