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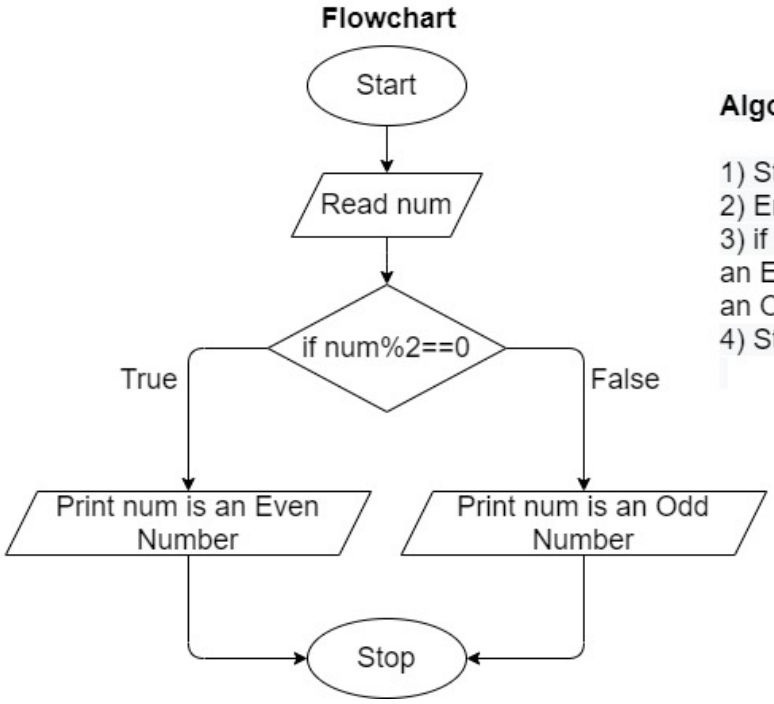
Topic: Logic Building

Assignment No.1

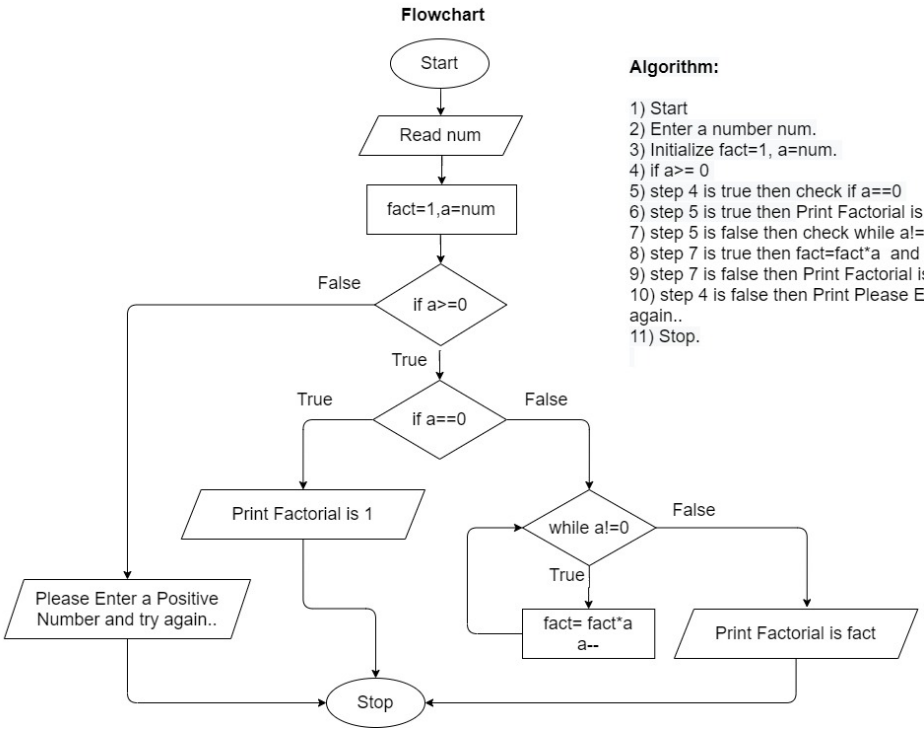
Q1. Check if the given number is Even or Odd Number.



Algorithm:

1) Start
2) Enter a number num.
3) if num%2 == 0 then Print num is an Even Number else, Print num is an Odd Number.
4) Stop.

Q.2. Write a java program to find the Factorial of a given Number.



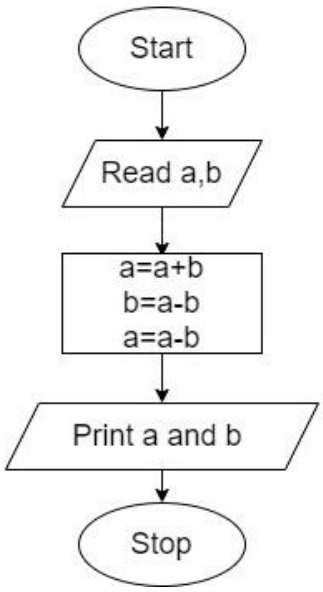
Algorithm:

1) Start
2) Enter a number num.
3) Initialize fact=1, a=num.
4) if a>= 0
5) step 4 is true then check if a==0
6) step 5 is true then Print Factorial is 1.
7) step 5 is false then check while a!=0.
8) step 7 is true then fact=fact*a and a--
9) step 7 is false then Print Factorial is fact.
10) step 4 is false then Print Please Enter a Positive Number and try again..
11) Stop.

Q.3. Find the Factorial of a Numbers using Recursion.

Q.4. Swap Two Numbers without using third variable approach.

Flowchart

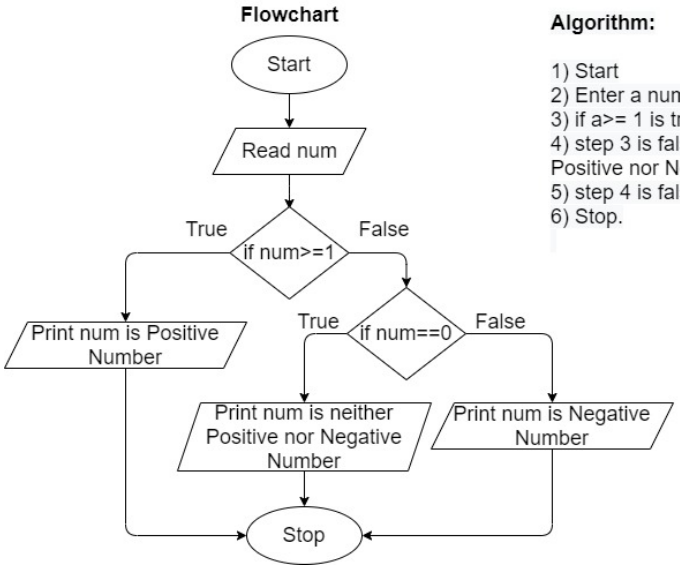


Algorithm:

1) Start
2) Enter two numbers a and b .
3) a=a+b
   b=a-b
   a=a-b
4) Print a and b.
5) Stop.

Q.5. How to check whether a given Number is Positive or Negative in java.

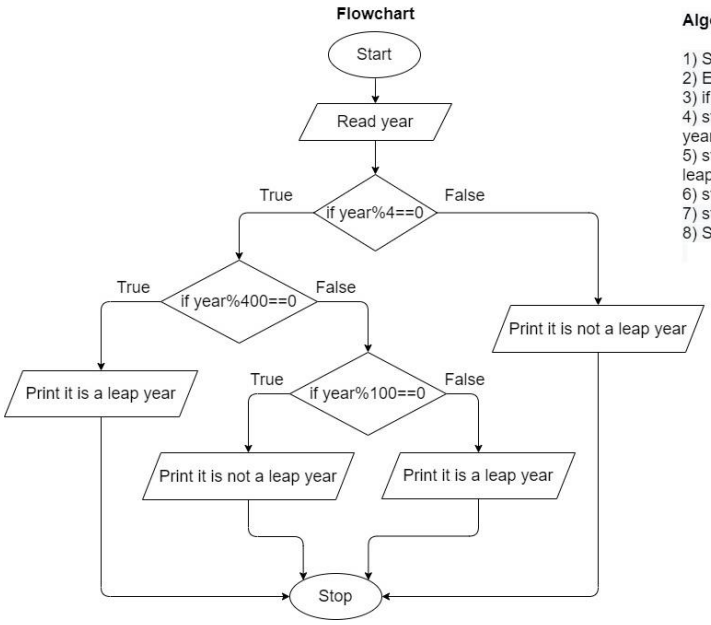
Flowchart



Algorithm:

1) Start
2) Enter a number num.
3) if a>= 1 is true then Print num is Positive Number.
4) step 3 is false then check if num==0 is true then Print num is neither Positive nor Negative Number.
5) step 4 is false then Print num is Negative Number..
6) Stop.

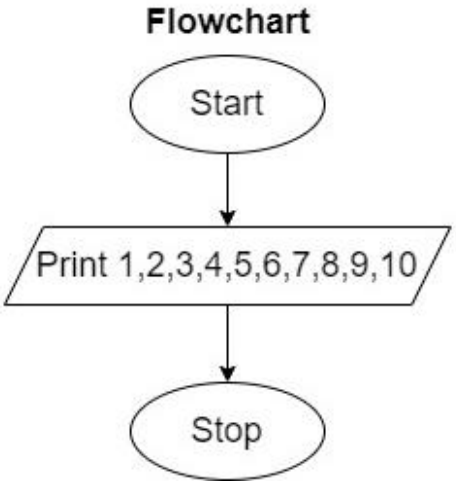
Q.6. Write a java program to find whether a given number is Leap Year or not.



Algorithm:

1) Start
2) Enter a year.
3) if year%4==0
4) step 3 is true then check if year%400==0 is true then Print it is a leap year.
5) step 4 is false then check if year%100==0 is true then Print it is not a leap year.
6) step 5 is false then Print it is a leap year.
7) step 3 is false then Print it is not a leap year.
8) Stop.

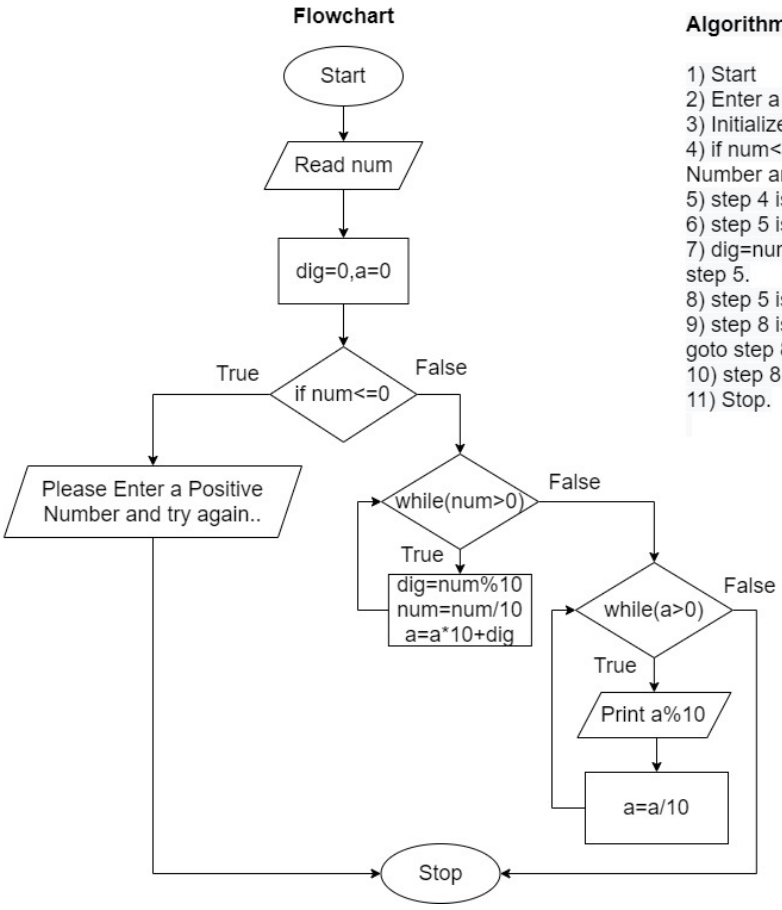
Q.7. Write a java program to Print 1 to 10 without using loop.



Algorithm:

1) Start
2) Print 1,2,3,4,5,6,7,8,9,10.
3) Stop.

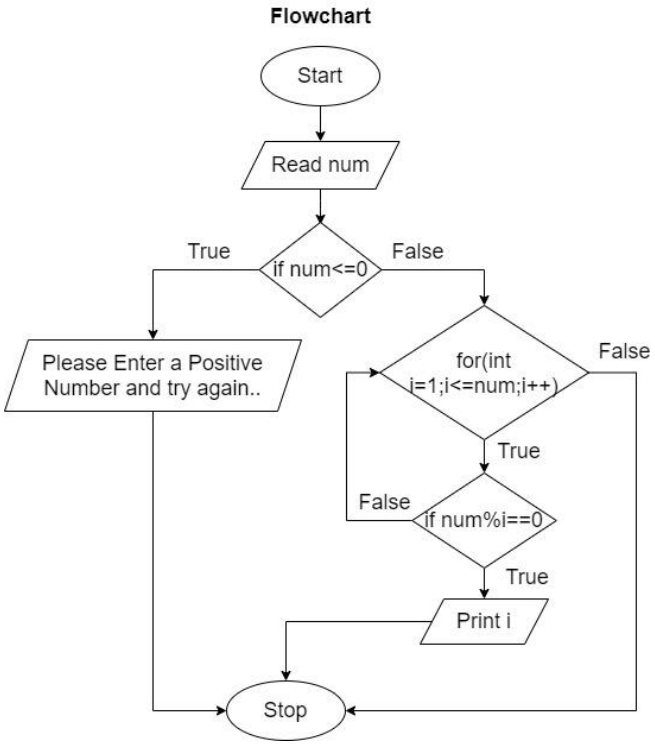
Q.8 Write a java program to print the digits of a given number.



Algorithm:

1) Start
2) Enter a Number num.
3) Initialize dig=0,a=0.
4) if num<=0 is true then Please Enter a Positive Number and try again.. and goto step 11.
5) step 4 is false then check while(num>0)
6) step 5 is true then do step 7.
7) dig=num%10, num=num/10, a=a*10+dig and goto step 5.
8) step 5 is false then check while(a>0)
9) step 8 is true then Print a%10 and do a=a/10 and goto step 8.
10) step 8 is false then goto step 11.
11) Stop.

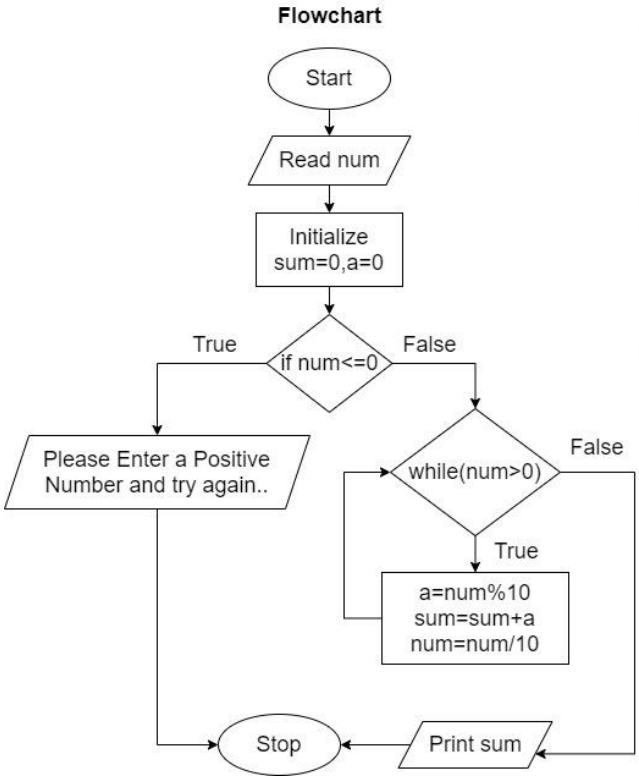
Q.9. Write a java program to print all the factors of a given number.



Algorithm:

1) Start
2) Enter a Number num.
3) if num<=0 is true then Please Enter a Positive Number and try again..
4) step 3 is false then check for(int i=1;i<=num;i++)
5) step 4 is true then check if num%i==0
6) step 5 is true then Print i else goto step 4.
7) step 4 is false then Stop.
8) Stop.

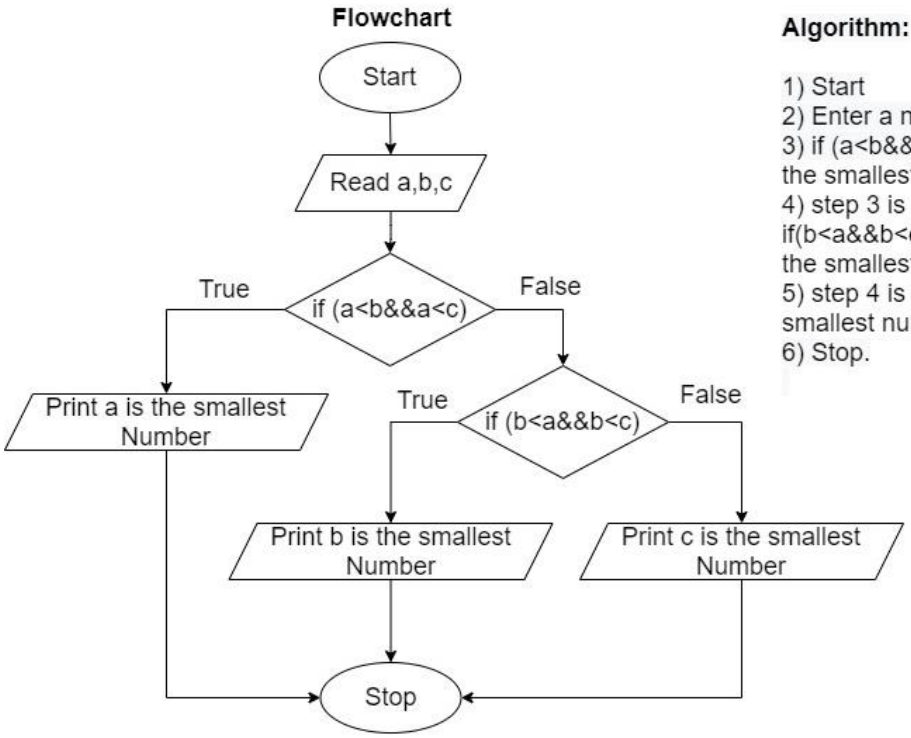
Q.10. Write a java program to find sum of digits of a given number.



Algorithm:

1) Start
2) Enter a Number num.
3) Initialize sum=0, a=0.
4) if num<=0 is true then Please Enter a Positive Number and try again..
5) step 4 is false then check while(num>0).
6) step 5 is true then
   a=num%10
   sum=sum+a
   num=num/10
7) step 5 is false then Print sum.
8) Stop.

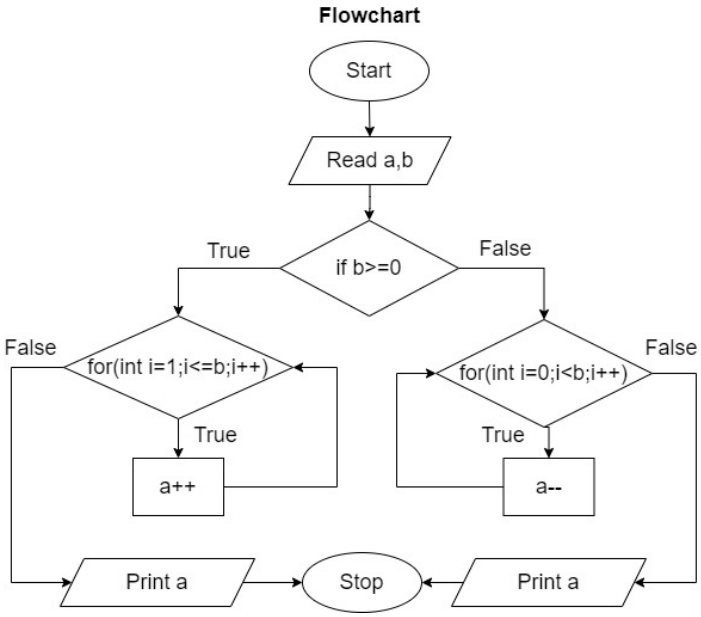
Q.11. Write a java program to find the smallest of 3 number.



Algorithm:

1) Start
2) Enter a number a,b,c.
3) if (a<b&&a<c) is true then Print a is the smallest number.
4) step 3 is false then check if(b<a&&b<c) is true then print b is the smallest number.
5) step 4 is false then print c is the smallest number.
6) Stop.

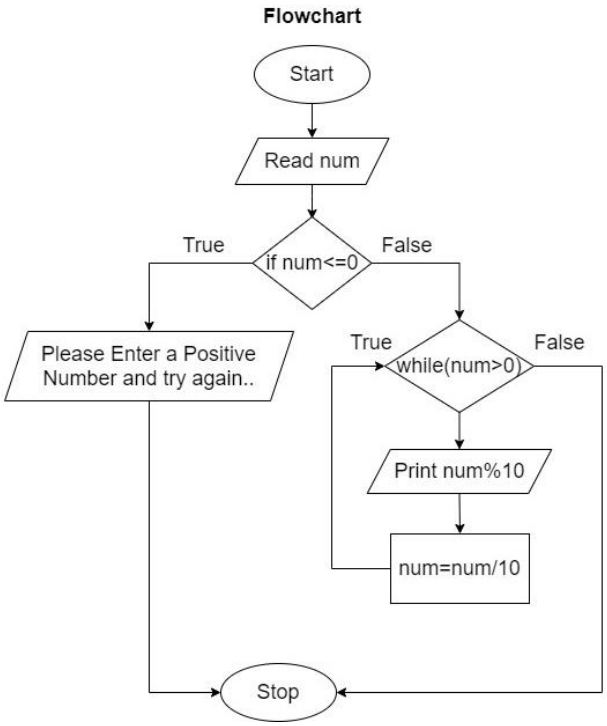
Q.12. How to add two numbers without using arithmetic operators in java.



Algorithm:

1) Start
2) Enter a number a,b.
3) if b>=0
4) step 3 is true then check for(int i=1;i<=b,i++) .
5) step 4 is true then a++ and step 4 is false then Print a and goto step 8.
6) step 3 is false then check for(int i=0;i<b;i++).
7) step 6 is true then a-- and step 6 is false then Print a and goto step 8.
8) Stop.

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

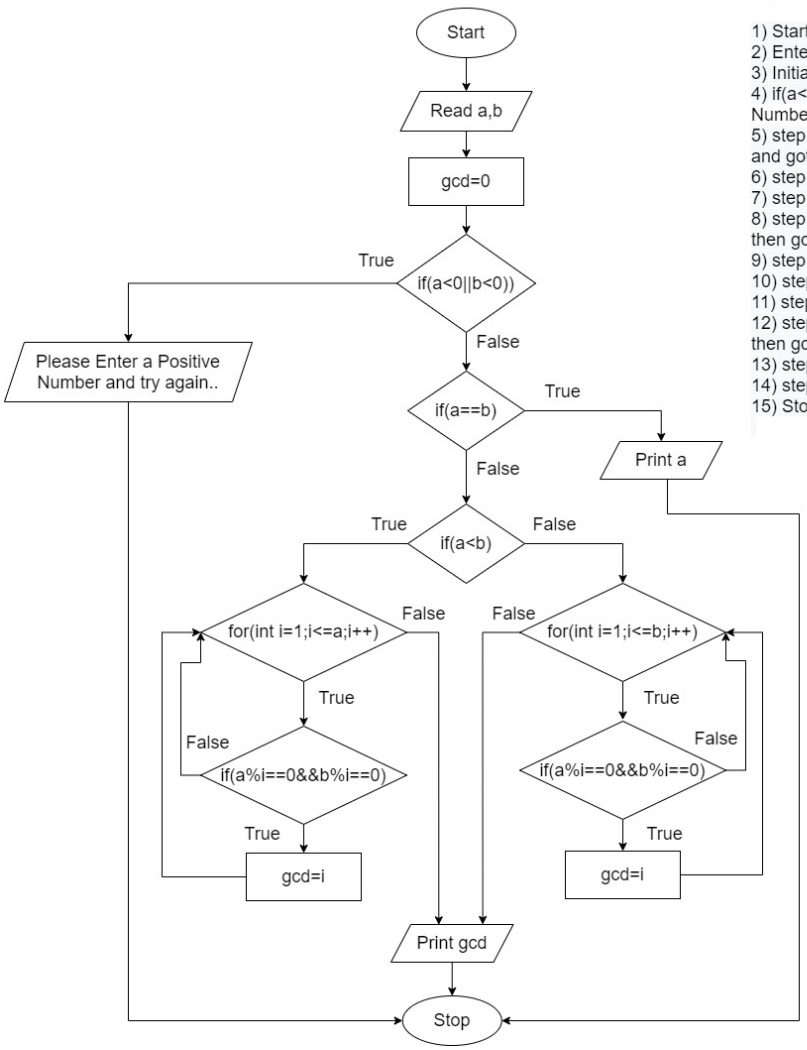


Algorithm:

1) Start
2) Enter a Number num.
3) if num<=0 is true then Please Enter a Positive Number and try again.. and goto step 8 .
4) step 3 is false then check while(num>0)
5) step 4 is true then Print num%10 and do step 6
6) num=num/10 and goto step 4.
7) step 4 is false then goto step 8.
8) Stop.

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

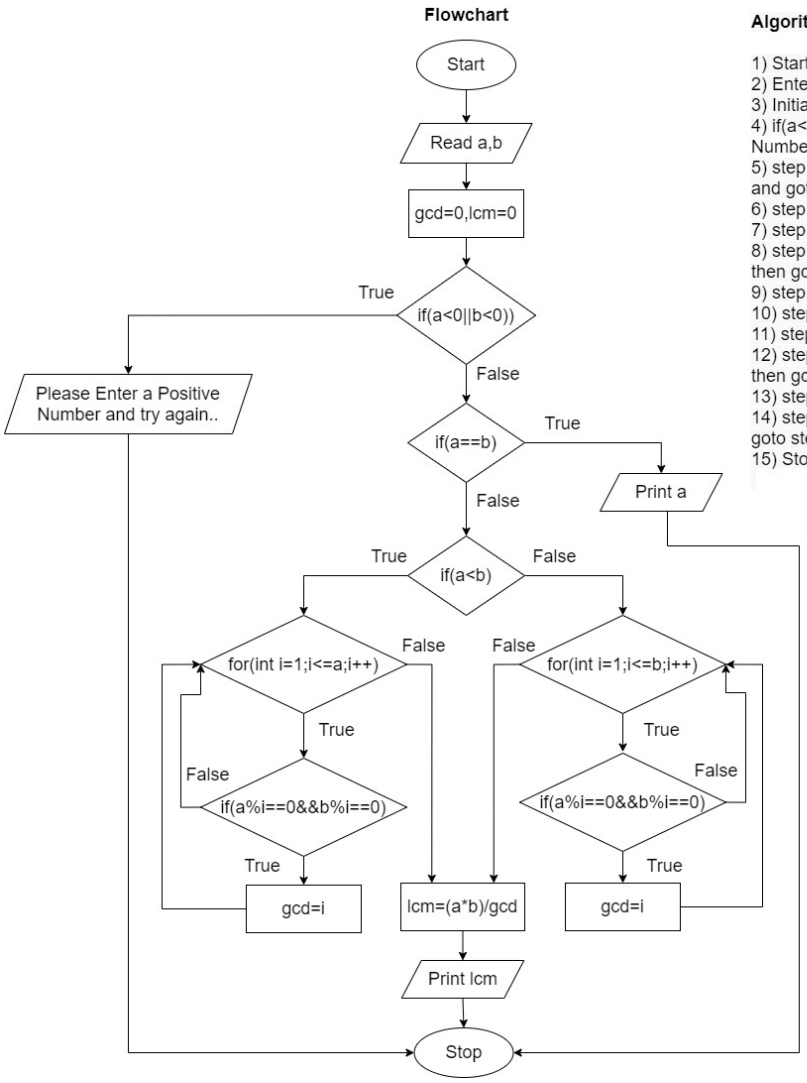
Flowchart



Algorithm:

1) Start
2) Enter a Number a,b.
3) Initialize gcd=0.
4) if(a<0||b<0) is true then Please Enter a Positive Number and try again.. and goto step 15 .
5) step 4 is false then check if(a==b) is true then Print a and goto step 15.
6) step 5 is false then check if(a<b)
7) step 6 is true then check for(int i=1;i<=a;i++)
8) step 7 is true then check if(a%i==0&&b%i==0) is true then gcd=i and goto step 7.
9) step 8 is false then goto step 7.
10) step 7 is false then Print gcd and goto step 15.
11) step 6 is false then check for(int i=1;i<=b;i++)
12) step11 is true then check if(a%i==0&&b%i==0) is true then gcd=i and goto step 11.
13) step 12 is false then goto step 11.
14) step 11 is false then Print gcd and goto step 15.
15) Stop.

Q.15. Write a java program to find LCM of two given numbers.



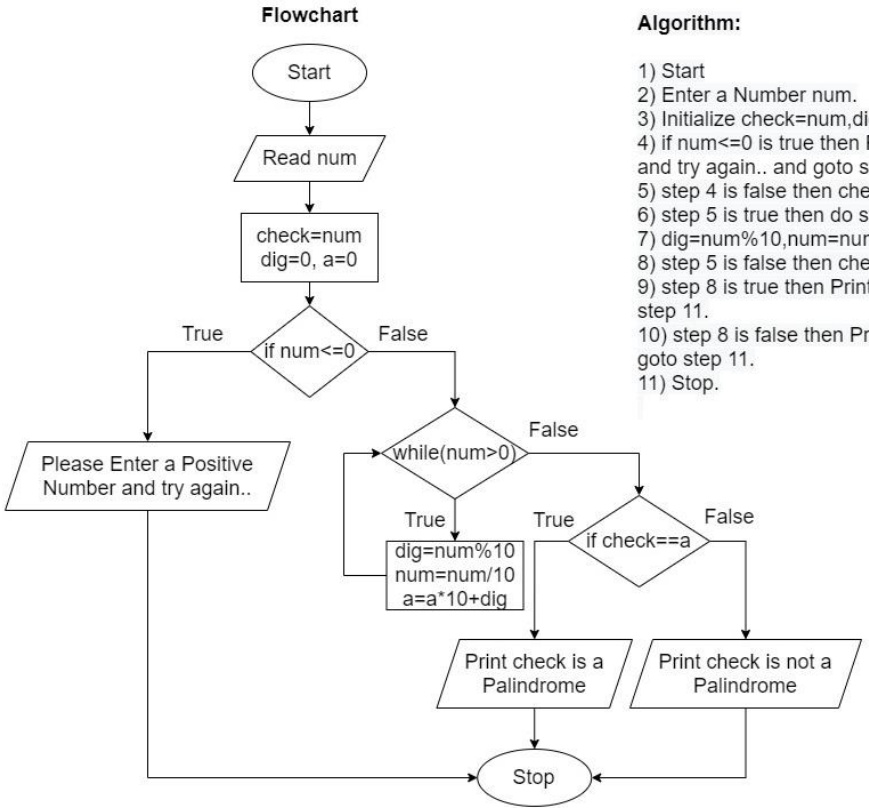
Algorithm:

1) Start
2) Enter a Number a,b.
3) Initialize gcd=0.
4) if(a<0||b<0) is true then Please Enter a Positive Number and try again.. and goto step 15 .
5) step 4 is false then check if(a==b) is true then Print a and goto step 15.
6) step 5 is false then check if(a<b)
7) step 6 is true then check for(int i=1;i<=a;i++)
8) step 7 is true then check if(a%i==0&&b%i==0) is true then gcd=i and goto step 7.
9) step 8 is false then goto step 7.
10) step 7 is false then Print gcd and goto step 15.
11) step 6 is false then check for(int i=1;i<=b;i++)
12) step11 is true then check if(a%i==0&&b%i==0) is true then gcd=i and goto step 11.
13) step 12 is false then goto step 11.
14) step 11 is false then lcm=(a*b)/gcd and Print lcm and goto step 15.
15) Stop.

Q.16. Write a java program to find LCM of two given numbers using the Prime factors method.

Q.17. Check whether the given number is a Palindrome or Not.

Flowchart

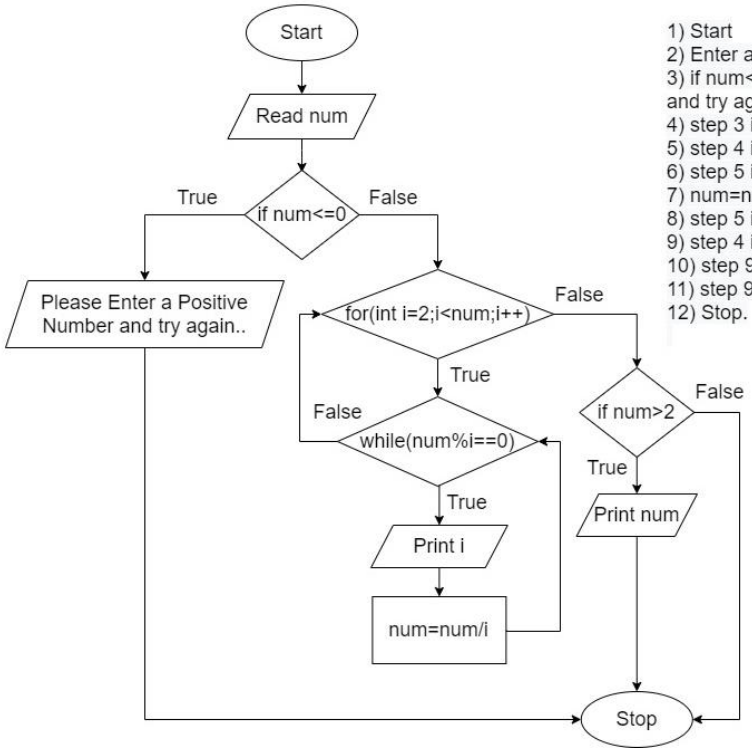


Algorithm:

1) Start
2) Enter a Number num.
3) Initialize check=num,dig=0,a=0.
4) if num<=0 is true then Please Enter a Positive Number and try again.. and goto step 11 .
5) step 4 is false then check while(num>0)
6) step 5 is true then do step 7.
7) dig=num%10,num=num/10,a=a*10+dig and goto step 5.
8) step 5 is false then check for if(check==a).
9) step 8 is true then Print check is a Palindrome and goto step 11.
10) step 8 is false then Print check is not a palindrome and goto step 11.
11) Stop.

Q.18. Write a java program to print all Prime factors of the given number.

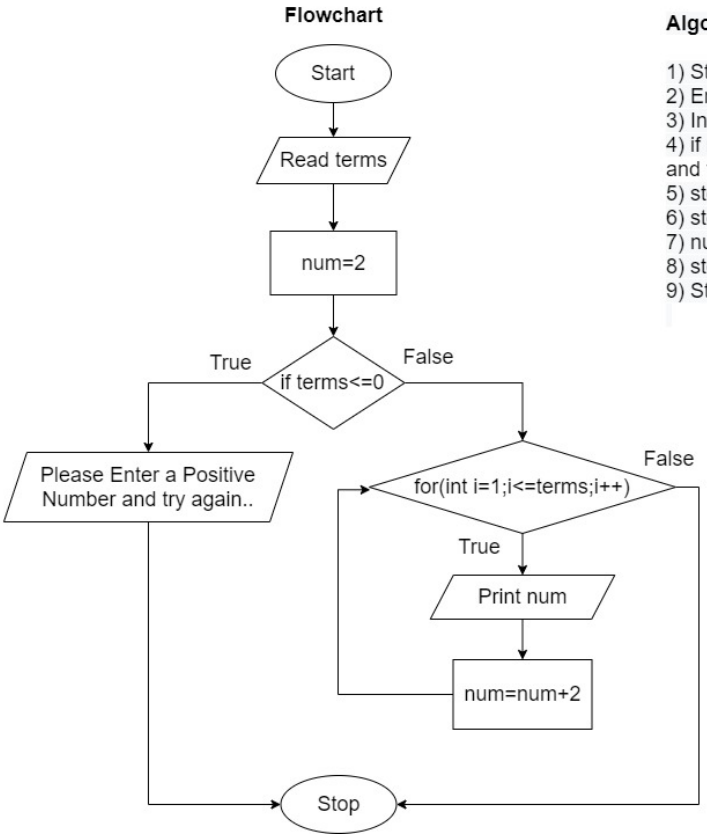
Flowchart



Algorithm:

1) Start
2) Enter a Number num.
3) if num<=0 is true then Please Enter a Positive Number and try again.. and goto step 12.
4) step 3 is false then check for(int i=2;i<num;i++)
5) step 4 is true then check while(num%i==0)
6) step 5 is true then Print i and do step 7.
7) num=num/i and goto step 5.
8) step 5 is false then goto step 4.
9) step 4 is false then check if(num>2)
10) step 9 is true then Print num and goto step 12 .
11) step 9 is false then goto step 12.
12) Stop.

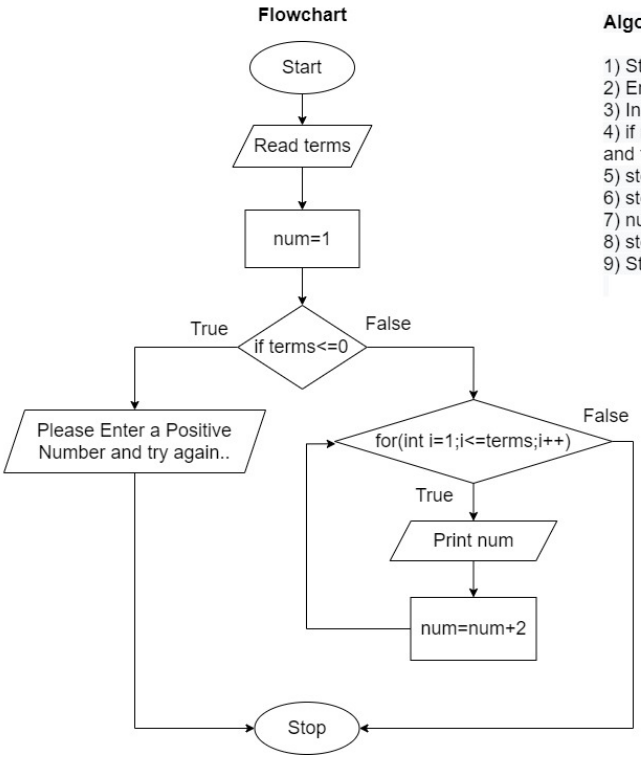
Q.19. Write a java program to print following Even number series 2 4 6 8 10 12 14 ……



Algorithm:

1) Start
2) Enter a Number of terms.
3) Initialize num=2.
4) if num<=0 is true then Please Enter a Positive Number and try again.. and goto step 9.
5) step 4 is false then check for(int i=1;i<=terms;i++)
6) step 5 is true then Print num and do step 7.
7) num=num+2 and goto step 5.
8) step 5 is false then goto step 9.
9) Stop.

Q.20. Write a java program to print following Odd number series 1 3 5 7 9 11 13……



Algorithm:

1) Start
2) Enter a Number of terms.
3) Initialize num=1.
4) if num<=0 is true then Please Enter a Positive Number and try again.. and goto step 9.
5) step 4 is false then check for(int i=1;i<=terms;i++)
6) step 5 is true then Print num and do step 7.
7) num=num+2 and goto step 5.
8) step 5 is false then goto step 9.
9) Stop.