

Assignment 1

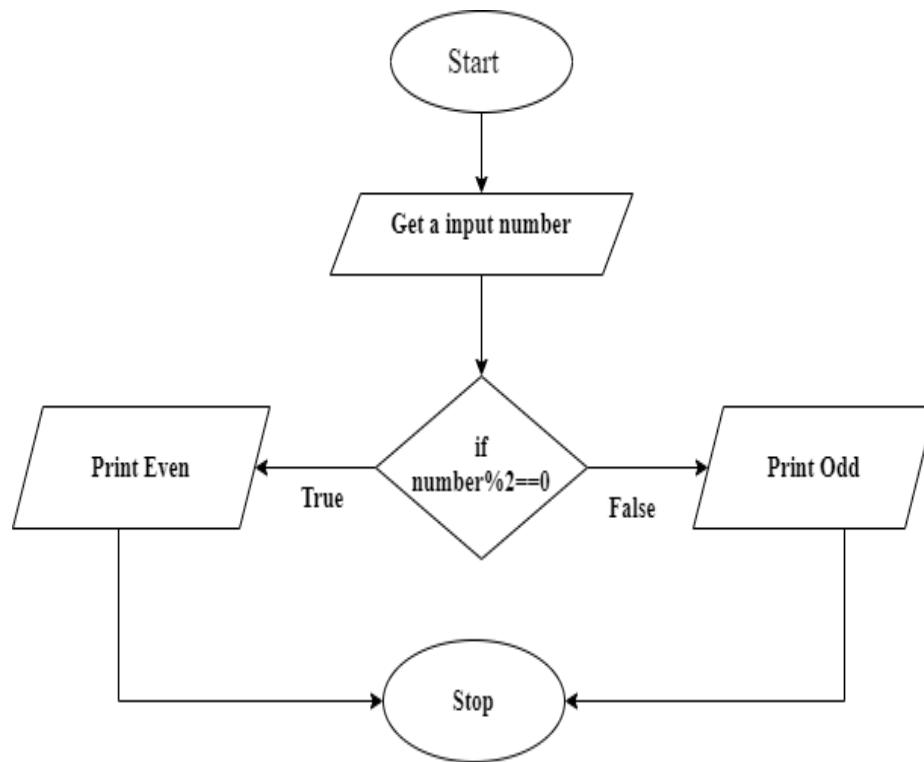
Q.1) Check no is even or odd.

Ans:-

Algorithm-

- 1) Start
- 2) Get a input number
- 3) Check whether it is odd or even using $\text{num} \% 2 == 0$
- 4) If true, print even number. Else, print odd number
- 5) Stop

Flowchart:-



Program :

```
import java.util.Scanner;

class EvenOdd{

    public static void main(String args[]){
```

```
Scanner sc = new Scanner(System.in);
System.out.print(" Enter any Numbers to check : ");
int num = sc.nextInt();
if(num%2 == 0)
{
    System.out.println(" Given number "+num+" is Even");
}
else
{
    System.out.println(" Given number "+num+" is Odd");
}
}
```

Output:-

E:\cdac\assignments>javac EvenOdd.java

E:\cdac\assignments>java EvenOdd

Enter any Numbers to check : 34

Given number 34 is Even

E:\cdac\assignments>java EvenOdd

Enter any Numbers to check : 33

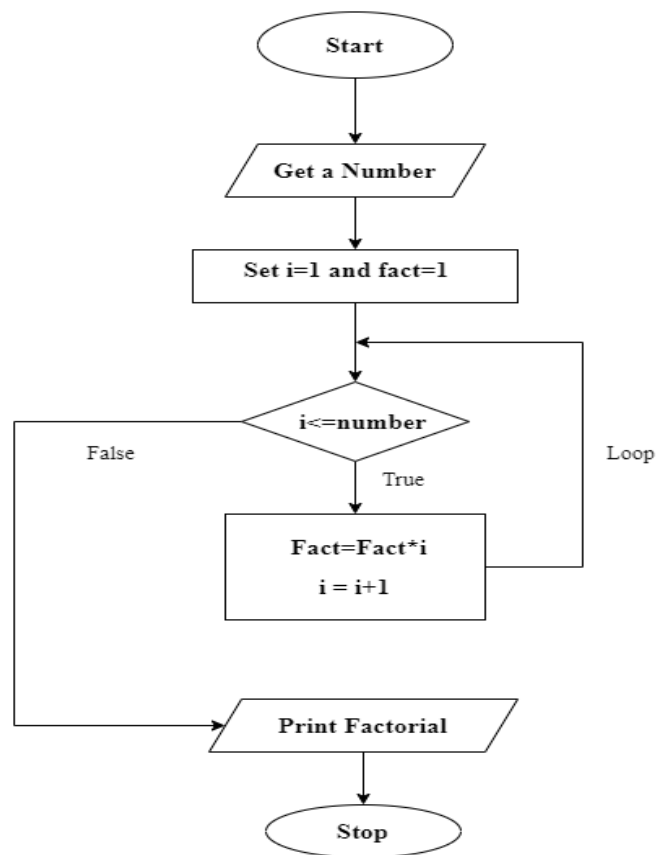
Given number 33 is Odd

Q.2) Factorial of given number.

Ans- **Algorithm:-**

- 1) Start
- 2) Declare variable num, fact=1, i=1
- 3) Get a input number
- 4) Repeat until $i \leq \text{num}$
 Fact=fact*i
 i++
- 5) Print factorial
- 6) Stop

Flowchart:-



Program :

```
import java.util.Scanner;  
class Factorial
```

```

{
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.print(" Enter any Numbers to get Factorial : ");
        int num = sc.nextInt();
        int fact=1;
        int i;
        for(i=1;i<=num;i++)
        {
            fact=fact*i;
        }
        System.out.println("Factorial of "+num+" is "+fact);
    }
}

```

Output:-

E:\cdac\assignments>javac Factorial.java

E:\cdac\assignments>java Factorial

Enter any Numbers to get Factorial : 5

Factorial of 5 is 120

E:\cdac\assignments>java Factorial

Enter any Numbers to get Factorial : 4

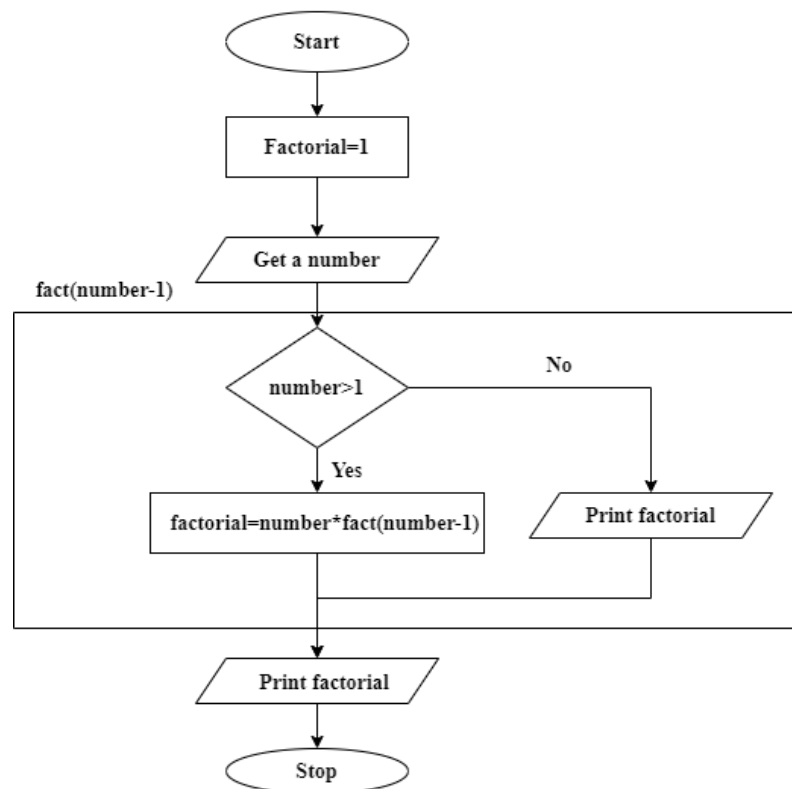
Factorial of 4 is 24

Q.3) Factorial using recursion

Ans: **Algorithm-**

- 1) Start
- 2) Declare variable fact=1
- 3) Get a number from user
- 4) Call method facto(number) recursively until value of number>1
- 5) Print factorial
- 6) Stop

Flowchart:



Program:-

```
import java.util.*;
public class FactRec
{
    public static void main(String[] args)
```

```

{
    Scanner sc = new Scanner(System.in);
    System.out.print("Enter a number for factorial = ");
    int num=sc.nextInt();
    long fact = facto(num);
    System.out.println(" Factorial of " + num + " = " + fact);
}
public static long facto(int num)
{
    if (num > 1)
        return num * facto(num-1);
    else
        return 1;
}
}

```

Output:-

E:\cdac\assignments>javac FactRec.java

E:\cdac\assignments>java FactRec

Enter a number for factorial = 3

Factorial of 3 = 6

E:\cdac\assignments>java FactRec

Enter a number for factorial = 5

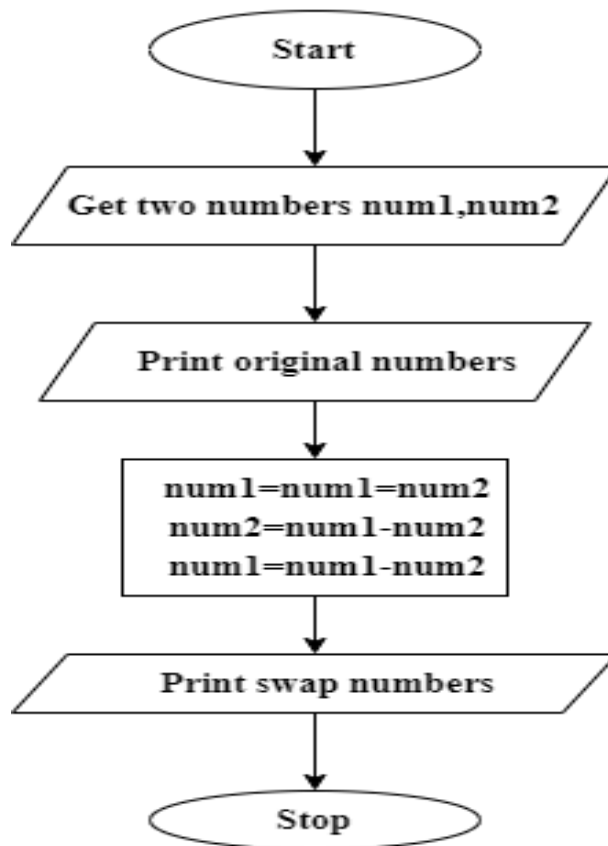
Factorial of 5 = 120

Q.4) Swap two numbers without using third variable.

Ans: **Algorithm:-**

- 1) Start
- 2) Get two numbers num1,num2
- 3) Print unswap numbers
 $\text{Num1} = \text{num1} + \text{num2}$
 $\text{Num2} = \text{num1} - \text{num2}$
 $\text{Num1} = \text{num1} - \text{num2}$
- 4) Print swap numbers
- 5) Stop

Flowchart:-



Program:

```
import java.util.Scanner;

class SwapTwo
{
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);

        System.out.println(" Enter two numbers to swap : ");

        int a = sc.nextInt();
        int b = sc.nextInt();

        System.out.println(" Before Swapping a = "+a+" b = "+b);

        a = a + b;
        b = a - b;
        a = a - b;

        System.out.println(" After Swapping a = "+a+" b = "+b);

    }
}
```

Output:-

E:\cdac\assignments>javac SwapTwo.java

E:\cdac\assignments>java SwapTwo

Enter two numbers to swap : 34 65

Before Swapping a = 34 b = 65

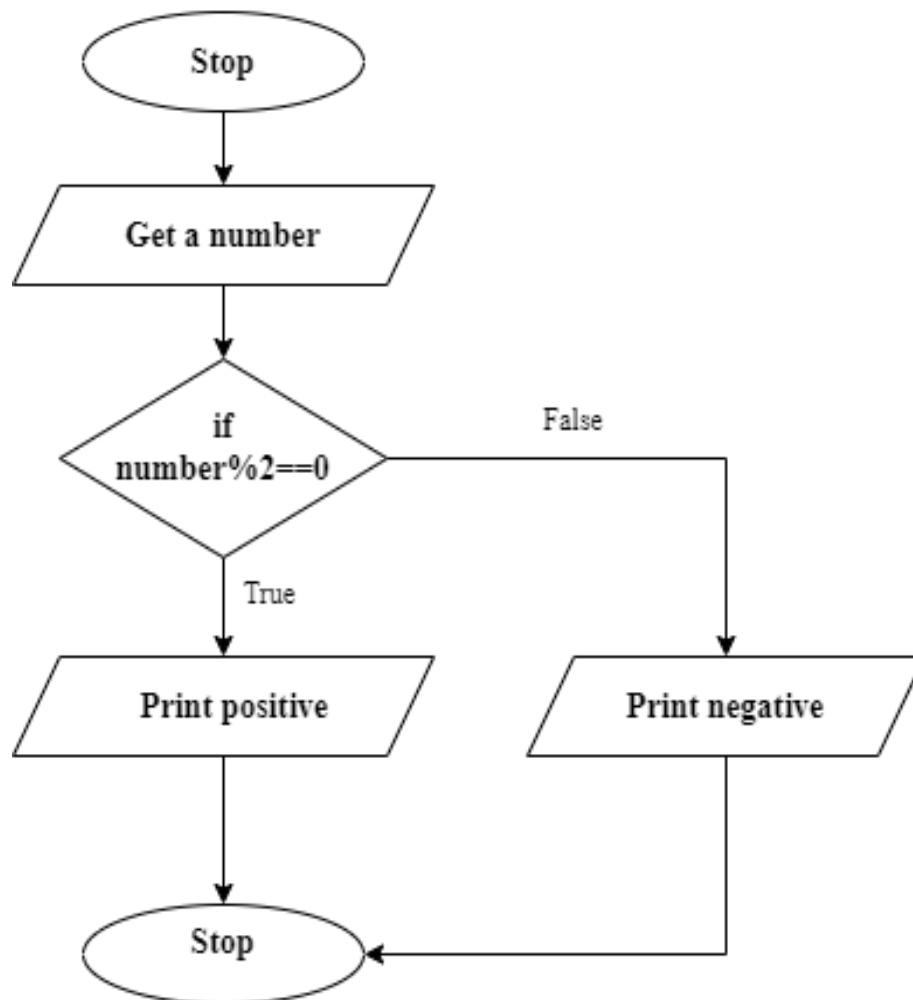
After Swapping a = 65 b = 34

Q.5) Check given numbers whether it is positive or negative

Ans: **Algorithm:**

- 1) Stop
- 2) Get a number
- 3) Check $\text{number} \% 2 == 0$
 If true, print positive
 Else print negative
- 4) Stop

Flowchart:



Program:

```
import java.util.Scanner;

class Positive
{
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.print(" Enter any Numbers to check : ");
        int num = sc.nextInt();
        if(num > 0)
            System.out.println(" Given number "+num+" is Positive");
        else
            System.out.println(" Given number "+num+" is Negative");
    }
}
```

Output:-

```
E:\cdac\assignments>javac Positive.java
```

```
E:\cdac\assignments>java Positive
```

```
Enter any Numbers to check : 45
```

```
Given number 45 is Positive
```

```
E:\cdac\assignments>java Positive
```

```
Enter any Numbers to check : -56
```

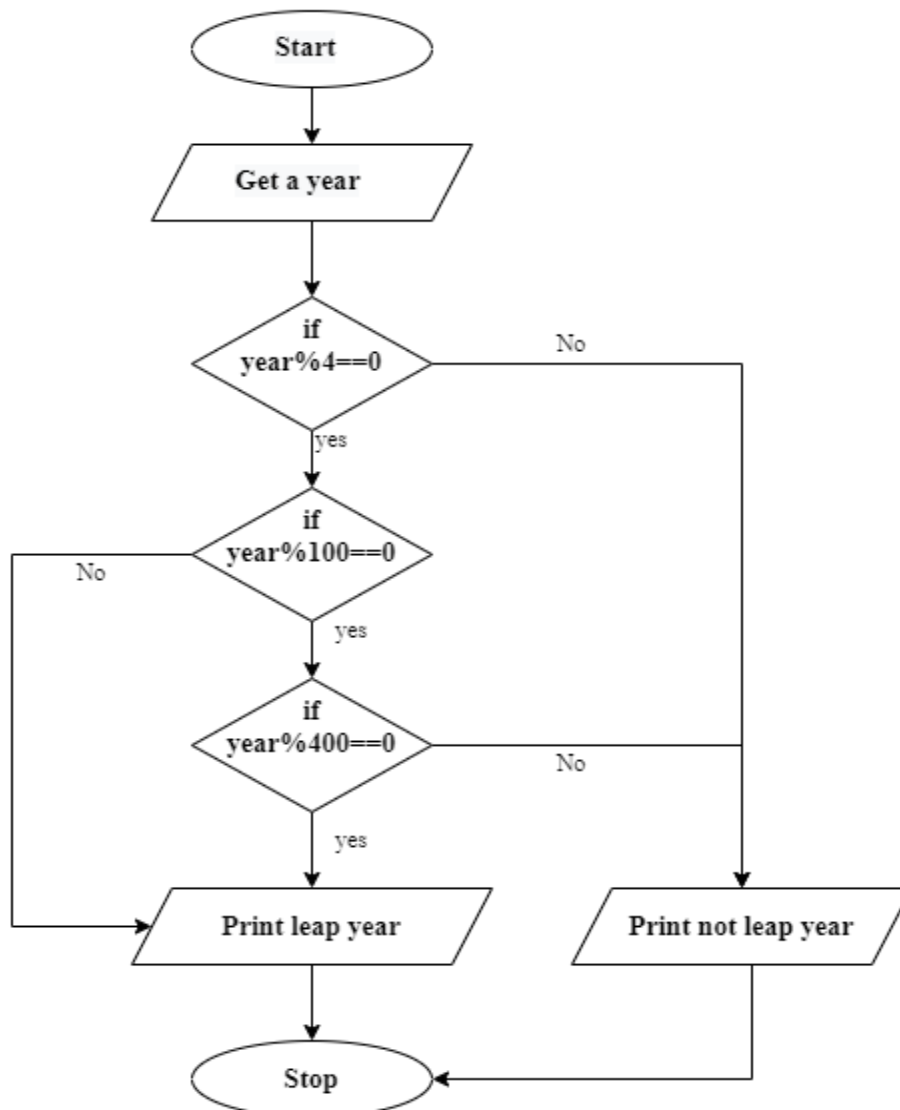
```
Given number -56 is Negative
```

Q.6) Leap year

Ans: **Algorithm:-**

1. Start
2. Get a input year
3. Check year divisible by 4, if true go to step 4. else Go to step 7
4. Check year divisible by 100, if true go to step 5, else go to step 6
5. Check year divisible by 400, if true go to step 6, else go to step 7
6. Print leap year
7. Print not leap year
8. Stop

Flowchart:-



Program:-

```
import java.util.Scanner;

class Leap
{
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.print(" Enter any year to check : ");
        int yr = sc.nextInt();
        if (((yr % 4 == 0) && (yr % 100 != 0)) || (yr % 400 == 0))
            System.out.println(yr + " year is a leap year");
        else
            System.out.println(yr + " year is not a leap year");
    }
}
```

Output:-

E:\cdac\assignments>java Leap

Enter any year to check : 2020

2020 year is a leap year

E:\cdac\assignments>java Leap

Enter any year to check : 2022

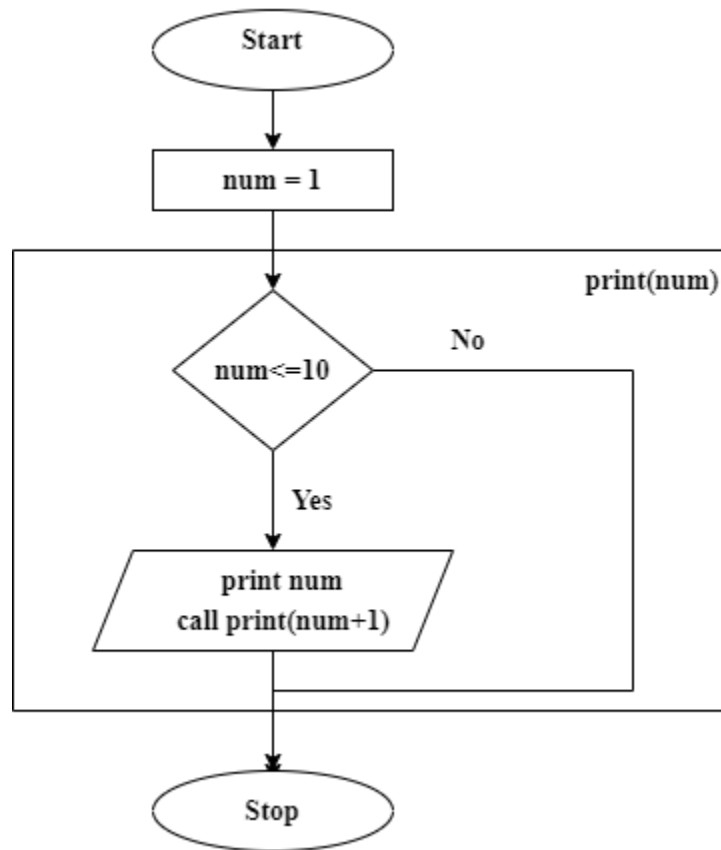
2022 year is not a leap year

Q.7) Print 1 to 10 without loop

Ans: **Algorithm:-**

1. Start
2. Call print metho
3. Define a method print
 - a. Check $\text{num} \leq 10$ if true print and recursively call print method with $\text{num}-1$, else exit
4. Stop

Flowchart:-



Program:

```
public class Print1to10
{
    public static void main(String[] args)
    {
        printNum(1);
    }
    public static void printNum(int num)
    {
        if (num <= 10)
        {
            System.out.println(num);
            printNum(num+1);
        }
    }
}
```

Output:-

E:\cdac\assignments>javac Print1to10.java

E:\cdac\assignments>java Print1to10

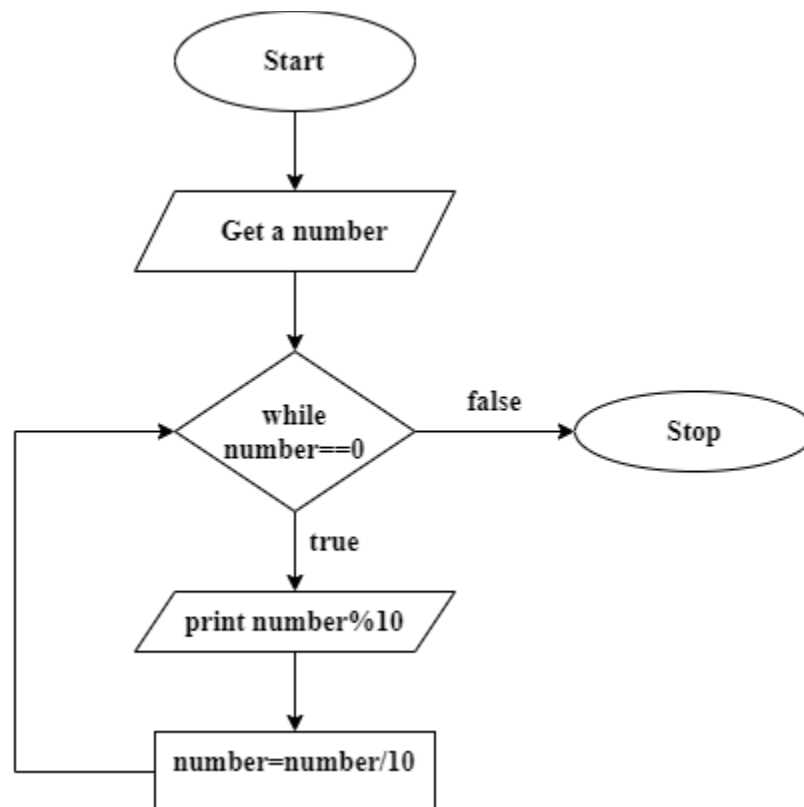
1 2 3 4 5 6 7 8 9 10

Q.8) Print the digit of given number.

Ans: **Algorithm-**

- 1) Start
- 2) Get a number
- 3) Print the the value of $\text{number} \% 10$
- 4) $\text{Number} = \text{number} / 10$;
- 5) Repeat step 3 to 4 until number is not equal to zero
- 6) Stop

Flowchart:-



Program:-

```
import java.util.Scanner;

class Digit
{
    public static void main(String args[])
    {

        Scanner sc = new Scanner(System.in);
        System.out.println(" Enter any number ");
        int num = sc.nextInt();
        while(num!=0)
        {
            System.out.println(num%10);
            num=num/10;
        }
    }
}
```

Output:-

E:\cdac\assignments>javac Digit.java

E:\cdac\assignments>java Digit

Enter any number = 2356

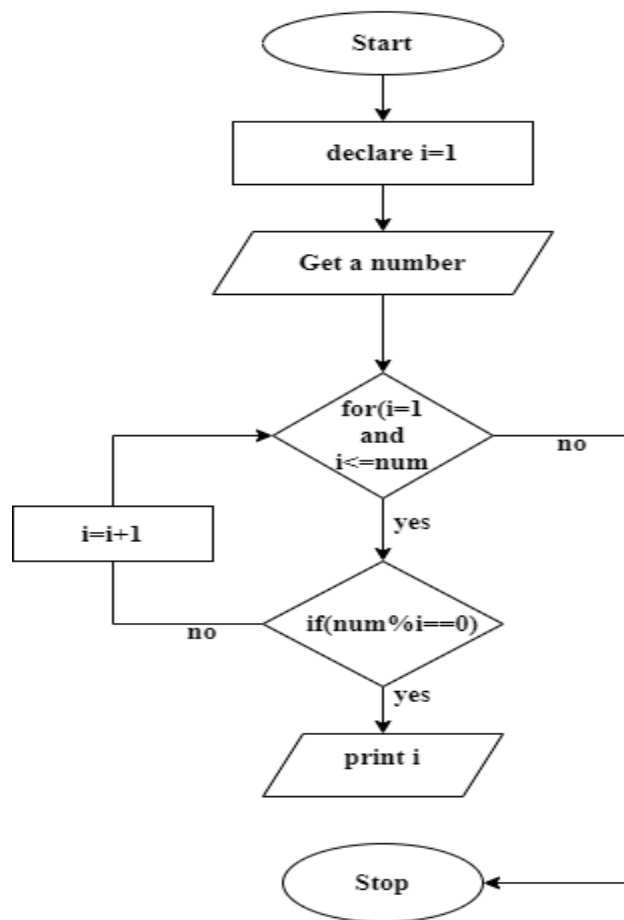
Digits of number are = 6 5 3 2

Q.9) Factor of given number

Ans: **Algorithm-**

- 1) Start
- 2) Get a number
- 3) Declare $i=1$
- 4) Check $\text{number} \% i == 0$ if true print i and increment the value of i
- 5) Repeat step 4 until $i \leq \text{number}$
- 6) Stop

Flowchart:-



Program:-

```
import java.util.*;

public class Factor
```

```
{  
    public static void main(String[] args)  
    {  
        System.out.print("Enter a number to get factors = ");  
        Scanner sc=new Scanner(System.in);  
        int num = sc.nextInt();  
        System.out.print(" Factors of " + num + " are: ");  
        for (int i = 1; i <= num; ++i)  
        {  
            if(num % i == 0)  
            {  
                System.out.print(i + " ");  
            }  
        }  
    }  
}
```

Output:-

E:\cdac\assignments>javac Factor.java

E:\cdac\assignments>java Factor

Enter a number to get factors = 45

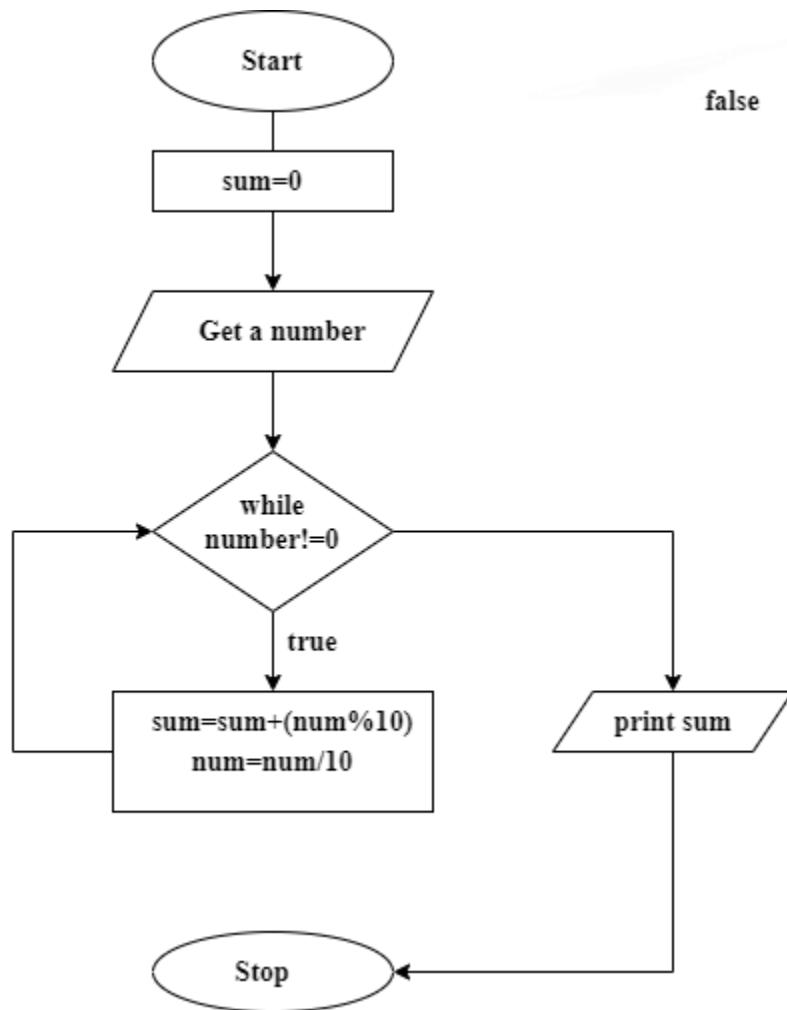
Factors of 45 are: 1 3 5 9 15 45

Q.10) Sum of digit of given number

Ans: **Algorithm:-**

- 1) Start
- 2) Get a number
- 3) Set sum=0
- 4) While(number!=0)
 Sum=sum+(number%10)
 Num=num/10
- 5) Print sum
- 6) Stop

Flowchart:-



Program:-

```
import java.util.Scanner;

class DigitSum
{
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println(" Enter any number ");
        int num = sc.nextInt();
        int sum=0;
        while(num!=0)
        {
            sum=sum+(num%10);
            num=num/10;
        }
        System.out.println(" sum = "+sum);
    }
}
```

Output:-

E:\cdac\assignments>javac DigitSum.java

E:\cdac\assignments>java DigitSum

Enter any number =5346

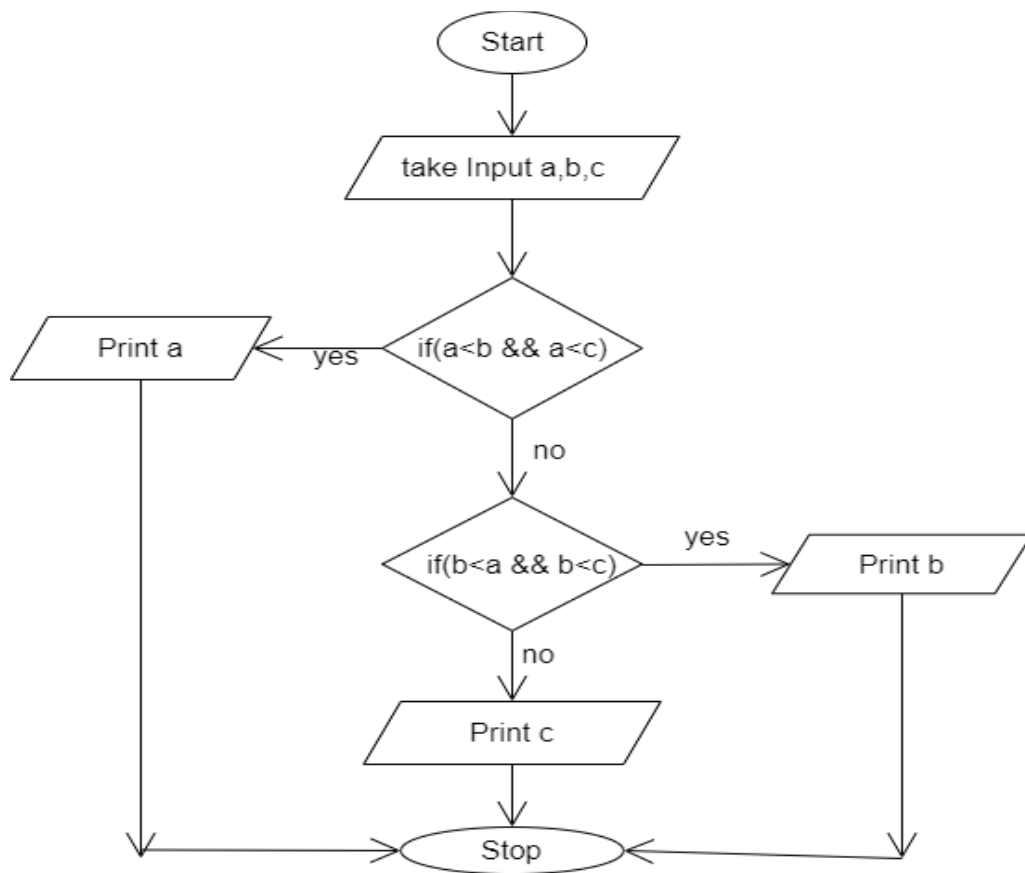
sum = 18

Q.11) Smallest of three numbers

Ans: **Algorithm:-**

1. Start
2. Get three numbers from user
3. Check if $a < b$ and $a < c$, if true print a and exit else go to step 4
4. Check if $b < a$ and $b < c$, if true print b and exit else go to step 5
5. Print c
6. Stop

Flowchart:-



Program:-

```
import java.util.Scanner;
class SmallThree
{
```

```
public static void main(String[] args)
{
    Scanner sc = new Scanner(System.in);
    System.out.print(" Enter Three Numbers to check Smallest : ");
    int a = sc.nextInt();
    int b = sc.nextInt();
    int c = sc.nextInt();
    if(a<b && a<c)
    {
        System.out.println(a+" is the smallest number");
    }else
    if(b<a && b<c)
        System.out.println(b+" is the smallest number");
    else
        System.out.println(c+" is the smallest number");
}
}
```

Output:-

E:\cdac\assignments>javac SmallThree.java

E:\cdac\assignments>java SmallThree

Enter Three Numbers to check Smallest : 23 12 44

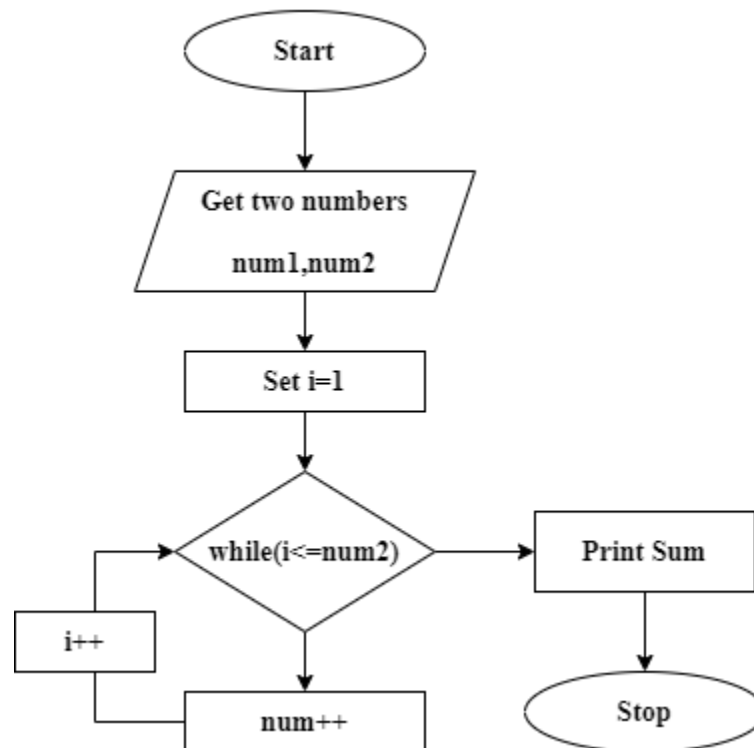
12 is the smallest number

Q.12) Addition without arithmetic operator

Ans: **Algorithm:-**

1. Start
2. Get two number
3. Call addNum(num1,num2) method
4. For(i=1;i<=num2;i++)
 - a. Num1++
5. Print Sum
6. Stop

Flowchart:-



Program:-

```
import java.util.Scanner;

class Add
{
```

```
public static void main(String[] args)
{
    Scanner sc = new Scanner(System.in);
    System.out.print(" Enter first number = ");
    int num1 = sc.nextInt();
    System.out.print(" Enter second number = ");
    int num2 = sc.nextInt();
    int sum=addNum(num1,num2);
    System.out.println("Sum of "+num1+" and "+num2+" = "+sum);
}
public static int addNum(int a, int b)
{
    for(int i = 1; i <= b; i++)
        a++;
    return a;
}
}
```

Output:-

E:\cdac\assignments>javac Add.java

E:\cdac\assignments>java Add

Enter first number = 12

Enter second number = 23

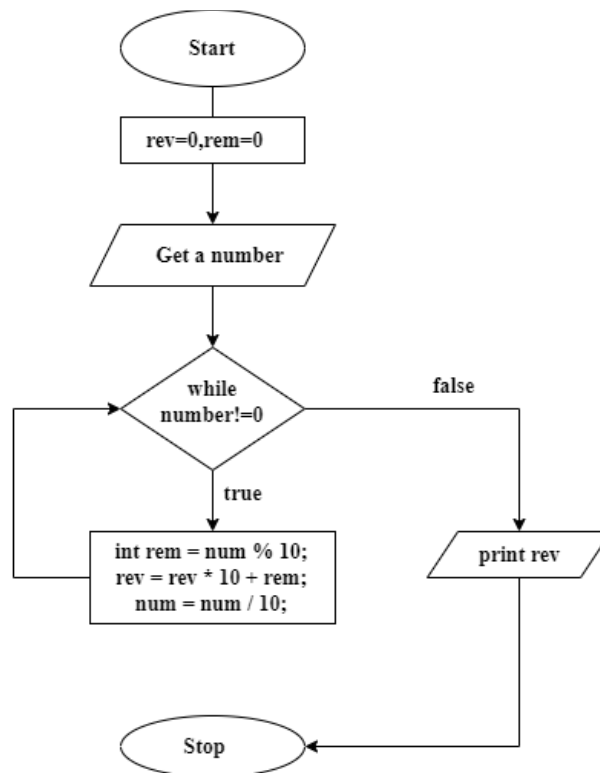
Sum of 12 and 23 = 35

Q.13) Reverse a given number

Ans: **Algorithm-**

- 1) Start
- 2) Get a number
- 3) Set rem=0, rev=0
- 4) While(number!=0)
 - a. $\text{int rem} = \text{num} \% 10$
 - b. $\text{rev} = \text{rev} * 10 + \text{rem}$
 - c. $\text{num} = \text{num} / 10$
- 5) Print rev
- 6) Stop

Flowchart:-



Program:-

```
import java.util.Scanner;  
  
class NumRev
```

```
{  
    public static void main(String[] args)  
    {  
        Scanner sc = new Scanner(System.in);  
        System.out.print(" Enter any number to get reverse = ");  
        int num = sc.nextInt();  
        int rev=0;  
        System.out.println(" Original Number: " + num);  
        while(num != 0)  
        {  
            int rem = num % 10;  
            rev = rev * 10 + rem;  
            num = num / 10;  
        }  
        System.out.println(" Reversed Number: " + rev);  
    }  
}
```

Output:-

E:\cdac\assignments>javac NumRev.java

E:\cdac\assignments>java NumRev

Enter any number to get reverse = 5645

Original Number: 5645

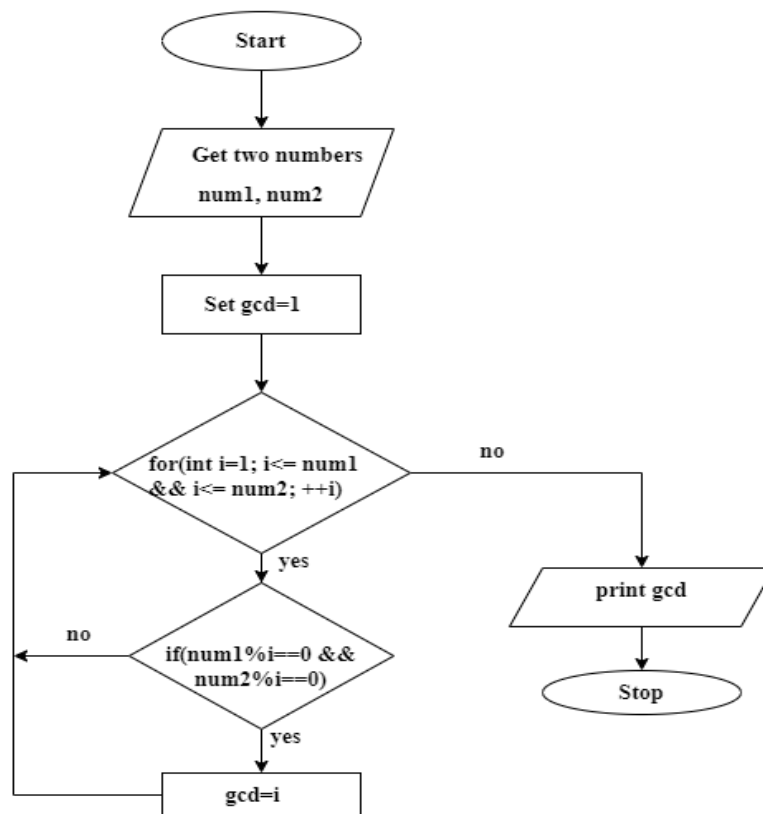
Reversed Number: 5465

Q.14) GCD of two number

Ans: **Algorithm:-**

- 1) Start
- 2) Get two number num1,num2
- 3) Set gcd=1
- 4) for(int i=1; i<= num1 && i<= num2; ++i)
 if(num1%i==0 && num2%i==0)
 set gcd=i
- 5) Print GCD
- 6) Stop

Flowchart:-



Program:-

```
import java.util.Scanner;  
  
class Gcd
```

```

{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.print(" Enter first number = ");
        int num1 = sc.nextInt();
        System.out.print(" Enter second number = ");
        int num2 = sc.nextInt();
        int gcd = 1;
        for(int i=1; i<= num1 && i<= num2; ++i)
        {
            if(num1%i==0 && num2%i==0)
                gcd = i;
        }
        System.out.println(" GCD of " + num1 + " and " + num2 + " = " + gcd);
    }
}

```

Output:-

E:\cdac\assignments>java Gcd

Enter first number = 45

Enter second number = 18

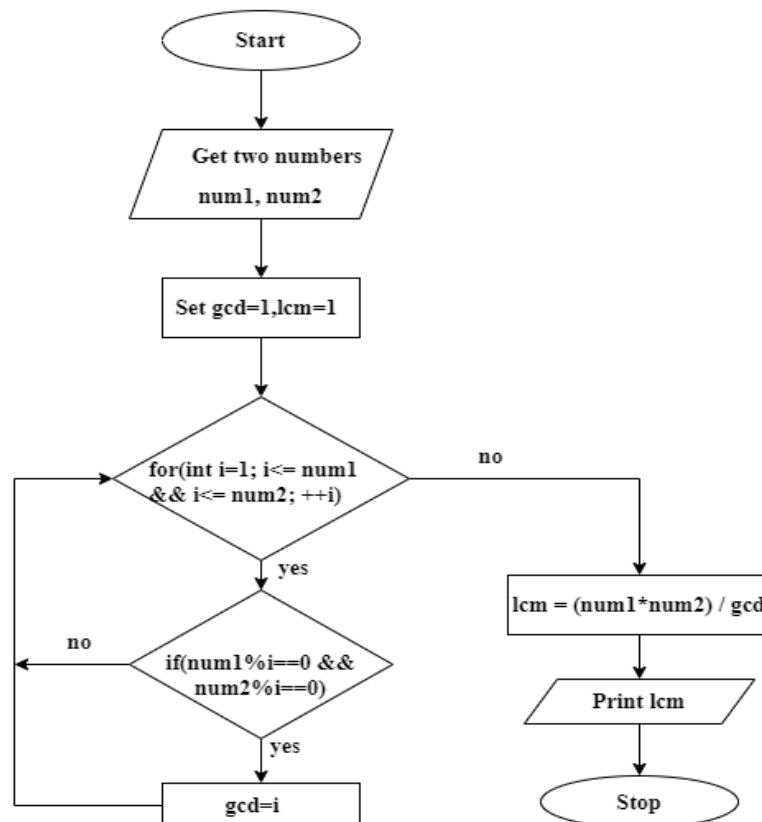
GCD of 45 and 18 = 9

Q.15) LCM of two numbers

Ans: **Algorithm:-**

- 1) Start
- 2) Get two number num1,num2
- 3) Set gcd=1
- 4) for(int i=1; i<= num1 && i<= num2; ++i)
 if(num1%i==0 && num2%i==0)
 set gcd=i
- 5) lcm=(num1*num2)/gcd
- 6) print LCM
- 7) Stop

Flowchart:-



Program:-

```
import java.util.Scanner;
```

```
class Lcm
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.print(" Enter first number = ");
        int num1 = sc.nextInt();
        System.out.print(" Enter second number = ");
        int num2 = sc.nextInt();
        int gcd = 1;
        for(int i=1; i<= num1 && i<= num2; ++i)
        {
            if(num1%i==0 && num2%i==0)
                gcd = i;
        }
        int lcm = (num1*num2) / gcd;
        System.out.println("The LCM of "+num1+" and "+num2+" is "+lcm);
    }
}
```

Output:-

E:\cdac\assignments>java Lcm

Enter first number = 45

Enter second number = 18

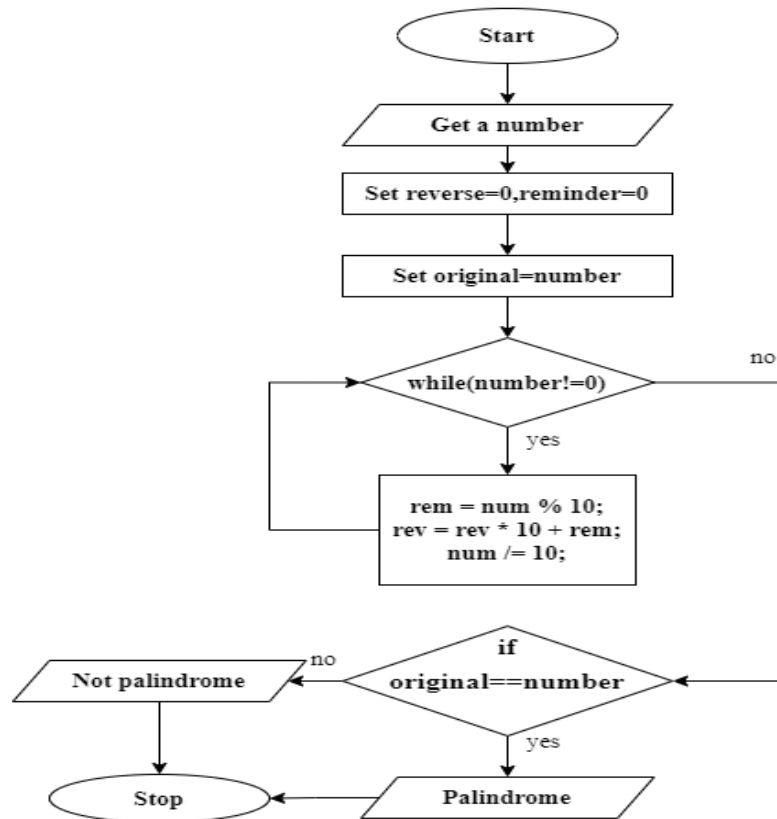
The LCM of 45 and 18 is 90

Q.17) Check Palindrome number or not.

Ans: **Algorithm:-**

- 1) Start
- 2) Get a number
- 3) Set reverse=0 and reminder=0
- 4) Set original=number
- 5) Check number!=0 if true go to 5 else goto 7
- 6) $rem = num \% 10;$
 $rev = rev * 10 + rem;$
 $num /= 10;$
- 7) check if original==number if true print palindrome else print not palindrome
- 8) stop

Flowchart:-



Program:-

```
import java.util.Scanner;

class Palindrome
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.print(" Enter any number = ");
        int num = sc.nextInt();
        int rev = 0, rem;
        int original = num;
        while (num != 0)
        {
            rem = num % 10;
            rev = rev * 10 + rem;
            num /= 10;
        }
        if (original == rev)
        {
            System.out.println(original + " is Palindrome.");
        }
        else
        {
            System.out.println(original + " is not Palindrome.");
        }
    }
}
```



```
    }  
}
```

Output:-

```
E:\cdac\assignments>java Palindrome
```

```
Enter any number = 12321
```

```
12321 is Palindrome.
```

```
E:\cdac\assignments>java Palindrome
```

```
Enter any number = 3456
```

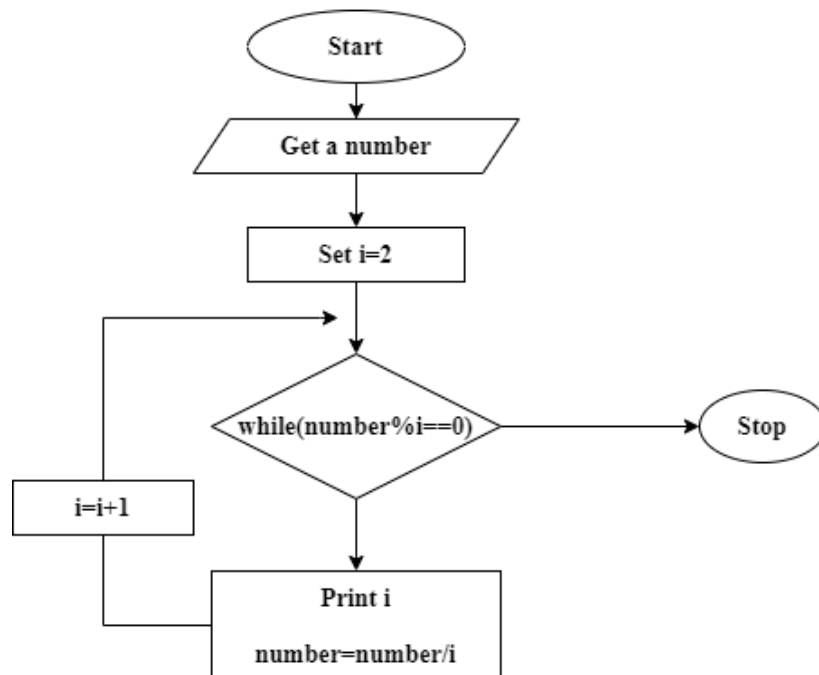
```
3456 is not Palindrome.
```

Q.18) Prime Factor of given number

Ans: **Algorithm:-**

1. Start
2. Enter the Number.
3. Take $i=2$.
4. Check the Input Number is greater than Then enter in loop.
 - a. while(Number is greater than 1)
 - b. Check the condn if($\text{Number} \% i == 0$)
 - c. if it is true enter in bracket.
 - d. print(i) value on terminal
 - e. $\text{Number} = \text{Number} / i$ else $i++$ then loop will iteration again
5. Stop

Flowchart-



Program:-

```
import java.util.Scanner;

public class PrimeFactor
{
```

```

public static void main(String args[])
{
    int number;
    Scanner sc = new Scanner(System.in);
    System.out.print("Enter a number =");
    number = sc.nextInt();
    for(int i = 2; i<=number; i++)
    {
        while(number%i == 0)
        {
            System.out.println(i+" ");
            number = number/i;
        }
    }
}

```

Output:-

E:\cdac\assignments>java PrimeFactor

Enter a number =30

2 3 5

E:\cdac\assignments>java PrimeFactor

Enter a number =28

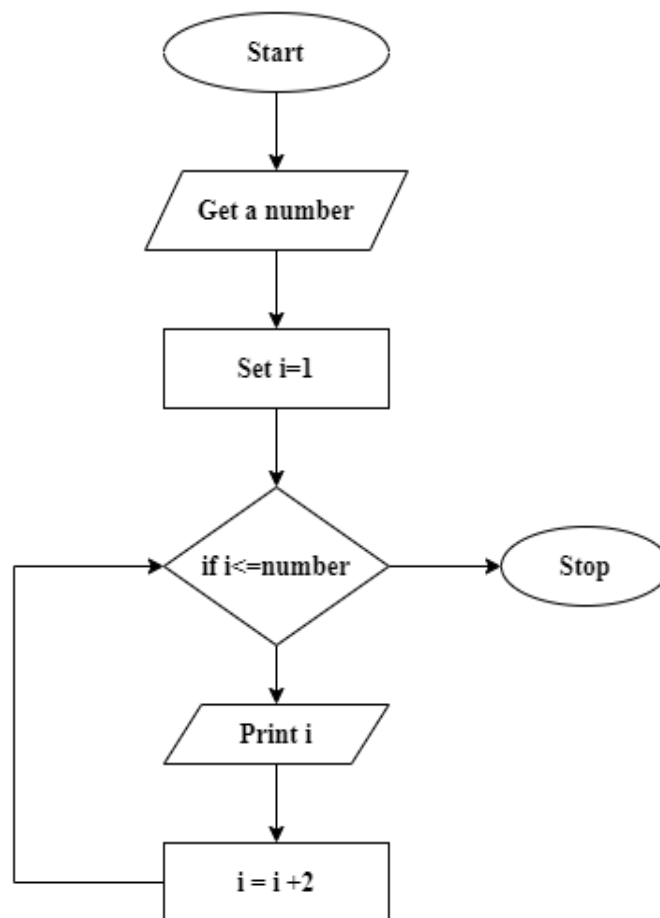
2 2 7

Q.19) Even series

Ans: **Algorithm:-**

1. Start
2. Get a number from user upto which they want to print even number
3. Set $i=2$
4. If $i \leq \text{number}$, print i and $i=i+2$. Else go to step 6
5. Repeat step 4 until $i \leq \text{number}$
6. Stop

Flowchart:-



Program :-

```
import java.util.Scanner;  
class EvenSeries
```

```
{  
    public static void main(String args[])  
    {  
        Scanner sc = new Scanner(System.in);  
        System.out.print(" Enter Numbers upto which you want to print even no : ");  
        int num = sc.nextInt();  
        for(int i=2; i<=num; i=i+2)  
        {  
            if(i%2 == 0)  
            {  
                System.out.println(i);  
            }  
        }  
    }  
}
```

Output:-

E:\cdac\assignments>javac EvenSeries.java

E:\cdac\assignments>java EvenSeries

Enter Numbers upto which you want to print even no : 15

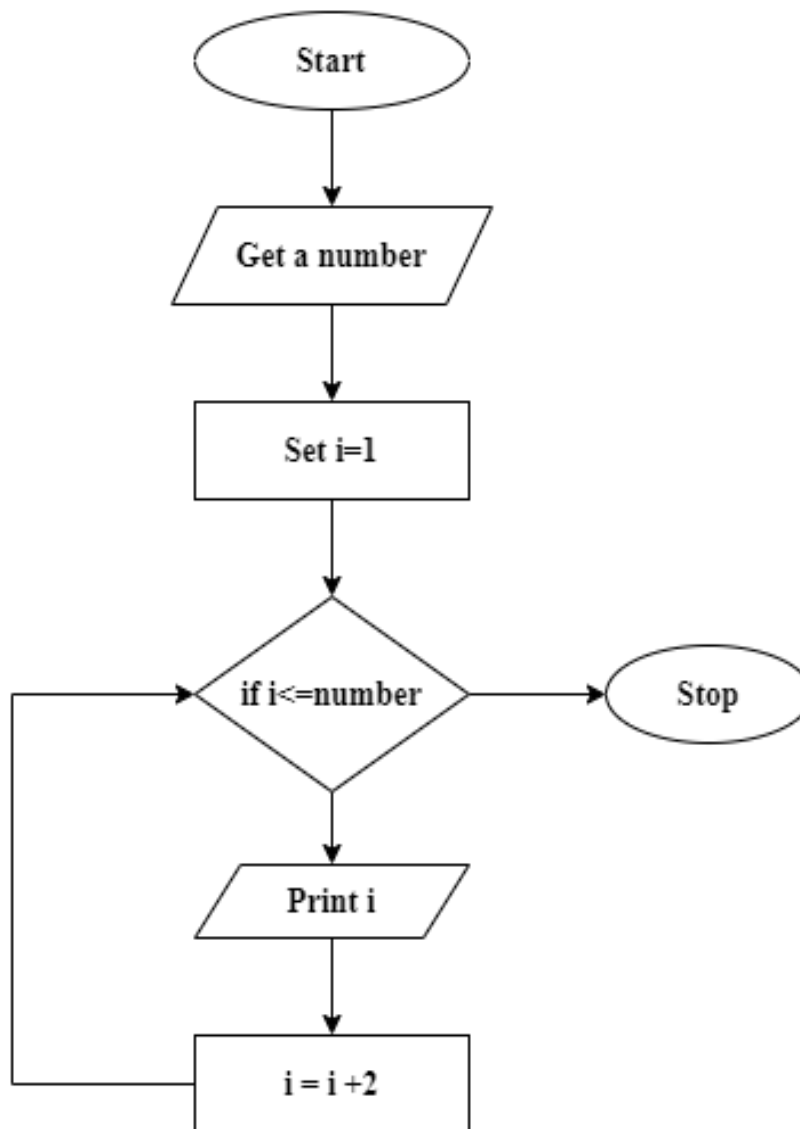
2 4 6 8 10 12 14

Q.20) odd series

Ans: **Algorithm:-**

1. Start
2. Get a number from user upto which they want to print even number
3. Set $i=1$
4. If $i \leq \text{number}$, print i and $i=i+2$. Else go to step 6
5. Repeat step 4 until $i \leq \text{number}$
6. Stop

Flowchart:-



Program :-

```
import java.util.Scanner;

class OddSeries
{
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.print(" Enter Numbers upto which you want to print even no : ");
        int num = sc.nextInt();
        for(int i=1; i<=num; i++ )
        {
            if(i%2 != 0)
            {
                System.out.println(i);
            }
        }
    }
}
```

Output:-

E:\cdac\assignments>javac OddSeries.java

E:\cdac\assignments>java OddSeries

Enter Numbers upto which you want to print even no : 15

s1 3 5 7 9 11 13 15