WEEK 1

1)

Solution:

```
class Week1{
   public static void main(String args[]){
      System.out.println("This is my java class.");
   }
}
```

2)

Solution:

```
class Week1{
   public static void main(String args[]){
      System.out.println(args);
   }
}
```

5)

Solution:

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

      Scanner sc=new Scanner(System.in);
      System.out.println("Enter the  string is: ");
      String str = sc.nextLine();
      int[] freq = new int[str.length()];
```

```
        char str1[] = str.toCharArray();
        for(int i = 0; i <str.length(); i++)
        {
           freq[i] = 1;
           for(int j = i+1; j <str.length(); j++)
           {
              if(str1[i] == str1[j])
              {
                 freq[i]++;



                 str1[j] = '0';
              }
           }
        }

        System.out.println("Frequencies of the characters in the string are as below: ");
        System.out.println("Characters  frequencies");
        for(int i = 0; i <freq.length; i++)
        {
           if(str1[i] != ' ' && str1[i] != '0')
              System.out.println(str1[i] + "             " + freq[i]);
        }
     }
}
```

6)

Solution:

```
import java.util.*;
```

```
class Demo{
   public static void main(String args[]){
      Scanner sc = new Scanner(System.in);
      int  n = sc.nextInt();
      int flag=0;
      for(int i=1;i<=n;i++){
         flag=0;
         for(int j=2;j<n;j++){
            if(i%j==0)
              flag=1;
            else
              flag=0;
         }

         if(flag==0)
           System.out.println(i);
      }
   }
}
```

7)

Solution:

```
import java.util.*;

class HelloWorld {
   public static void main(String[] args) {
      Scanner sc  = new Scanner(System.in);
      int arr[][] = new int[3][3];
      int brr[][] = new int[3][3];
```

```
        int crr[][] = new int[3][3];
        for(int i=0;i<3;i++){
            for(int j=0;j<3;j++){
                arr[i][j] = sc.nextInt();
            }
        }
        for(int i=0;i<3;i++){
            for(int j=0;j<3;j++){
                brr[i][j] = sc.nextInt();
            }
        }
        for(int i=0;i<3;i++){
            for(int j=0;j<3;j++){
                crr[i][j]=0;
                for(int k=0;k<3;k++){
                    crr[i][j]+= arr[k][i]*brr[j][k];
                }
            }
        }

        for(int i=0;i<3;i++){
            for(int j=0;j<3;j++){
                System.out.print(crr[i][j]+" ");
            }
            System.out.print("\n");
        }
    }
}
```

8)

Solution:

Without Recursion

```
class HelloWorld {
    public static void main(String[] args) {
        int n =5;
        int a=0,b=1;
        int c=a+b;
        System.out.println(a);
        System.out.println(b);
        //System.out.println(c);
        for(int i=1;i<5;i++){
            System.out.println(c);
            a=b;
            b=c;
            c=a+b;
        }
    }
}
```

With Recursion

```
class Demo{
    int fibonacci(int a,int b,int n){
    if(n==0)
       return 0;

    System.out.println(a+b);
    //System.out.println(b);
    return fibonacci(b,a+b,n-1);
```

```
  }
}
class HelloWorld {
   public static void main(String[] args) {
     int a=0,b=1;
     Demo d = new Demo();
     System.out.println(a);
     System.out.println(b);
     d.fibonacci(a,b,5);
   }
}
```

WEEK 2

Q1 : Write a program to make a class A in that class declare function add perform addition through main.

Program:

```
import java.util.*;
class A
{
   int add(int a, int b)
   {
      return a+b;
   }

   double add(double a, double b)
   {
      return a+b;
```

```
    }
    float add(float a , float b)
    {
        return a+b;
    }
}

class B
{
    public static void main(String args[])
    {
        Scanner sc  = new Scanner(System.in);
        int a,b;
        System.out.println("Enter two numbers  : ");
        a = sc.nextInt();
        b = sc.nextInt();
        A obj = new A();
        System.out.println("Sum is  "+obj.add(a , b));

    }

}
```

Q2: Write a program to write prime numbers 1 to 50 using while and do while

Program :

```
class PrimeNo
{
    public static void main(String args[])
    {
        /** using while loop**/
```

```
System.out.println("Using while loop : ");
int n=1;
int flag =0;
while(n<=50)
{
   int j=2;
   flag = 0 ;
   while(j<n)
   {
     if(n%j==0)
     {
        flag = 1;
        break;
     }
     j=j+1;
   }
   if(flag == 0)
   {
      System.out.println(n);
   }
   n=n+1;
}

/* do while loop **/
n =1;
System.out.println("Using do while loop : ");
do
{
   int j=2;
   flag=0;
```

```
        do{
            if(n%j==0){
                flag = 1;
                break;
            }
            j=j+1;
        }while(j<n);
        if(flag==0)
          System.out.println(n);
        n=n+1;
      }while(n<=50);



  }}
```

Q3: Write a program to print this shape

```
 *
* *
* * *
* *
*
```

Program :

```
import java.io.*;

class HelloWorld {
    public static void main(String[] args) {
        int space = 6;
        for(int i=0;i<7;i++)
        {
            for(int k=0;k<space;k++)
```

```
            System.out.print(" ");

          // System.out.println();
           for(int j=0;j<i;j++)
           {
              System.out.print("* ");
           }
           System.out.println();
           space--;
       }
       space = 0;
       for(int i=7;i>0;i--)
       {

            for(int k=0;k<space;k++)
              System.out.print(" ");

           for(int j=0;j<i;j++)
           {
              System.out.print("* ");
           }
          System.out.println();
           space++;
       }
   }
}
```

Q4 : Write a program to calculate factorial using command line argument

Program:

```
class Factorial{
```

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

        //int num = args;
        int factorial =1;
        for(int i=1 ; i<=args ; i++)
        {
              factorial = factorial*i;
        }
        System.out.println(factorial);
    }
}
```

Q5: WAP to find the volume of a cuboid using this pointer.

Program:

```
class Cuboid
{
    int length;
    int breadth;
    int height;
    Cuboid()
    {
      length = -1;
      breadth = -1;
      height = -1;
    }
    Cuboid(int length,int breadth, int height)
    {
        this.length = length;
        this.breadth = breadth;
        this.height = height;
```

```
    }
    int volume()
    {
        return this.length * this.breadth * this.height;
    }
}
class Driver
{
    public static void main(String args[])
    {
        Cuboid c1 = new Cuboid();
        System.out.println("Volume using default volume: "+c1.volume());
        Cuboid c2 = new Cuboid(10,20,30);
        System.out.println("Volume of cuboid : "+c2.volume());
    }
}
```

Q6:Write a program to swap the values of speed of bikes by making class bike and using call by value and call by refernce.

Program :

```
/*   In call by value the original value remains same there is no change in the original variable*/
/*And java do not support call by refernce as it uses pointers*/
import java.util.*;
class Swap{
     void SwapBikespeed(int bike1 , int bike2)
    {
        int temp = bike1;
        bike1 = bike2;
        bike2 = temp;
    }
```

```
}
class HelloWorld {

    public static void main(String[] args) {
        Swap obj = new Swap();
        Scanner sc = new Scanner(System.in);
        int b1 = sc.nextInt();
        int b2 = sc.nextInt();
        System.out.println("Before swapping : "+b1+" "+b2);
        obj.SwapBikespeed(b1,b2);
        System.out.println("After swapping : "+b1+" "+b2);
    }
}
```

Q7: Write a Program to check whether the given number is palindrome or not using recursion

Program:

```
import java.util.*;
class Pallindrome
{
    int number,original,temp,rev=0;
    Pallindrome(int num)
    {
        number = original = num;
    }
    int pallindrome(int num)
    {
       if(num<=0)
       {
           return rev;
       }
```

```
        else
        {
            temp = num%10;
            rev = rev*10+temp;
            pallindrome(num/10);
        }
        return rev;
    }

}

class Driver
{
  public static void main(String args[])
  {
      Scanner sc = new Scanner(System.in);
      Pallindrome obj = new Pallindrome(101);
      int n = obj.pallindrome(101);
      if(n==101)
        System.out.println("Number is Pallindrome");
      else
        System.out.println("Number is not pallindrome");
  }
}
```

Q9: Write a program to print all the substrings of the string “CODING”.

Program:

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

```
        String str = "CODING";
        for(int i=0;i<str.length();i++)
        {
            for(int j=i+1;j<=str.length();j++)
            {
              System.out.println(str.substring(i,j))  ;
            }
        }
    }
}
```

WEEK-3

Ques 1.

```
import java.util.*;
class Rectangle{
   int length;
   int breadth;
   int area(){
      return length*breadth;
   }
   Rectangle(int length,int breadth){
      this.length=length;
      this.breadth=breadth;
   }
}

class HelloWorld {
   public static void main(String[] args) {
      int l,b,area;
      Scanner sc=new Scanner(System.in);
      System.out.println("Enter length:");
      l=sc.nextInt();
      System.out.println("Enter breadth:");
      b=sc.nextInt();
      Rectangle a=new Rectangle(l,b);
      area=a.area();
      System.out.println("Area is:");
      System.out.println(area);
   }
}
```

2)

```
import java.util.*;
class Complex{
   int real;
   int imaginary;
   int real1;
   int imaginary1;
   int real2;
   int imaginary2;
   void sum(){
      real=real1+real2;
      imaginary=imaginary1+imaginary2;
      System.out.println("Sum is:"+real+"+"+imaginary+"i");
   }
   void difference(){
      real=real1-real2;
      imaginary=imaginary1-imaginary2;
      System.out.println("Difference is:"+real+"+"+imaginary+"i");
   }
   void product(){
      real=real1*real2 - imaginary1*imaginary2;
      imaginary=real1*imaginary2 + real2*imaginary1;
      System.out.println("Product is:"+real+"+"+imaginary+"i");
   }
   Complex(int real1,int imaginary1,int real2,int imaginary2){
      this.real1=real1;
      this.imaginary1=imaginary1;
      this.real2=real2;
      this.imaginary2=imaginary2;
   }
}
```

```
class HelloWorld {
    public static void main(String[] args) {
        int r1,i1,r2,i2,real,imaginary;
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter first complex no.:\n");
        System.out.println("Enter real:");
        r1=sc.nextInt();
        System.out.println("Enter imaginary:");
        i1=sc.nextInt();
        System.out.println("Enter second complex no.:");
        System.out.println("Enter real:");
        r2=sc.nextInt();
        System.out.println("Enter imaginary:");
        i2=sc.nextInt();
        Complex a=new Complex(r1,i1,r2,i2);
        a.sum();
        a.difference();
        a.product();
    }
}
```

3)

```
import java.util.*;
class Box{
    int length;
    int breadth;
    int height;
    void equals(){
    }
    Box(int length,int breadth,int height){
        this.length=length;
```

```
        this.breadth=breadth;
        this.height=height;
    }
    Box(){
        length=1;
        breadth=1;
        height=1;
    }
    Box(int length){
        this.length=length;
        this.breadth=length;
        this.height=length;
    }
    int volume(){
        return length*breadth*height;
    }
    boolean equals(Box o){
        if(o.length==length && o.breadth==breadth && o.height==height) return true;
        else return false;
    }
}

class HelloWorld {
    public static void main(String[] args) {
        int l,b,h,vol;
        System.out.print("Enter dimansions:\n");
        Scanner sc=new Scanner(System.in);
        System.out.print("Length:");
        l=sc.nextInt();
        System.out.print("Breadth:");
        b=sc.nextInt();
```

```
        System.out.print("Height:");
        h=sc.nextInt();
        Box obj1=new Box(l,b,h);
        Box obj2=new Box();
        Box obj3=new Box(l);
        Box obj4=new Box(l,b,h);
        Box obj5=new Box(1,1,1);
        vol=obj1.volume();
        System.out.print("Volume is:"+vol+"\n");
        vol=obj2.volume();
        System.out.print("Volume is:"+vol+"\n");
        vol=obj3.volume();
        System.out.print("Volume is:"+vol+"\n");
        System.out.print("obj1==obj4:"+obj1.equals(obj4)+"\n");
        System.out.print("obj1==obj5:"+obj1.equals(obj5)+"\n");
    }
}
```

WEEK 4:

Q1.

Program:

```
class Person{

                private String name;
                private String gender;
                private int age;

                public Person(String name,String gender,int age){

                  this.name = name;
                  this.gender = gender;
                  this.age = age;

                }
                public String getName(){
                  return name;
                }

                public String getGender(){
                  return gender;

                }
                public int getAge(){
                  return age;

                }

                public void setName(String name){
```

```
                this.name = name;

                }

                public void setGender(String gender){
                this.gender = gender;

                }

                public void setAge(int age){

                this.age = age;

                }
}

class Student extends Person{

                private int idNum;
                private double GPA;

                public Student(String name,String gender,int age,int
idNum,double GPA){

                super(name,gender,age);
                this.idNum = idNum;
                this.GPA = GPA;
                }

                public int getIdNum(){
```

```
                                    return idNum;

                                    }

                                    public double getGPA(){
                                    return GPA;

                                    }

                                    public void setIdNum(int itNum){

                                    this.idNum = idNum;

                                    }

                                    public void setGPA(double GPA){
                                    this.GPA = GPA;
                                    }
}
class Heri{
                                    public static void main(String args[]){
                                    Student s = new Student("Vaibhav
Bhalla","male",20,52211101,10);

                                    System.out.println(s.getName());
                                    System.out.println(s.getGender());
                                    System.out.println(s.getAge());
                                    System.out.println(s.getIdNum());
                                    System.out.println(s.getGPA());

                                    }
```

```
}
```

Q2:

Program:

```
class Acc{
                                public int a = 10;
                                private int b = 20;
                                protected int c = 30;
}

class Scope{
                                public static void main(String args[]){
                                  Acc bc = new Acc();
                                  System.out.println(bc.a);
                                  System.out.println(bc.b);// this line will show error because can't access private members of the class
                                  System.out.println(bc.c);
                                }
}
```

Q3:

```
import java.util.*;
import java.lang.*;

class Employee{
                                private String name;
                                private Double salary;

                                public Employee(String name,double salary){
                                  this.name = name;
                                  this.salary = salary;
```

```
                    }
                    public String getName(){
                     return name;
                    }
                    public double getSalary(){
                     return salary;
                    }
}

class Marketer extends Employee{
                    public Marketer(String name){
                     super(name,80000);
                    }

                    public void advertise(){
                     System.out.println("Act now,while supplies last!");
                    }
}

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

                     Marketer m = new Marketer("Vaibhav Bhalla");
                     System.out.println(m.getName());
                     System.out.println(m.getSalary());
                     m.advertise();

                    }
}
```

WEEK 5

Q1: Write a program to calculate the area of circle using interface

Program:

```
import java.util.*;
interface circle
{
   double area(double radius);
}
class Driver implements circle
{

   public double area(double r)
   {
       return 3.14*r*r;
   }
}
class Demo
{
   public static void main(String args[])
   {
      Driver obj = new Driver();
      Scanner sc = new Scanner(System.in);
      System.out.println("Enter the radius of the cicle : ");
      double r = sc.nextDouble();
      System.out.println(obj.area(r));
   }
}
```

WEEK-7

Q1:Write a program to check whether a given string is palindrome or not

Program:

```
import java.util.*;
class Pallindrome
{
   boolean CheckPallindrome(String str)
   {
      String reverse="";
      boolean flag = true;
      for(int i=str.length()-1;i>=0;i--)
      {
        reverse = reverse+str.charAt(i);
      }
      if(str.equals(reverse))
        return true;
      else
        return false;
   }
}
class Driver
{
    public static void main(String args[])
    {
       Pallindrome obj = new Pallindrome();
       String s = "carrac";
       boolean f = obj.CheckPallindrome(s);
       if(f)
          System.out.println("YES");
       else
```

```
            System.out.println("NO");
    }
}
```

2. Write a program to remove a particular character from string.

```
import java.util.*;
class Pallindrome
{
   void CheckPallindrome(String str,char ch)
   {
      String news="";
      boolean flag = true;
      for(int i=0;i<str.length();i++)
      {   if(str.charAt(i)==ch) continue;
        news = news+str.charAt(i);
      }
      System.out.println(news);
   }
}
class Driver
{
    public static void main(String args[])
    {
       Pallindrome obj = new Pallindrome();
       String s = "carrac";
       char ch='c';
       obj.CheckPallindrome(s,ch);
    }
}
```

Q3: Write a program to sort a list of string

```
import java.util.*;
```

```
class Pallindrome
{
   void CheckPallindrome(String arr[])
   {
      for(int i=0;i<5;i++)
      {
         for(int j=i+1;j<5;j++)
         {
            if(arr[i].compareTo(arr[j])>0)
            {
               String temp = arr[i];
               arr[i]=arr[j];
               arr[j]=temp;
            }
         }

      }
      for(int i=0;i<5;i++)
      {
        System.out.println(arr[i]);
      }

   }
}
class Driver
{
    public static void main(String args[])
    {
       Pallindrome obj = new Pallindrome();
       String arr[]=new String[5];
```

```
        Scanner sc=new Scanner(System.in);
        for(int i=0;i<5;i++){
            arr[i]=sc.nextLine();
        }
        obj.CheckPallindrome(arr);

    }
}
```

Q4. Write a program to print initials of full name.

Program:

```
import java.util.*;
class Pallindrome
{
   void CheckPallindrome(String arr)
   {   char temp=' ';
       for(int i=0;i<arr.length();i++)
       {
           if(arr.charAt(i)==' ')
               {
                   temp = arr.charAt(i+1);
               }
       }
       System.out.print(arr.charAt(0));
        System.out.print(temp);
   }
}
class Driver
{
    public static void main(String args[])
    {
```

```
        Pallindrome obj = new Pallindrome();
        String arr=new String();
        Scanner sc=new Scanner(System.in);
        arr=sc.nextLine();
        obj.CheckPallindrome(arr);

    }
}
```