1 a

```
import java.util.Scanner;
public class Linears {

	public static void main(String[] args)
	{
		int counter,num,item,array[];
		Scanner input= new Scanner(System.in);
		System.out.println("enter number of elements");
		num=input.nextInt();
		array=new int[num];
		System.out.println("enter " +num +" integer");
		for(counter=0;counter<num;counter++)
			array[counter]=input.nextInt();
		System.out.println("enter the search value");
		item=input.nextInt();
		for(counter=0;counter<num;counter++)
		{
			if(array[counter]==item)
			{
				System.out.println(item+" is present at location
"+(counter+1));
				break;
			}

		}
		if(counter==num)
			System.out.println(item+" is not present in array");

	}

}
```

1b

```
import java.io.*;
public class Sortingnames {

	public static void main(String[] args)throws IOException
	{
	BufferedReader br=new BufferedReader(new InputStreamReader(System.in));
	System.out.println("\n enter the number of names:");
	int n=Integer.parseInt(br.readLine());
	String names[]=new String[n];
	System.out.println();
	for(int i=1;i<=n;i++)
	{
	    System.out.println("enter name"+i+":");
	      names[i-1]=br.readLine();
	}
	System.out.println("\n names in ascending order");
	System.out.println();
	for(int j=0;j<names.length;j++)
```

```
	{
		for(int i=j+1;i<names.length;i++)
		{
			if(names[i].compareToIgnoreCase(names[j])<0)
			{
				String temp=names[j];
				names[j]=names[i];
				names[i]=temp;
			}
		}
			System.out.println(names[j]);
	}


	}
}
```

2a

```
class Car{
	public Car()
	{
		System.out.println("class car");
	}
	public void vehicleType()
	{
		System.out.println("vehicle type: car");
	}
}
class Maruti extends Car{
	public Maruti()
	{
		System.out.println("class maruti");
	}
	public void brand()
	{
		System.out.println("Brand: maruti");
	}
	public void speed()
	{
		System.out.println("Max:90kmph");
	}
}
public class Maruti800 extends Maruti {
	public Maruti800()
	{
		System.out.println("Maruti Model:800");
	}
	public void speed()
	{
		System.out.println("Max:80Kmph");
	}
	public static void main(String[] args) {
		// TODO Auto-generated method stub
```

```
		Maruti800 obj=new Maruti800();
		obj.vehicleType();
		obj.brand();
		obj.speed();
	}

}
```

2b

```
class Student
{
	int rno;
	void setno(int n)
	{
		rno=n;
	}
	void putno()
	{
		System.out.println("RegNo:"+rno);
	}
}
class Test extends Student
{
	float m1,m2;
	void setmarks(float a,float b)
	{
		m1=a;
		m2=b;
	}
	void putmarks()
	{
		System.out.println("M1:"+m1);
		System.out.println("M2:"+m2);
	}
}
interface Sports
{
	float sportwt=6.0f;
	void putwt();

}
class Results extends Test implements Sports
{
	float tot;
	public void putwt()
	{
		System.out.println("sports wt: " + sportwt);
	}
	void display()
	{
		tot=m1+m2+sportwt;
		putno();
		putmarks();
```

```
                putwt();
                System.out.println("Total: " + tot);
        }
}
public class Multiple {

        public static void main(String[] args) {
                Results r = new Results();
                r.setno(1001);
                r.setmarks(79f, 95f);
                r.display();

        }

}
```

3a(1)

```
package P1;

public class Student
{
        int regno;
        String name;
        public void getdata(int r,String s)
        {
                regno=r;
                name=s;
        }
        public void putdata()
        {
                System.out.println("regno="+regno);
                System.out.println("name="+name);
        }


        }
```

3a(2)

```
package P1;


import P1.*;
class StudentTest
{

        public static void main(String[] args)
        {
                Student s=new Student();
                s.getdata(695,"nishanth");
                s.putdata();
```

```
	}

}
```

3b(2)

```
import java.util.*;
public class StringTokenizerDemo {

	public static void main(String[] args)
	{
		int n;
		int sum=0;
		Scanner sc=new Scanner(System.in);
		System.out.println("enter the integer with one space gap");
		String s=sc.nextLine();
		StringTokenizer st=new StringTokenizer(s," ");
		while(st.hasMoreTokens())
		{
			String temp=st.nextToken();
			n=Integer.parseInt(temp);
			System.out.println(n);
			sum=sum+n;
		}
		System.out.println("sum of integers is:"+sum);
		sc.close();
	}

}
```

4(a)

```
import java.util.Scanner;
 class stcalss
 {
   static int num1,num2;
   static int add(int a, int b)
   {
		return a+b;
   }
   static int sub(int a,int b)
   {
		return a-b;
   }
   static int mul(int a,int b)
   {
		return a*b;
   }
   static int div(int a,int b)
   {
		return a/b;
```

```
    }
    static int modulus(int a,int b)
    {
           return a%b;
    }
    static int incremant(int a)
    {
           return --a;

    }
    static int decremant(int a)
    {
           return--a;
    }
     public static void main(String[] args)
     {
              Scanner input=new Scanner(System.in);
              System.out.println("enter two numbers:");
              num1=input.nextInt();
              num2=input.nextInt();
              System.out.println("\n the two numbers are:"
              +num1+","+num2+"\n Addition:"
              +add(num1,num2)+"\n subtraction:"
              +sub(num1,num2)+"\n Multiplication:"
              +mul(num1,num2)+"\n Division:"
            +div(num1,num2)+"\n Modulus:"
            +modulus(num1,num2)+"\n Incremant of first num: "
            +incremant(num1)
            +"\nDecremant of 2nd num:"  +decremant(num2));


       }

}
```

```
4(b)
import java.io.BufferedReader;
import java.io.IOException;
import java.io.InputStreamReader;
public class clsarray {

public static void main(String[] args)throws IOException {
// TODO Auto-generated method stub
BufferedReader br =new BufferedReader(new InputStreamReader(System.in));
int i,n;
int a[]=new int[100];
System.out.println("Enter the values of n");
n=Integer.parseInt(br.readLine());
System.out.println("Enter the values");
for(i=0;i<n;i++)
{
a[i]=Integer.parseInt(br.readLine());
}
System.out.println("The values are");
for(i=0;i<n;i++)
```

```
{
System.out.println(a[i]);
}
}

}
```

5a

```
public class StringDemo {

	public static void main(String[] args) {
		// TODO Auto-generated method stub
	    String s1=new String("ISE DSCE BANGALORE");
	    String s2=("ise dsce bangalore");
	    System.out.println("The String s1 is:   "+s1);
	    System.out.println("The String s2 is:   "+s2);
	      System.out.println("length of the string s1 is:"+s1.length());
	    System.out.println("Index of the letter r in he String s2 is:
"+s2.indexOf('r'));
	    System.out.println("Uppercase of the string s2 is:   "+s2.toUpperCase());
	    System.out.println("Lowercase of string s1 is:   "+s1.toLowerCase());
	    System.out.println("string s1 equals to string s2:   "+s1.equals(s2));
	    System.out.println("string s1 equals to string s2:
"+s1.equalsIgnoreCase(s2));
	    int result=s1.compareTo(s2);
	    System.out.println("After compare 2");
	    if (result==0){
	                System.out.println(s1+"is equal to"+s2);
	    }
	    else if (result>0){
	         System.out.println(s1+" is greater than"+s2);
	    }
	    else{
	         System.out.println(s1+" is lesser than "+s2);}

	    System.out.println("The character at index 6 is:  " +s1.charAt(6));
	    String s3=s1.substring(4,12);
	     System.out.println(s3);
	     System.out.println(s2.replace('g', 'a'));
	    String s4="This is a book";
	    System.out.println("string s4 is: "+s4);
	    System.out.println("string s4 trimmed:  "+s4.trim());
	    System.out.println("Joined string:"+s1.concat(s2));
	    System.out.println(s1.endsWith("g"));

	    }

}
```

Outut

```
The String s1 is:   ISE DSCE BANGALORE
The String s2 is:   ise dsce bangalore
length of the string s1 is:18
```

```
Index of the letter r in he String s2 is:   16
Uppercase of the string s2 is:   ISE DSCE BANGALORE
Lowercase of string s1 is:   ise dsce bangalore
string s1 equals to string s2:   false
string s1 equals to string s2:   true
After compare 2
ISE DSCE BANGALORE is lesser than ise dsce bangalore
The character at index 6 is:  C
DSCE BAN
ise dsce banaalore
string s4 is:         This is a book
string s4 trimmed:  This is a book
Joined string:ISE DSCE BANGALOREise dsce bangalore
false
```

5a(prem)

```
import java.lang.String;
public class stringdemo {
    public static void main (String args [])
    {
        String str = "Change me"; //1
          System.out.println(str.replace('m','M')); //replace
          String str1 = "0123456789";//2
          System.out.println(str1.substring(4));   //substring
          System.out.println(str1.substring(4,7));
          String str2 = "ABCDEF";
          System.out.println(str2.toLowerCase());  //toLowerCase
          String str3 = "abcdef";//3
          System.out.println(str3.toUpperCase());  //toUpperCase
          int num = 35;//4
          String s4 = String.valueOf(num);       //valueOf
          System.out.println(s4);
          String str5 = "   hello  ";//5
          System.out.println(str5.trim());       //trim
          String a="";   //6
          System.out.println(a.isEmpty());       // isEmpty
          String str7 = "study";  //7
          System.out.println(str7.startsWith("s"));   //startsWith
          System.out.println(str7.startsWith("t"));
          String str8 = "java";//8
          System.out.println(str8.equalsIgnoreCase("JAVA"));  //equalsIgnoreCase
          String str9 = "Count me";//9
          System.out.println(str9.length());     //length
          String str10 = "java";//10
          System.out.println( str10.charAt(2) ); //charAt
          String str11 = "book";//11
          System.out.println( str11.concat(" author") ); //concat
          String str12 = "kelvin "; //12
          char [] arrayChar = str12.toCharArray();  //toCharArray

    }
}
```

```
Change Me
456789
456
abcdef
ABCDEF
35
hello
true
true
false
true
8
v
book author
```

5(b)

```java
import java.lang.StringBuffer;
public class StringBufferClass {

	public static void main(String[] args) {
		StringBuffer s1 = new StringBuffer("ISE DSCE BANGALORE");
		System.out.println(s1.append(" 2022"));
		System.out.println(s1.length());
		System.out.println(s1.capacity());
		System.out.println(s1.charAt(15));
		System.out.println(s1.deleteCharAt(13));
		System.out.println(s1.insert(13, 'A'));
		System.out.println(s1.replace(18, s1.length(), " 2023"));
		System.out.println(s1.delete(18, s1.length()));
		System.out.println(s1.reverse());


	}

}
```

Output

```
ISE DSCE BANGALORE 2022
23
34
O
ISE DSCE BANGLORE 2022
ISE DSCE BANGALORE 2022
ISE DSCE BANGALORE 2023
ISE DSCE BANGALORE
EROLAGNAB ECSD ESI
```

6

```
import java.util.*;
// class for Even Number
class EvenNum implements Runnable {
    public int a;
    public EvenNum(int a) {
        this.a = a;
    }
    public void run() {
        System.out.println("The Thread "+ a +" is EVEN and Square of " + a + " is : "
+ a * a);
    }
} // class for Odd Number
class OddNum implements Runnable {
    public int a;
    public OddNum(int a)  {
        this.a = a;
    }
    public void run()  {
        System.out.println("The Thread "+ a +" is ODD and Cube of " + a + " is: " + a
* a * a);
    }
}
// class to generate random number
class RandomNumGenerator extends Thread  {
    public void run() {
        int n = 0;
        Random rand = new Random();
        try  {
            for (int i = 0; i < 10; i++) {
                n = rand.nextInt(20);
                System.out.println("Generated Number is " + n);
                // check if random number is even or odd
                if (n % 2 == 0) {
                    Thread thread1 = new Thread(new EvenNum(n));
                    thread1.start();
                }
                else {
                    Thread thread2 = new Thread(new OddNum(n));
                    thread2.start();
                }
        // thread wait for 1 second
        Thread.sleep(1000);
           System.out.println("-----------------------------------");
            }
        }
        catch (Exception ex) {
            System.out.println(ex.getMessage());
        }
    }
}
// Driver class
public class multiThread {
    public static void main(String[] args) {
```

```
        RandomNumGenerator rand_num = new RandomNumGenerator();
        rand_num.start();
}
}
```

7

```
import java.lang.*;
import java.io.DataInputStream;

class MyException extends Exception
{
       MyException(String Message)
       {
              super(Message);
       }
}

public class userdef {

       public static void main(String[] args)
       {
              // TODO Auto-generated method stub
      int age;
      DataInputStream ds= new DataInputStream(System.in);
      try
      {
         System.out.println("Enter the age Above 18 and below 25");
         age=Integer.parseInt(ds.readLine());
         if(age<18 || age>25)
         {
                throw new MyException("Number not in range");
         }
         System.out.println("the number is:"+age);
      }
      catch(MyException e)
      {
         System.out.println("Caught MyException");
         System.out.println(e.getMessage());
      }
      catch(Exception e)
      {
       System.out.println(e);
      }
       }

}
```

8

```
import java.applet.*;
import java.awt.event.*;
import java.awt.*;
```

```
public class MouseEvents extends Applet implements MouseListener,MouseMotionListener
{

    String msg=" ";
    int x=0,y=0;
    public void init()
    {
       addMouseListener(this);
       addMouseMotionListener(this);
    }
       public void mouseClicked(MouseEvent m)
       {
                    x=10;
                    y=10;
                    msg="mouse clicked";
                    repaint();
       }


       public void mouseEntered(MouseEvent m)
       {
              // TODO Auto-generated method stub
              x=10;
              y=10;
              msg="mouse entered";
              repaint();
       }
       public void mouseExited(MouseEvent m)
       {
              // TODO Auto-generated method stub
          x=10;
          y=10;
          msg="mouse exited";
          repaint();
       }


       public void mousePressed(MouseEvent m) {
              // TODO Auto-generated method stub
              x=m.getX();
              y=m.getY();
              msg="up";
              repaint();
       }
       public void mouseReleased(MouseEvent m)
       {
              // TODO Auto-generated method stub
              x=m.getX();
              y=m.getY();
              msg="down";
              repaint();
       }

       @Override
       public void mouseDragged(MouseEvent m)
```

```
        {
                // TODO Auto-generated method stub
                x=m.getX();
                y=m.getY();
                msg="*";
                showStatus("dragged mouse at "+x+"&"+y);
                repaint();
        }

        @Override
        public void mouseMoved(MouseEvent m)
        {
                // TODO Auto-generated method stub
        showStatus("moving mouse at"+m.getX()+"2"+m.getY());
        }
    public void paint(Graphics g)
    {
        g.drawString(msg,x,y);
    }
}


8

import java.applet.*;
import java.awt.event.*;
import java.awt.*;
public class MouseEvents extends Applet implements MouseListener,MouseMotionListener
{

    String msg=" ";
    int x=0,y=0;
    public void init()
    {
        addMouseListener(this);
        addMouseMotionListener(this);
    }
        public void mouseClicked(MouseEvent m)
        {
                    x=10;
                    y=10;
                    msg="mouse clicked";
                    repaint();
        }


        public void mouseEntered(MouseEvent m)
        {
                // TODO Auto-generated method stub
                x=10;
                y=10;
                msg="mouse entered";
                repaint();
        }
        public void mouseExited(MouseEvent m)
```

```
    {
            // TODO Auto-generated method stub
        x=10;
        y=10;
        msg="mouse exited";
        repaint();
    }


    public void mousePressed(MouseEvent m) {
            // TODO Auto-generated method stub
            x=m.getX();
            y=m.getY();
            msg="up";
            repaint();
    }
    public void mouseReleased(MouseEvent m)
    {
            // TODO Auto-generated method stub
            x=m.getX();
            y=m.getY();
            msg="down";
            repaint();
    }

    @Override
    public void mouseDragged(MouseEvent m)
    {
            // TODO Auto-generated method stub
            x=m.getX();
            y=m.getY();
            msg="*";
            showStatus("dragged mouse at "+x+"&"+y);
            repaint();
    }

    @Override
    public void mouseMoved(MouseEvent m)
    {
            // TODO Auto-generated method stub
    showStatus("moving mouse at"+m.getX()+"2"+m.getY());
    }
public void paint(Graphics g)
{
    g.drawString(msg,x,y);
}
}
```

10

```
import java.io.IOException;
import java.io.PrintWriter;
import java.util.Date;
import javax.servlet.ServletException;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
import javax.servlet.http.HttpSession;
public class dd extends HttpServlet {
protected void doGet(HttpServletRequest request, HttpServletResponse response)
throws ServletException, IOException {
// TODO Auto-generated method stub
HttpSession session = request.getSession(true);
Date createTime = new Date(session.getCreationTime());
Date lastAccessTime = new Date(session.getLastAccessedTime());
String title = "Welcome";
Integer visitCount = new Integer(0);
String visitCountKey = new String("visitCount");
String userIDKey = new String("userID");
String userID = new String("ISE-DSCE");
if (session.isNew()) {
title = "Welcome to my website";
session.setAttribute(userIDKey, userID);
} else {
visitCount = (Integer)session.getAttribute(visitCountKey);
visitCount = visitCount + 1;
userID = (String)session.getAttribute(userIDKey);
}
session.setAttribute(visitCountKey, visitCount);
response.setContentType("text/html");
PrintWriter out = response.getWriter();
String docType =
"<!doctype html public \"-//w3c//dtd html 4.0 " +
"transitional//en\">\n";
out.println(docType +
"<html>\n" +
"<head><title>" + title + "</title></head>\n" +
"<body bgcolor = \"#f0f0f0\">\n" +
"<h1 align = \"center\">" + title + "</h1>\n" +
"<h2 align = \"center\">Session Infomation</h2>\n" +
"<table border = \"1\" align = \"center\">\n" +
"<tr bgcolor = \"#949494\">\n" +
" <th>Session info</th><th>value</th> </tr>\n" +
"<tr>\n" +
" <td>id</td>\n" +
" <td>" + session.getId() + "</td> </tr>\n" +
"<tr>\n" +
" <td>Creation Time</td>\n" +
" <td>" + createTime + " </td> </tr>\n" +
"<tr>\n" +
" <td>Time of Last Access</td>\n" +
" <td>" + lastAccessTime + " </td> </tr>\n" +
```

```
"<tr>\n" +
" <td>User ID</td>\n" +
" <td>" + userID + " </td> </tr>\n" +
"<tr>\n" +
" <td>Number of visits</td>\n" +
" <td>" + visitCount + "</td> </tr>\n" +
"</table>\n" +
"</body> </html>"
);
}
}
```

Xml

```
<?xml version="1.0" encoding="UTF-8"?>
<web-app xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns="http://xmlns.jcp.org/xml/ns/javaee"
xsi:schemaLocation="http://xmlns.jcp.org/xml/ns/javaee
http://xmlns.jcp.org/xml/ns/javaee/web-app_3_1.xsd" id="WebApp_ID" version="3.1">
  <display-name>seesion1</display-name>
  <welcome-file-list>
  <welcome-file>dd</welcome-file>
      </welcome-file-list>
    <servlet>
<servlet-name>dd</servlet-name>
 <servlet-class>dd</servlet-class>
</servlet>
<servlet-mapping>
 <servlet-name>dd</servlet-name>
 <url-pattern>/dd</url-pattern>
</servlet-mapping>
</web-app>
```