JAVA PRACTICAL RECORD

1. Write a program to find the largest of n natural numbers.

```
import    java.util.Scanner;
public  class   LargestNumber
{
      public  static  void  main(String  args[])
     {
         int   n, largest;
         Scanner  s = new   Scanner(System.in);
         System.out.println(“Enter the size of the array:");
         n= s.nextlnt);
         int arr[] =new int[n];
         System.out.println("Enter elements of array:");
         for(int   i =0; i<n; i++)
        {
              arr[i] =s.nextInt( );
        }
        largest =arr[0];
        for(int   i =0; i<n; i++)
        {
                if(largest < arr[i])
               {
                   largest = arr[i];
                }
        }
        System.out.println("The largest number of " +n+ " natural numbers is: "+largest);

     }

}
```

OUTPUT:

Enter the size of the array: 6

Enter elements of array:

30 15 45 50 10 20

The largest number of 6 natural numbers is: 50

2. Write a program to find whether a given number is prime or not.

```
import    java.util.Scanner;
public  class   Prime
{
     public  static  void  main(String  args[])
   {
              int   i, n,count;
              Scanner  s = new   Scanner(System.in);
              System.out.println(“Enter a number :");
              n = s.nextInt( );
              for(int  i =2; i<= n; ++i)
              {
                   if(n% i = = 0)
                   {
                        Count++;
                        Break;
                   }
              }
             if(count = = 0)
             {
                  System.out.println(n+ " is  a  prime number");
             }
             else
             {
                   System.out.println(n + “is not a prime number");
             }
       }
 }
```

OUTPUT:

Enter a number : 83

83 is a prime number

3. Write a menu driven program for following:

a) Display a Fibonacci series

```
import java.io.*;
import java.util.Scanner;
public class HelloWorld
{
    public static void main(String []args) throws Exception
    {
      int n,n1=0,n2=1,n3,i;
      Scanner sc=new Scanner(System.in);
      System.out.println("Enter a number :");
      n=sc.nextInt( );
      System.out.println("The  Fibonacci series is:");
      System.out.println(n1);
      System.out.println(n2);
      for(i=2; i<n ;i++)
      {
         n3 = n1+n2;
         System.out.println(n3);
         n1=n2;
         n2=n3;
       }
    }
}
```

OUTPUT:

Enter a number : 10

The Fibonacci series is:

0

1

1

2

3

5

8

13

21

34

b) Compute Factorial of a given number.

```
import java.util.Scanner;
public class Factorial
{
   public  static  void  main(String  args[])
   {
      int n,i,fact=1;
      Scanner s=new Scanner(System.in);
      System.out.println("Enter a number :");
      n=s.nextInt( );
      for(i=1;i<=n;i++)
      {
         fact=fact*i;
      }
      System.out.println("The factorial of "+n+"is:"+fact);
   }
}
```

OUTPUT:

```
Enter a number : 8
The factorial of 8 is:40320
```

4. Write a program to check whether a given number is odd or even.

```
import    java.util.Scanner;
public  class     Factorial
{
    public  static  void  main(String  args[])
    {
            int   n,i;
            Scanner  s = new   Scanner(System.in);
            System.out.println(“Enter a number :");
            n = s.nextlnt( );
            if(n%2 = = 0)
            {
                 System.out.println(n+“is  an even  number :");
            }
            else
            {
                 System.out.println(n+“is an odd  number :");
            }
      }
}
```

OUTPUT:

Enter a number: 56

56 is an even nunber

5. Write a program to check whether a given string is palindrome or not.

```
class Palindrome
{
   public static void main(String args[ 1)
   {
      StringBufer  Sl = new  StringBuffer("MADAM");
      StringBuffer  S2;
      System.out.println("The given string is: "+ S1);
      S2 = S1.reverse( );
      if(S1.equals(S2) = = true)
     {
          System.out.printin("It is a Palindrome string");
      }
      else
     {
         System.out,printin(It is not a Palindrome string"):
      }
  }
}
```

OUTPUT:

The given string is: MADAM
It is a Palindrome string

6. Write a program to print the sum and product of digits of an Integer and reverse the Integer.

```
import java.util.Scanner;
public class  AddReverse
{
    public static void main(String args[])
    {
        Scanner s=new Scanner(System.in);
        System.out.println("Enter the number: ");
        int n = s.nextInt();
        int sum =0, pr =1, rev=0, r,i;
        i=n;
        while(i!=0)
        {
            r=i%10;
            sum = sum + r;
            pr =pr *r;
            rev = rev*10 + r;
            i=i/10;
        }
        System.out.println("sum of the digits: "+sum);
        System.out.println("Product of the digits: "+pr);
        System.out.println("Reverse of the given number is: "+rev);
    }
}
```

OUTPUT:

Enter the number: 456

sum of the digits: 15

Product of the digits: 120
Reverse of the given number is: 654

7. **Write a program to create an array of 10 integers. Accept values from the user in that Array. Input another number from the user and find out how many numbers are equal for the number passed, how many are greater and how many are less than the number passed**.

```
import  java.util.Scanner;

public  class  ArrayEx

{

   public  static  void  main(String[] args)

  {

      int  i,n;

      int  equal_count=0, greater_count=0, less_count=0;

      Scanner  sc=new  Scanner(System.in);

      int  arr[ ] = new  int[10];

      System.out.println("Please enter 10 integer values: ");
      for(i=0; i<10; i++)
     {
         arr[i]=sc.nextInt( );

      }

      System.out.println("Enter Another Value: ");

      n=sc.nextInt( );

      for(i=0; i<10; i++)

      {

         if(arr[i]==n)

         {

            equal_count++;

         }


        else if(arr[i]>n)

        {
                greater_count++;

         }
```

```
                else
                {
                        less_count++;
                }
               }
                System.out.println("The count of numbers that are equal to the number passed
                                                is:"+equal_count);
                System.out.println("The count of numbers that are greater than the number passed
                                                is: "+greater_count);
                System.out.println("The count of numbers that are less than the number passed
                                                is: "+less_count);
                }
}
```

OUTPUT:

```
Please enter 10 integer  values : 10     20     30     40    50     60    70    80    90     100
Enter Search Value: 50

The count of numbers that are equal to the number passed is: 1

The count of numbers that are greater than the number passed is: 5
The count of numbers that are less than the number passed is: 4
```

8. **Write a program that will prompt the user for a list of 5 prices. Compute the average of the prices and find out all the prices that are higher than the calculated average.**

```
import java.util.Scanner;
public class Average
{
    public static void main(String[] args)
   {
      Scanner s=new Scanner(System.in);
      int a[] = new int[5];
      float  total =0, avg;
      System.out.println("Please enter 5 prices: ");
      for(int  i=0;i<5;i++)
     {
        a[i]=s.nextInt( );
     }
     for (int  i=0;i<5;i++)
      {
        total = total + a[i];
      }
      avg = total/5;
      System.out.println("The average of 5 prices is: "+ avg);
      System.out.println("The Prices that are higher than the calculated average are: ");
      for (int  i=0; i<5; i++)
      {
           if(a[i]>avg)
          {
               System.out.println(a[i]);
```

```
            }
            else
            {
                continue;
            }
        }
    }
}
```

OUTPUT:

```
Please  enter  5 prices:
26
51
76
43
95
The  average  of  5 prices  is:
58.2
The Prices that are higher than the calculated average are:
76
95
```

9. **Write a program in java to Input N numbers in an array and print out the Amstong numbers from the set.**

```
import java.util.Scanner;
public class Armstrong
{
   public static void main(String[] args)
   {
   int N, temp, r;
   double sum;
   Scanner sc=new Scanner(System.in);
   System.out.print("Enter the size of the array:");
   N=sc.nextInt();
   int[] arr = new int[10];
   System.out.println("Please enter the elements of the array: ");
   for(int i=0;i<N;i++)
   {
      arr[i]=sc.nextInt();
   }
   System.out.println("The list of Armstrong numbers in the given array are: ");
   for (int i=0; i<N; i++)
   {
      sum = 0.0;
      temp = arr[i];
      while(temp !=0)
      {
         r=temp % 10;
         sum=sum+Math.pow(r,3);
         temp /= 10;
      }
```

```
            if(sum== arr[i])
            {
                System.out.println(arr[i] +"");
            }
            else
            {
                continue;
            }
        }
    }
}
```

OUTPUT:

```
Enter the size of the array:5
Please enter the elements of the array:
15 379 153 481 236
The list of Armstrong numbers 1n the given array are :
378
153
```

10. Write java program for the following matrix operations:

a) **Additlon of fwo matrices**

```
public class MatrixAdd
{
   public static void main(String args[])
   {
      int a[][]={{1,2,3},{9,8,7},{5,4,6}};
      int b[][]={{5,7,9},{6,1,2},{8,3,1}};
      int c[][]=new int[3][3];
      System.out.print("a matrix is:\n");
      for(int i=0;i<3;i++)
      {
         for(int j=0;j<3;j++)
         {
            System.out.print(a[i][j]+"\t");
         }
         System.out.println();
      }
      System.out.print("b matrix is:\n");
      for(int i=0;i<3;i++)
      {
         for(int j=0;j<3;j++)
         {
            System.out.print(b[i][j]+"\t");
         }
         System.out.println();
      }

      System.out.println("Addition of two matrices is:");

      for(int i=0;i<3;i++)
      {
         for(int j=0;j<3;j++)
         {
            c[i][j]=a[i][j]+b[i][j];
            System.out.print(c[i][j]+"\t");
         }
         System.out.println();
      }
   }

}
```

OUTPUT:

a matrix is:

1 2 3

9 8 7

5 4 6

b matrix is:

5 7 9

6 1 2

8 3 1

Addition of two matrices is:

6 9 12

15 9 9

13 7 7

b) Transpose of a matrix.

```
public class MatTranspose
{
   public static void main(String args[])
   {
      int m[][]={{10,20,30},{12,14,13},{25,45,55}};
      int tm[][]=new int[3][3];
      for(int i=0;i<3;i++)
      {
         for(int j=0;j<3;j++)
         {
            tm[i][j]=m[j][i];
         }
      }
      System.out.println("The given matrix is: ");
      for(int i=0;i<3;i++)
      {
         for(int j=0;j<3;j++)
         {
            System.out.print(m[i][j]+"\t");
         }
         System.out.println();
      }
      System.out.println("The transpose of the given matrix is: ");
      for(int i=0;i<3;i++)
      {
         for(int j=0;j<3;j++)
         {
            System.out.print(tm[i][j]+"\t");
         }
```

```
            System.out.println();
        }
    }
}
```

OUTPUT:

The given matrix is:

10 20 30

12 14 13

25 45 55

The transpose of the given matrix is:

10 12 25

20 14 45

30 13 55

11. Write a java program that computes the area of a crcle, reciangle and a Cylinder using function overloading.

```
import java.lang.Math.*;
class FunOver
{
   void area(double r)
   {
      System.out.println("The area of the circle is: "+Math.PI * r*r+"sq.units");
   }
   void area(float m, float n)
   {
      System.out.println("The area of the rectangle is: "+m*n+" sq. units");
   }
   void area(double h, double r)
   {
   System.out.println("The area of the cylinder is: "+2 * Math.PI *r* (h +r)+"sq.
units");
   }
}
public class Area
{
   public static void main(String[] args)
   {
      FunOver ob = new FunOver();
      ob.area(6.2);
      ob.area(8,7);
      ob.area(6.2,5.3);
   }
}
```

OUTPUT:

The area of the circle is: 120.76282160399165sq.units

The area of the rectangle is: 56.0 sq. units

The area of the cylinder is: 382.96014447259574sq. units

12. Write a Java program for the implementation of multiple Inheritance Using interfaces to calculate the area of a rectangle and triangle.

```
interface Calc_Area
{
   float area(float x, float y);
}
class Rectangle implements Calc_Area
{
   public float area(float l,float b)
   {
      return(l * b);
   }
}
class Triangle implements Calc_Area
{
   public float area(float b,float h)
   {
      return(b * h/2);
   }
}
public class Multiple
{
   public static void main(String args[])
   {
   Rectangle r= new Rectangle();
   Triangle t = new Triangle();
   Calc_Area ar;
   ar = r;
   System.out.println("The Area Of Rectangle is: "+ ar.area(5,9));
   ar = t;
   System.out.println("The Area Of Triangle is: "+ ar.area(8,12));
   }
}
```

OUTPUT:

The Area Of Rectangle is: 45.0

The Area Of Triangle is: 48.0

13. Write a java program to create a frame window in an Applet. Display your name, address and qualification in the frame window.

```
import java.awt.*;
import java.awt.event. *;
import java.applet. *;
import java.awt.Frame;
/*
<applet code="AppletFrame" width=400 height=60>
</applet>
*/
class Sample extends Frame
{
   Sample(String title)
   {
      super(title);
      MyWindowAdapter adap = new MyWindowAdapter(this);
      addWindowListener(adap);
   }
   public void paint(Graphics gr)
   {
      gr.drawString("The details of the student are:",30,40);
      gr.drawString("Name:R.Sandhya",30,55);
      gr.drawString("Address: Uppal,Hyderabad",30,70);
      gr.drawString("Qualification: M.Tech(CSE)",30,85);
   }
}
Class  MyWindowAdapter  extends  WindowAdapter
{
   Sample sam;
   public MyWindowAdapter( Sample sam)
   {
      this.sam=sam;
   }
   public void windowClosing( WindowEvent w)
   {
      sam.setVisible(false);
   }
}
public class AppletFrame extends Applet
{
   Frame fr;
   public void ini()
   {
      fr= new Sample("This is a Frame Window");
      fr.setSize(300,200);
      fr.setVisible(true);
   }
   public void start()
   {
      fr.setVisible(true);
```

```
    }
    public void stop()
    {
       fr.setVisible(false);
    }
    public void paint(Graphics gr)
    {
       gr.drawString("Frame Window in an Applet",10,20);
    }
}
```

OUTPUT:

The details of the student are:

Name:R.Sandhya

Address: Uppal,Hyderabad

Qualification: M.Tech(CSE)

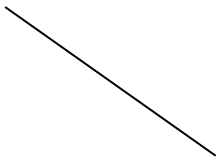
14. Write a Java program to draw line between two coordinates in a window.

```
import java.applet.Applet;
import java.awt. Graphics;

   <applet code="Line" width=400 height-60>
   </applet>

public class Line extends Applet
{
   public void paint(Graphics g)
   {
      g.drawLine(20, 30, 90, 80); //drawLine(xl, yl, x2, y2)
      //Here, the line is drawn between (x1, yl) and (x2, y2)
   }
}
```

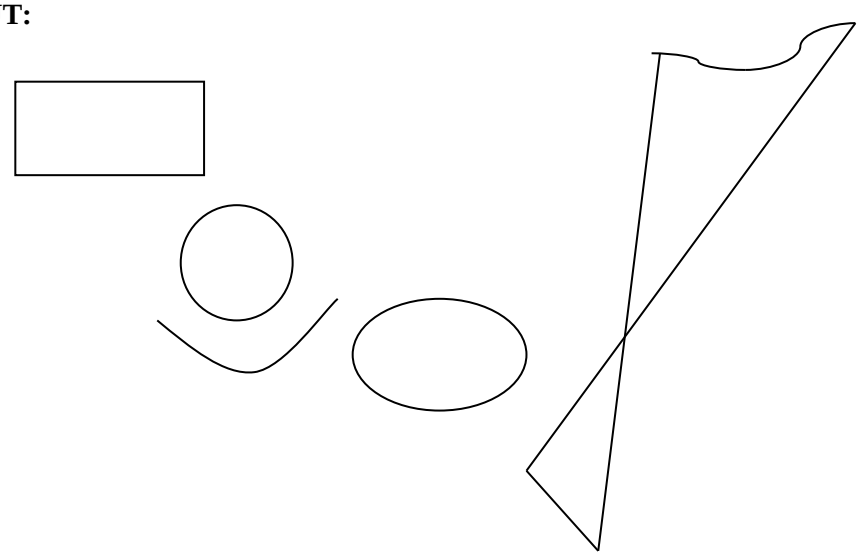
OUTPUT:



15. Wrte a java program to display the following graphics in an applet window.
(a) Rectangles (b)Circles (c)Ellipses (d) Arcs (e)Polygons

```
import java.applet.Applet;
import java.awt.Graphics;
/*
   <applet code-"Graphics_ Ex" width=400 height-400>
   </applet>
*/
import java.awt.*;
import java.applet.*;
public class Graphics_Ex extends Applet
{
   public void paint(Graphics g)
   {
      g.setFont(new Font("Cambria", Font.BOLD,15));
      g.drawstring("Drawing different shapes in Applet window", 15, 15);
      g.drawRect(10,20,60,40);
      g.drawOval(70, 70, 70, 70);
      g.drawOval(120, 160, 100, 50);
      g.drawArc(60, 125, 80, 40, 180, 180);
      int x[] = { 210, 230, 240, 250, 310, 340 };
      int y[] ={ 310, 340, 150, 140, 130, 110 };
      int n =6;
      Polygon pg = new Polygon(x, y, n);
      g.drawPolygon(pg); //drawing polygon
   }
}
```

OUTPUT:



16. Write a program that reads two integer numbers for the variables a and b. If any other character except nunber (0 - 9) is entered then the error is caught by NumberFormatExcepion object. After that ex.getMessage( ) prints the information about the error occurring causes.

```
import java.io.*;
public class ExceptionEx
{
   public static void main(String[] args) throws Exception
   {
      try
      {
         int a,b;
         BufferedReader br=new BufferedReader(new InputStreamReader(System.in));
         System.out.println("Enter the values of a and b:");
         a= Integer.parseInt (br.readLine());
         b=Integer.parseInt(br.readLine());
      }
      catch(NumberFormatException ex)
      {
         System.out.println(ex.getMessage() +" is not a number");
         System.exit(0);
      }
   }
}
```

OUTPUT:

Enter the values of a and b:

25

yash

For input string: "yash" is not a number

17. Write a program for the following string operations:

(a) Compare two strings

(b) Concatenate two strings

(c) Compute length of a string.

```
import java.io.*;
import java.util. *;
public class StringOperations
{
   public static void main (String[] args)
   {
      boolean flag;
      String strl= "VIVEKANANDA ";
      String str2="GOVENMEVT DEGREE COLLEGE";
      //String Concatenation
      System.out.println("The concatenated string is:" +strl.concat(str2));
      //String Comparison
      flag = strl.equals(str2);
      System.out.println("strl is equal to str2: "+flag);
      //String Length
      System.out. println("The length of strl is:" + strl.length());
      System.out.println("The length of str2 is: "+ str2.length());
   }
}
```

OUTPUT:

The concatenated string is: VIVEKANANDA GOVENMEVT DEGREE COLLEGE

strl is equal to str2: false

The length of strl is:12

The length of str2 is: 24

18. Create a class called fraction that can be used to represent the ratio of two integers. Include appropriate constructors and methods. If the denominator becomes zero, throw and handle an exception.

```
import java.util.Scanner;
public class Fraction
{
   public Fraction() throws ArithmeticException
   {
      Scanner sc=new Scanner(System.in);
      System.out.println("Please enter two numbers: ");
      int numerator = sc.nextInt();
      int denominator = sc.nextInt();
      int result= numerator/denominator;
      System.out.println("The result is: " +result);
   }
   void display()
   {
      System.out.println("Divided by Zero Exception Example");
   }
   public static void main(String args[])
   {
      try
      {
         Fraction f= new Fraction();
         f.display();
      }
      catch(ArithmeticException e)
      {
         System.out.println ("Can't be divided by Zero " +e);
      }
   }
}
```

OUTPUT:

```
Please enter two numbers:
10
0
Can't be divided by Zero java.lang.ArithmeticException: / by zero


Please enter two numbers:
60
30
The result is: 2
Divided by Zero Exception Example
```