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List of Experiments:

1	**1.** Write a program in Java with class Circle & with the data fields radius, area and colour. The radius and area are of double type and colour is of string type. The methods are get_radius (), get_colour() and find_area(). Create two objects of Circle and compare their area and colour. If the area and colour both are the same for the objects then display “Matching Circles”, otherwise display “Non-matching Circles”

```
import java.util.*;
class Circle
{
 private double r;
 private double a;
 private String c;

 void accept()
 {
  Scanner sc = new scanner(System.in);
  System.out.println("enter radius & Colour");
  r=sc.nextDouble();
  c=sc.next();
 }
  double get_radius();
 {
  return r;
 }
  double find_area();
 {
  final float Pi=3.14f;
  a = Pi*r*r;
  return a;
  String get_colour();
 {
  return c;
 }
 }
}

class CircleMatch
{
 public static void main(String args[])
 {
  Circle x = new Circle();
  Circle y= new Circle();
  x.accept();
  y.accept();
  double a1,a2;
  String c1,c2;
  a1 = x.find_area();
  a2 = y.find_area();
  c1 = x.get_colour();
  c2 = y.get_colour();
```

```
    if(a1==a2 && c1.equals(c2))
    {
     System.out.println("matching circle");
    }
     else
     {
     System.out.println("not matching circle");
    }
   }
}
```

2

2. Write a program in Java to implement a Calculator with simple arithmetic operations such as add, subtract, multiply, divide using switch case and other simple java statements.

```
import java.util.*;

class ArithOperation
{
        public static void main(String arp[])
        {
                int a,b,c,ch;
                float d;
                Scanner sc = new Scanner(System.in);
                System.out.println("1.Addition");
                System.out.println("2.Subtraction");
                System.out.println("3.Multiplication");
                System.out.println("4.Division");

                System.out.println("enter your choice");
                ch = sc.nextInt();


                switch(ch)
                {
                        case 1:
                                System.out.println("enter 2 nos");
                                a = sc.nextInt();
                                b = sc.nextInt();
                                c = a+b;
                                System.out.println("Additon = " + c);
                                break;
                        case 2:
                                System.out.println("enter 2 nos");
                                a = sc.nextInt();
                                b = sc.nextInt();
                                c = a-b;
                                System.out.println("Subtraction = " + c);
                                break;
                        case 3:
                                System.out.println("enter 2 nos");
                                a = sc.nextInt();
                                b = sc.nextInt();
```

```
                                                    c = a*b;
                                                    System.out.println("Multiplication = " + c);
                                                    break;
                                        case 4:
                                                    System.out.println("enter 2 nos");
                                                    a = sc.nextInt();
                                                    b = sc.nextInt();
                                                    d = (float)a/(float)b;
                                                    System.out.println("Division = " + d);
                                                    break;
                                        default:
                                                    System.out.println("Invalid Choice");
                                }

                        }
}
```

3 **3.** Write a program in Java with class Rectangle with the data fields width, length, area and colour. The length, width and area are of double type and colour is of string type. The methods are get_length (), get_width (), get_colour() and find_area(). Create two objects of Rectangle and compare their area and colour. If the area and colour both are the same for the objects then display "Matching Rectangles", otherwise display "Non-matching Rectangle"

```
import java.util.*;

class Rectangle
{
                private double l,w,a;
                private String c;

                void accept()
                {
                                Scanner sc = new Scanner(System.in);
                                System.out.println("enter length and width");
                                l =  sc.nextDouble();
                                w =  sc.nextDouble();
                                System.out.println("enter Colour");
                                c = sc.next();
                }
                double get_length()
                {
                                return l;
                }
                double get_width()
                {
                                return w;
                }
                double find_area()
                {
                                a = l*w;
                                return a;
                }
                String get_colour()
                {
```

```
                                        return c;
                                }
}

class RectangleMatchExample
{
                public static void main(String ar[])
                {
                                Rectangle x = new Rectangle();
                                Rectangle y = new Rectangle();
                                x.accept();
                                y.accept();
                                double a1,a2;
                                String c1,c2;
                                a1 = x.find_area();
                                a2 = y.find_area();
                                c1 = x.get_colour();
                                c2 = y.get_colour();
                                if(a1 == a2 && c1.equals(c2))
                                {
                                                System.out.println("Matching Rectangle");
                                }
                                else
                                {
                                                System.out.println("NonMatching Rectangle");
                                }
                }
}
```

4

4. Write a program in JAVA to demonstrate the method overloading

```
import java.util.*;

class Addition
{
                void add(int a,int b)
                {
                                int c = a+b;
                                System.out.println("Addition = " + c);
                }
                void add(float a,float b)
                {
                                float c = a+b;
                                System.out.println("Addition  = " + c);
```

```
        }
        void add(int a,int b,int c)
        {
                int d = a+b+c;
                System.out.println("Addition = " + d);
        }
}

class Q4
{
        public static void main(String arp[])
        {
                int a,b,c;
                Scanner sc = new Scanner(System.in);
                Addition x = new Addition();
                float p,q;
                System.out.println("enter 2 float nos");
                p = sc.nextFloat();
                q = sc.nextFloat();
                x.add(p,q);
                System.out.println("enter 2 nos");
                a = sc.nextInt();
                b = sc.nextInt();
                x.add(a,b);
                System.out.println("enter 3 nos");
                a = sc.nextInt();
                b = sc.nextInt();
                c = sc.nextInt();
                x.add(a,b,c);
        }
}
```

5	**5.** Write Programs in Java to sort list of names in alphabetical order. **import java.util.*;** **class Q5**

```
{
        public static void main(String ar[])
        {
                int n,i;
                Scanner sc = new Scanner(System.in);
                System.out.println("enter n");
                n = sc.nextInt();
                String a[] =new String[n];

                System.out.println("enter names");
                for(i=0;i<n;i++)
                {
                        a[i] = sc.next();
                }

                System.out.println("Display all names before ascending");

                for(String p: a)
                {
                        System.out.print(p+"    ");
                }

                System.out.println();

                Arrays.sort(a);

                System.out.println("Display all names After ascending");

                for(String p: a)
                {
                        System.out.print(p+"    ");
                }

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

6. Write a java program to add two matrices and store it in third matrix.

6

```
import java.util.*;

class Q6
{
        public static void main(String ar[])
        {
                int m,n,i,j;

                Scanner sc = new Scanner(System.in);
```

```
System.out.println("enter m and n");
m = sc.nextInt();
n= sc.nextInt();

int a[][] = new int[m][n];
int b[][] = new int[m][n];
int c[][] = new int[m][n];

System.out.println("enter First Matrix");
for(i=0;i<m;i++)
{
        for(j=0;j<n;j++)
        {
                a[i][j] = sc.nextInt();
        }
}

System.out.println("enter Second Matrix");
for(i=0;i<m;i++)
{
        for(j=0;j<n;j++)
        {
                b[i][j] = sc.nextInt();
        }
}

System.out.println("Display first matrix");

for(i=0;i<m;i++)
{
        for(j=0;j<n;j++)
        {
                System.out.print(a[i][j]+"   ");
        }
        System.out.println();
}

System.out.println("Display second matrix");

for(i=0;i<m;i++)
{
        for(j=0;j<n;j++)
        {
                System.out.print(b[i][j]+"   ");
        }
        System.out.println();
}

for(i=0;i<m;i++)
{
```

```
                                        for(j=0;j<n;j++)
                                        {
                                                c[i][j] =  a[i][j] + b[i][j];
                                        }
                                }

                                System.out.println("Display Addition matrix");

                                for(i=0;i<m;i++)
                                {
                                        for(j=0;j<n;j++)
                                        {
                                                System.out.print(c[i][j]+"   ");
                                        }
                                        System.out.println();
                                }

                        }
}
```

7. Write a program in Java to create a player class. Inherit the classes Cricket_player, Football_player and Hockey_player from player class.

7

```
import java.util.*;

class Player
{
        protected int pid;
        protected String pname;

        void accept()
        {
                Scanner sc = new Scanner(System.in);
                System.out.println("enter player details");
                pid = sc.nextInt();
                pname = sc.next();
        }

        void display()
        {

                        System.out.print(pid+"  "+pname+"  ");
        }

}

class Cricket extends Player
{
                private int innings,runs;

                void accept()
                {
```

```
                                        super.accept();
                                        Scanner sc = new Scanner(System.in);
                                        System.out.println("enter cricket details");
                                        innings = sc.nextInt();
                                        runs = sc.nextInt();
                        }
                        void display()
                        {
                                super.display();
                                System.out.println(innings  + "   "+runs);
                        }
}

class Football extends Player
{
                        private int goals,fouls;

                        void accept()
                        {
                                        super.accept();
                                        Scanner sc = new Scanner(System.in);
                                        System.out.println("enter football details");
                                        goals = sc.nextInt();
                                        fouls = sc.nextInt();
                        }
                        void display()
                        {
                                super.display();
                                System.out.println(goals  + "   "+fouls);
                        }
}

class Hockey extends Player
{
                        private int goals,fouls;

                        void accept()
                        {
                                        super.accept();
                                        Scanner sc = new Scanner(System.in);
                                        System.out.println("enter Hockey details");
                                        goals = sc.nextInt();
                                        fouls = sc.nextInt();
                        }
                        void display()
                        {
                                super.display();
                                System.out.println(goals  + "   "+fouls);
                        }
}
class Q7
{
                public static void main(String ar[])
                {
                                Cricket x = new Cricket();
                                x.accept();
```

```
                                        x.display();

                                        Football y = new Football();
                                        y.accept();
                                        y.display();

                                        Hockey z = new Hockey();
                                        z.accept();
                                        z.display();
                        }
}
```

8. Write a JAVA program which implements INTERFACE.

8

```
import java.util.*;
interface Shape
{
                        void area();
}

class Circle implements Shape
{
                private final float PI = 3.14f;
                private float r;

                Circle(float p)
                {
                                r = p;
                }

                public void area()
                {
                                float a = PI*r*r;
                                System.out.println("Area of Cricle = " + a);
                }

}

class Q8
{
                        public static void main(String arp[])
                        {
                                        float r;
                                        Scanner sc = new Scanner(System.in);
                                        System.out.println("enter radius");
                                        r = sc.nextFloat();

                                        Shape x = new Circle(r);
                                        x.area();
                        }
}
```

9	**9.** Write a JAVA program which use try and catch for exception handling. **import java.util.*;** **class Q9** **{** **public static void main(String arp[])** **{** **int a,b;** **float c;** **Scanner sc = new Scanner(System.in);** **System.out.println("enter 2 nos");** **a = sc.nextInt();** **b = sc.nextInt();** **try** **{** **c = a/b;** **System.out.println("Division = " + c);** **}** **catch(ArithmeticException e)** **{** **System.out.println(e);** **}** **}** **}**

10	**10.** Write a Java program to draw oval, rectangle, line, text using graphics class
	
	import java.applet.*;
	import java.awt.*;
	
	/* <applet code = "Q10" width = "600" height="900"></applet>*/
	public class Q10 extends Applet
	{
	public void paint(Graphics g)
	{
	g.setColor(Color.red);
	g.fillOval(100,100,200,200);
	g.fillRect(100,350,400,200);
	g.drawLine(300,600,100,750);
	Font f = new Font("verdana",Font.BOLD,25);
	g.setFont(f);
	g.drawString("Hello World",200,800);
	}
	}

11	

11. Write a java program in which data is read from one file and should be written in another file line by line.

```
import java.io.*;

class CopyExample
{
        public static void main(String ar[])
        {
                try
                {
                        File x = new File("sample.txt");
                        if(x.exists())
                        {
                                FileReader fr = new FileReader("sample.txt");
                                BufferedReader br = new BufferedReader(fr);
                                FileWriter fw = new FileWriter("test.txt");
                                String s;
                                while((s = br.readLine())!=null)
                                {
                                        fw.write(s);
                                        fw.write("\n");
                                }

                                br.close();
                                fr.close();
                                fw.close();
                        }
                        else
                        {
                                System.out.println("File not found");
                        }


                }
                catch(IOException e)
                {
                        System.out.println(e);
                }
        }
}
```

12. Write a Java Program to sort the elements of an array in ascending order

12

```
import java.util.*;

class Q12
{
        public static void main(String arp[])
        {
                int n,i;
                Scanner sc = new Scanner(System.in);
                System.out.println("enter n");
                n = sc.nextInt();
```

```
                                        int x[] = new int[n];

                                        System.out.println("enter elements");
                                        for(i=0;i<n;i++)
                                        {
                                                        x[i] = sc.nextInt();
                                        }

                                        System.out.println("Display before sort");

                                        for(int p:x)
                                        {
                                                        System.out.print(p+ "    ");
                                        }

                                        System.out.println();
                                        Arrays.sort(x);

                                        System.out.println("Display After sort");

                                        for(int p:x)
                                        {
                                                        System.out.print(p+ "    ");
                                        }

                        }
}
```

13. Write a Java Program to Calculate and Display Area of a Circle?

13

```
import java.util.*;
public class Circle
{
   public static void main(String[] args)
   {
      int r;
      double pi = 3.14, area;
      Scanner s = new Scanner(System.in);
      System.out.print("Enter radius of circle:");
      r = s.nextInt();
      area = pi * r * r;
      System.out.println("Area of circle:"+area);
   }
}
```

14. Write a java program for “Array out of bound” exception handling using try catch and finally block

14

```
class Q14
{
                        public static  void main(String a[])
                        {
```

```
                                        try
                                        {
                                                System.out.println(a[4]);
                                        }
                                        catch(ArrayIndexOutOfBoundsException e)
                                        {
                                                System.out.println(e);
                                        }
                                        finally
                                        {
                                                System.out.println("finally Block");
                                        }
                        }

}
```

15. Write a java program for method overloading and overriding

15

```
import java.util.*;

class Student
{
  protected int rno;
  protected String name;
  protected String course;

  void accept()
 {
  Scanner sc = new Scanner(System.in);
  System.out.println("enter student details");
  rno=sc.nextInt();
  name=sc.next();
  course=sc.next();
 }
  void display()
 {
  System.out.println(rno +" "+ name +" "+ course);
 }
}

class Marks extends Student
{
   private int m1,m2,m3;
   private float total,per;
   void accept()
   {
   super.accept();
   Scanner sc= new Scanner(System.in);
   System.out.println("enter marks");
   m1=sc.nextInt();
```

```
  m2=sc.nextInt();
  m3=sc.nextInt();
 }
  void calculate()
  {
  total=m1+m2+m3;
  per=(float)total/3.0f;
 }
  void display()
  {
  super.display();

  System.out.println(total +" "+ per);
 }
}

class Q15
{
  public static void main(String args[])
  {
  int n,i;
  Scanner sc = new Scanner(System.in);
  System.out.println("enter n");
  n = sc.nextInt();
  Marks x[] = new Marks[n];
  for(i=0;i<n;i++)
  {
  x[i] = new Marks();
  x[i].accept();
  x[i].calculate();
 }
  System.out.println("display student details");
  for(i=0;i<n;i++)
  {
  x[i].display();
 }
 }
}
```

16. Write a Java program to find factorial of number.

16

```
import java.util.*;

class Factorial
{
        public static void main(String ar[])
        {
                int no,i,f=1;
                Scanner sc = new Scanner(System.in);
                System.out.println("enter no");
                no = sc.nextInt();
                for(i=1;i<=no;i++)
                {
```

```
                                        f = f* i;
                        }
                        System.out.println("Factorial = " + f);
                }
}
```

17. Write a Java program to display first 50 prime numbers.

17

```
class PrimeExample
{
        public static void main(String arp[])
        {
                int no=2,c = 0,i,flag;

                while(c<=50)
                {
                        flag = 0;
                        for(i=2;i<no;i++)
                        {
                                if(no%i  == 0)
                                {
                                        flag = 1;
                                        break;
                                }

                        }
                        if(flag == 0)
                        {
                                System.out.print(no+ "     " );
                                c++;
                        }

                        no++;
                }
        }
}
```

18. Write a program in JAVA to demonstrate the constructor overloading

18

```
import java.util.*;
class Student
{
        private int rno;
        private String sname;
        private float per;

        Student()
        {
                rno = 0;
                sname = "";
                per = 0.0f;
```

```
        }
        Student(int a,String b,float c)
        {
                rno = a;
                sname = b;
                per = c;
        }
        void display()
        {
                System.out.println(rno + "   "+ sname+"  "+per);
        }
}

class Q18
{
        public static void main(String arp[])
        {
                Student x = new Student();
                x.display();
                Scanner sc = new Scanner(System.in);
                int a;
                String b;
                float c;
                System.out.println("enter student details");
                a = sc.nextInt();
                b = sc.next();
                c = sc.nextFloat();
                Student y = new Student(a,b,c);
                y.display();
        }
}
```

19 **19.** Write a Java Program to sort the elements of an array in descending order

```
import java.util.*;

class Q19
{
        public static void main(String arp[])
        {
                int n,i,j,t;
                Scanner sc = new Scanner(System.in);
                System.out.println("enter n");
                n = sc.nextInt();

                int x[] = new int[n];

                System.out.println("enter elements");
                for(i=0;i<n;i++)
                {
                        x[i] = sc.nextInt();
                }
```

```
                                        System.out.println("Display before descending sort");

                                        for(int p:x)
                                        {
                                                        System.out.print(p+ "    ");
                                        }

                                        System.out.println();
                                        for(i=0;i<=n-2;i++)
                                        {
                                                        for(j=i+1;j<=n-1;j++)
                                                        {
                                                                        if(x[i]<x[j])
                                                                        {
                                                                                        t = x[i];
                                                                                        x[i]  =x[j];
                                                                                        x[j] = t;
                                                                        }
                                                        }
                                        }
                                        System.out.println("Display After descending sort");

                                        for(int p:x)
                                        {
                                                        System.out.print(p+ "    ");
                                        }

                        }
}
```