Programming in Java Lab. (18UCA6P)

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1.MATH FUNCTIONS

```
import java.io.*;
class mathfun
{
 public static void main(String args[])throws IOException
{
 int a,b;
 float f;
 System.out.println("enter a,b,f value");
 DataInputStream in=new DataInputStream (System.in);
 a=Integer.parseInt(in.readLine());
 b=Integer.parseInt(in.readLine());
 f=Float.parseFloat(in.readLine());
 System.out.println("Sqr root value:"+Math.sqrt(a));
 System.out.println("Absolute value:"+Math.abs(a));
 System.out.println("Ceil value:"+Math.ceil(f));
 System.out.println("Round value:"+Math.round(f));
 System.out.println("Minimum value:"+Math.min(a,b));
 System.out.println("Maximum value:"+Math.max(a,b));
 System.out.println("Power value:"+Math.pow(a,b));
 }
}
```

2.OPERATORS

```
import java.io.*;
class operators
{
 public static void main(String args[])throws IOException
{
 DataInputStream dis=new DataInputStream (System.in);
 System.out.println("enter the a value:");
 int a=Integer.parseInt(dis.readLine());
 System.out.println("enter the b value:");
 int b=Integer.parseInt(dis.readLine());
 System.out.println("a:"+a);
 System.out.println("b:"+b);
 System.out.println("a+b:"+(a+b));
 System.out.println("a-b:"+(a-b));
 System.out.println("a*b:"+(a*b));
 System.out.println("a/b:"+(a/b));
 System.out.println("a%b:"+(a%b));
 System.out.println("a<b:"+(a<b));
 System.out.println("a>b:"+(a>b));
 System.out.println("a<=b:"+(a<=b));
 System.out.println("a>=b:"+(a>=b));
 System.out.println("a!=b:"+(a!=b));
 System.out.println("a==b:"+(a==b));
 System.out.println("a++:"+(a++));
 System.out.println("++a:"+(++a));
 }
}
```

3.TYPE CASTING

```
class typecasting
{
 public static void main(String args[])
{
 System.out.println("*****");
 System.out.println("variables  created");
 System.out.println("*****");
 char c='X';
 byte b=50;
 short s=1996;
 int i=123456789;
 long l=12345678998765L;
 float f1=3.142f;
 float f2=1.2e-5f;
 double d=0.00000987;
 System.out.println("c:"+c);
 System.out.println("b:"+b);
 System.out.println("s:"+s);
 System.out.println("i:"+i);
 System.out.println("l:"+l);
 System.out.println("f1:"+f1);
 System.out.println("f2:"+f2);
 System.out.println("d:"+d);
 System.out.println("*****");
 System.out.println("Types  converted");
 System.out.println("*****");
 short s1=(short)b;
 short s2=(short)i;
 float n1=(float)l;
 int m1=(int)f1;
 System.out.println("(short)b="+s1);
 System.out.println("(short)i="+i);
 System.out.println("(float)l="+n1);
 System.out.println("(int)f1="+m1);
 }
}
```

4.COMMAND LINE ARGUMENTS

```
class   arguments
{
 public static void main(String args[])
{
 int count,i=0;
 String string;
 count =args.length;
 System.out.println("Number of arguments ="+count);
 while(i<count)
{
 string =args[i];
 i=i+1;
 System.out.println(i+":"+"java is "  +string+"!");
  }
 }
}
```

5.STRING HANDLING

```
class  mystring
{
 String s1="Malayalam";
 String s2="Mayam";
 String s3="very good";
void length()
{
 System.out.println("the length of the String is :"+s1.length());
}
void concat()
{
 System.out.println("the concanatation of the String is
"+s1.concat(s2));
}
void chat()
{
 System.out.println("the 3 charactor of the String is :"+s1.charAt(3));
}
void lcase()
{
 System.out.println("the lower case of String is :"+s1.toLowerCase());
}
void ucase()
{
System.out.println("the uppor case of String is :"+s1.toUpperCase());
}
void swith()
{
System.out.println("If string s1 is start
with'ma':"+s2.startsWith("Ma"));
}
void ewith()
{
```

```
System.out.println("If string s2 is end with
'Am':"+s2.endsWith("Am"));
}
void substring()
{
System.out.println("The substring of s2 is:"+s2.substring(0,3));
}
}
class mystring1
{
 public static void main(String args [])
{
 mystring ob1=new mystring();
 System.out.println("string1:"+ob1.s1);
 System.out.println("string2:"+ob1.s2);
 System.out.println("string3:"+ob1.s3);
 ob1.length();
 ob1.concat();
 ob1.chat();
 ob1.lcase();
 ob1.ucase();
 ob1.swith();
 ob1.ewith();
 ob1.substring();
}
}
```

6.CLASS AND OBJECTS

```
import java.io.*;
class employee
{
 int eno;
 String ename;
 double bp,hra,da,pf,lic,gp,np;
 public void getdata()throws IOException
{
 DataInputStream dis=new DataInputStream(System.in);
 System.out.println("enter the employee number:");
 eno=Integer.parseInt (dis.readLine());
 System.out.println("enter the employee name:");
 ename=dis.readLine();
 System.out.println("enter the basic pay:");
 bp=Integer.parseInt(dis.readLine());
}
 public void calc()throws IOException
{
 hra=bp*0.07;
 da=bp*0.05;
 lic=bp*0.06;
 pf=bp*0.05;
 gp=bp+hra+da;
 np=gp-(pf=lic);
}
 public void show()throws IOException
{
 System.out.println("Employee No:"+eno);
 System.out.println("Employee Name:"+ename);
 System.out.println("Employee Basic pay:"+bp);
 System.out.println("HRA:"+hra);
 System.out.println("Da:"+da);
 System.out.println("LIC:"+lic);
 System.out.println("PF:"+pf);
 System.out.println("Gross pay:"+gp);
 System.out.println("Net pay:"+np);
}
}
```

```
class empinfo
{
 public static void main(String args[])throws IOException
{
 employee emp1=new employee();
 emp1.getdata();
 emp1.calc();
 emp1.show();
}
}
```

7.CONSTRUCTOR

```
import java.io.*;
class telephone1
{
 float servicetax,rentalcharges;
 int tele_no;
 String cust_name;
 String cust_address;
 int no_calls;
 float amt;
 telephone1(float x,float y)
{
 System.out.println("-------------");
 System.out.println("TELEPHONE DEPARTMENT");
 rentalcharges=x;
 servicetax=y;
 System.out.println("Rental charges:"+ rentalcharges);
 System.out.println("Service tax:"+ servicetax);
}
 void getval() throws IOException
{
 System.out.println("-------------");
 DataInputStream str=new DataInputStream (System.in);
 System.out.println("Enter the telephone number:");
 tele_no=Integer.parseInt(str.readLine());
 System.out.println("Enter the customer name:");
 cust_name=str.readLine();
 System.out.println("Enter the customer address:");
 cust_address=str.readLine();
 System.out.println("Enter the number of calls:");
 no_calls=Integer.parseInt(str.readLine());
}
```

```
 void putval()
{
 System.out.println("\n\n\n");
 System.out.println("-----------");
 System.out.println("Telephone number:"+tele_no);
 System.out.println("customer name:"+cust_name);
 System.out.println("customer address:"+cust_address);
 System.out.println("-------------");
 System.out.println("Number of calls:"+no_calls);
   amt=(float)no_calls*1.0f+120+10;
 System.out.println("payable Amount is :"+amt);
    amt=(float)no_calls*1.1f+120+10;
 System.out.println("-------------");
 System.out.println("\n If paid after to days you have to pay is:"+amt);
 System.out.println("-------------");
}
}
 class telephonebill
{
 public static void main(String args[])throws IOException
 {
  telephone1 ob1=new telephone1(120.0f,10.0f);
  ob1.getval();
  ob1.putval();
}
}
```

8.METHOD OVERLOADING

```
import java.io.*;
 class area
{
 void area(int l,int b)
{
 int ar=l*b;
 System.out.println("Area of rectangle="+ar);
}
 void area(double r, double h)
{
 double ar=(3.14*r*r*h);
 System.out.println("Area of circle="+ar);
 }
 void area(int a)
{
 int ar=(a*a);
 System.out.println("Area of square="+ar);
 }
}
 class area1
{
 public static void main(String args[])throws IOException
{
 area a=new area();
 DataInputStream dis=new DataInputStream(System.in);
 System.out.println("Enter the length:");
 int ll=Integer.parseInt(dis.readLine());
 System.out.println("Enter the breadth:");
 int bb=Integer.parseInt(dis.readLine());
a.area(ll,bb);
 System.out.println("Enter the radius:");
 double rr=Double.parseDouble(dis.readLine());
 System.out.println("Enter the height:");
 double hh=Double.parseDouble(dis.readLine());
 a.area(rr,hh);
 System.out.println("Enter the length of one side:");
```

```
 int aa=Integer.parseInt(dis.readLine());
 a.area(aa);
}
}
```

9.SINGLE INHERITANCE

```
import java.io.*;
class student
{
int sno;
String sname,maj;
int m1,m2,m3;
int tot;float avg;String yos;
void getdata()throws IOException
{
DataInputStream dis=new DataInputStream(System.in);
System.out.println("enter the student number:");
sno=Integer.parseInt(dis.readLine());
System.out.println("enter the student name:");
sname=dis.readLine();
System.out.println("enter the major name:");
maj=dis.readLine();
System.out.println("enter the year of study:");
yos=dis.readLine();
System.out.println("enter the Mark1:");
m1=Integer.parseInt(dis.readLine());
System.out.println("enter the Mark2:");
m2=Integer.parseInt(dis.readLine());
System.out.println("enter the Mark3:");
m3=Integer.parseInt(dis.readLine());
}
}
class student1 extends student
{
String res;
void cal()
{
tot=m1+m2+m3;
avg=tot/3;
if((m1>=30)&&(m2>30)&&(m3>30))
{
res="pass";
}
```

```
else
{
res="fail";
}
}
void display()
{
System.out.println("---------------------------------------------------------------");
System.out.println("        STUDENT DETAILS                    ");
System.out.println("---------------------------------------------------------------");
System.out.println("Student Number    :"                          +sno);
System.out.println("Student Name       :"                         +sname);
System.out.println("Major                :"                       +maj);
System.out.println("Mark1                :"                       +m1);
System.out.println("Mark2                :"                       +m2);
System.out.println("Mark3                :"                       +m3);
System.out.println("Total                :"                       +tot);
System.out.println("Average              :"                       +avg);
System.out.println("Result               :"                       +res);
}
}
class inheritance
{
public static void main(String args[])throws IOException
{
student1 s1=new student1();
s1.getdata();
s1.cal();
s1.display();
}
}
```

10.MULTIPLE INHERITANCE

```
class student
{
 int rollnumber;
 void getnumber(int n)
 {
  rollnumber=n;
 }
 void putnumber()
 {
  System.out.println("Roll No:"+rollnumber);
 }
}
class Test extends student
{
 float part1,part2;
 void getmark(float m1,float m2)
 {
  part1=m1;
  part2=m2;
 }
 void putmark()
 {
  System.out.println("Mark obtained");
  System.out.println("Part1="+part1);
  System.out.println("Part2="+part2);
 }
}
interface Sports
{
 float sportWt=6.0f;
 void putWt();
}
class Results extends Test implements Sports
```

```
{
 float total;
 public void putWt()
 {
  System.out.println("Sports Wt="+sportWt);
 }
 void display()
 {
  total=part1+part2+sportWt;
  putnumber();
  putmark();
  putWt();
  System.out.println("Total score="+total);
 }
}
class Hybrid
{
 public static void main(String args[])
 {
  Results student1=new Results();
  student1.getnumber(1234);
  student1.getmark(27.5f,33.0f);
  student1.display();
 }
}
```

11.MULTILEVEL INHERITANCE

```
import java.io.*;
class Student
{
private int rollno;
private String name;
DataInputStream dis=new DataInputStream(System.in);
public void getrollno()
{
try
{
System.out.println("Enter rollno ");
rollno=Integer.parseInt(dis.readLine());
System.out.println("Enter name ");
name=dis.readLine();
}
catch(Exception e){ }
}
void putrollno()
{
System.out.println("Roll No ="+rollno);
System.out.println("Name ="+name);
}
}
class Marks extends Student
{
protected int m1,m2,m3,tot;
private float avg;
void getmarks()
```

```
{
try
{
System.out.println("Enter marks :");
m1=Integer.parseInt(dis.readLine());
m2=Integer.parseInt(dis.readLine());
m3=Integer.parseInt(dis.readLine());
tot=m1+m2+m3;
avg=tot/3f;
}
catch(Exception e) { }
}
void putmarks()
{
System.out.println("Mark1:"+m1);
System.out.println("Mark2:"+m2);
System.out.println("Mark3:"+m3);
System.out.println("Total marks :" +tot);
System.out.println("Average:"+avg);
}
}
class Result extends Marks
{
private String res;
void getresult()
{
if((m1>=50)&&(m2>=50)&&(m3>=50))
res="pass";
else
res="fail";
}
```

```
void compute_display()
{
System.out.println("Result :" +res);
}
}
class MultilevelDemo
{
public static void main(String args[])
{
Result r=new Result();
r.getrollno();
r.getmarks();
r.getresult();
r.putrollno();
r.putmarks();
r.compute_display();
}
}
```

12.Exception Handling

```
import java.io.*;
class Exception
{
public static void main(String args[])throws IOException
{
DataInputStream din= new DataInputStream(System.in);
int a,b,c;
try
{
a=args.length;
System.out.println("enter b value :");
b= Integer.parseInt(din.readLine());
c=b/a;
System.out.println("a="+a);
System.out.println("b=" +b);
System.out.println(" b/a =" +c);
int d[] = new int[a-2];
d[42]=99;
}
catch(ArithmeticException e3)
{
System.out.println(e3);
}
catch(NegativeArraySizeException e2)
{
System.out.println(e2);
}
catch(ArrayIndexOutOfBoundsException e1)
{
System.out.println(e1);
}
catch(NumberFormatException e)
{
```

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

13.Multithreading

```
import java.io.*;
class A extends Thread
{
public void run()
{

for(int i = 1; i <= 5; i++)
{
if(i==1) yield();
System.out.println("\tFrom Thread A: i= " + i);
}
System.out.println("Exit from A");
}
}
class B extends Thread
{
public void run()
{

for(int j = 1; j <= 5; j++)
{
System.out.println("\tFrom Thread B: j= " + j);
if(j==3) stop();
}
System.out.println("Exit from B");
}
}
class C extends Thread
{
public void run()
{

for(int k = 1; k <= 5; k++)
{
```

```
System.out.println("\tFrom Thread C: k= " + k);
if(k==1)
try
{
sleep(1000);
}
catch(InterruptedException ie)
{
}
}
System.out.println("Exit from C");
}
}

public class ThreadMethodsDemo
{
public static void main(String args[])
{
A threadA = new A();
B threadB = new B();
C threadC = new C();
System.out.println("Started Thread A");
threadA.start();
System.out.println("Started Thread B");
threadB.start();
System.out.println("Started Thread C");
threadC.start();
System.out.println("End of main thread");
}
}
```

14.APPLET FOR DRAWING A HUMAN FACE

```
import java.awt.*;
import java.applet.*;
 public class appl extends Applet
{
 public void paint(Graphics g)
{
 g.drawOval(40,40,120,150);
 g.drawOval(57,75,30,20);
 g.drawOval(110,75,30,20);
 g.fillOval(68,81,10,10);
 g.fillOval(121,81,10,10);
 g.drawOval(85,100,30,30);
 g.fillArc(60,125,80,40,180,180);
 g.drawOval(25,92,15,30);
 g.drawOval(160,92,15,30);
 }
}
```

appl.html

```
 /*<applet code="appl.class"Width=250 height=200></applet>*/
```

15.AWT Choice Control

```
import java.awt.*;
import java.awt.event.*;
import java.applet.*;
public class ChoiceDemo extends Applet implements ItemListener
{
        Choice os,browser;
        String msg="";
        public void init()
        {
                os=new Choice();
                browser=new Choice();
                os.add("Windows 8/7");
                os.add("Windows Vista");
              os.add("Windows XP");
                os.add("Solaris");
                os.add("Mac OS");
                browser.add("Internet Explorer");
                browser.add("Firefox");
                browser.add("Opera");
              browser.add("Google Chrome");
                add(os);
                add(browser);
                os.addItemListener(this);
                browser.addItemListener(this);
        }
        public void itemStateChanged(ItemEvent ie)
        {
                repaint();
        }
        public void paint(Graphics g){
                msg="Current OS: ";
                msg+=os.getSelectedItem();
                g.drawString(msg,6,120);
```

```
                msg="Current Browser: ";
                msg+=browser.getSelectedItem();
                g.drawString(msg,6,140);
        }
}

//<applet code="ChoiceDemo.class" width=300
height=180></applet>
```