Assignment 3 (Test 2)

Aim: Create a Calculator Application (Include all the concepts in a single program)

Program:

```java
import java.util.*;

import Div_test2.*;

enum operators{

        SUB, MULTIPLY

}

class Operations{

        float result;

        public boolean Compare(float x, float y) {

                Boolean bool = x>y;

                return bool;

        }

        public float ADD(float x, float y) {

                result = x+y;

                return result;

        }

        public float MOD(float x, float y) {

                result = x%y;

                return result;

        }

        public void display(String x) {

                System.out.println("\n"+x+" Operation result: "+result+"\n");

        }


}


class Relational extends Operations {

        float p,q;
```

```java
        Boolean bool1;
        Relational(float x, float y){
                p=x;
                q=y;
        }
        public void display() {
                bool1=super.Compare(p,q);
                if(bool1==true) {
                        System.out.println(p+" is greater than "+q);
                }
                if(bool1==false) {
                        System.out.println(p+" is less than "+q);
                }
                if(bool1==null) {
                        System.out.println(p+" is equal to "+q);
                }
        }
}
abstract class Logical{
        float p,q,o;
        Logical(float x, float y, float z){
                p=x;
                q=y;
                o=z;
        }
        abstract void logic_display();
}
class AND extends Logical{
        AND(float x, float y, float z) {
                super(x, y, z);
```

```java
        }
        public void logic_display() {
                if(o>p && o>q) {
                        System.out.println(o+" is greater than "+p+" and "+q);
                }
                if(p>q && p>o) {
                        System.out.println(p+" is greater than "+o+" and "+q);
                }
                if(q>o && q>p) {
                        System.out.println(q+" is greater than "+p+" and "+o);
                }
        }
}
class OR extends Logical{
        OR(float x, float y, float z) {
                super(x, y, z);
        }
        public void logic_display() {
                if(p>q || o>q) {
                        System.out.println(q+" is less than "+(p+o));
                }
                if(p>o || q>o) {
                        System.out.println(o+" is less than "+(p+q));
                }
                if(q>p || o>p) {
                        System.out.println(p+" is less than "+(q+o));
                }
        }
}
interface bitwise1{
```

```java
        int bit_operation(int x, int y);
}
interface bitwise2{
        void bit_display(int x, int y);
}
class bitAND implements bitwise1,bitwise2{
        public int bit_operation(int x, int y){
                int r = x&y;
                return r;
        }
        public void bit_display(int x, int y){
                System.out.println("Bitwise AND result: "+bit_operation(x, y));
        }
}
class bitOR implements bitwise1,bitwise2{
        public int bit_operation(int x, int y){
                int r = x|y;
                return r;
        }
        public void bit_display(int x, int y){
                System.out.println("Bitwise OR result: "+bit_operation(x, y));
        }
}
class bitXOR implements bitwise1,bitwise2{
        public int bit_operation(int x, int y){
                int r = x^y;
                return r;
        }
        public void bit_display(int x, int y){
                System.out.println("Bitwise XOR result: "+bit_operation(x, y));
```

```java
        }
}
public class Test2_Assignment {

        static operators c;

        Test2_Assignment(operators c){

                this.c= c;

        }

        public void display(float x, float y) {

                switch(c) {

                case SUB:

                        System.out.println("\nSubtraction result: "+ (x-y));

                        break;

                case MULTIPLY:

                        System.out.println("\nMultiplication result: "+ (x*y));

                        break;

                }

        }


        public static void main(String[] args) {

                Scanner s = new Scanner(System.in);

                System.out.println("----------------*** Advanced Calculator Program***-----
----------------");

                final float a = 10;               // final variable

                float b = 0,v1 = 0;

                Operations obj1 = new Operations();   //object for Operations class

                div_display obj3 = new div_display(); //object for Div_test2 class


                while(true) {

                        System.out.println("\nSelect from the following for input values:-
\n1.Take single input and use final variable "
```

```java
                                        + "\n2.Take two new inputs\n3.Exit\t  4.Move to
options");
                        int ch2 = s.nextInt();
                        //if statements for input options
                        if(ch2==1) {
                                System.out.print("Enter a value: ");
                                b = s.nextFloat();
                        }
                        if (ch2==2) {
                                System.out.println("Enter two value:- ");
                                System.out.print("Enter v1: ");
                                v1 = s.nextFloat();
                                System.out.print("Enter v2: ");
                                b = s.nextFloat();
                        }
                        if(ch2==3) {
                                break;
                        }
                        if(ch2==4) {
                                System.out.println();
                        }
                        //operation options
                        System.out.println("\nSelect from the following options:-
\n1.Addition\t2.Subtraction\n3.Multiplication\t4.Division"
                                        + "\n5.Modulous\n6.Logical Operations \n7.Bitwise
Operations \n8.Relational Operations\n9.Exit");
                        int ch1 = s.nextInt();


                        //if statements for operations options
                        if (ch1==1) {
                                if(ch2==1) {
```

```
                        obj1.ADD(a,b);

                        obj1.display("Addition");

                }

                if(ch2==2) {

                        obj1.ADD(v1,b);

                        obj1.display("Addition");

                }

        }

        if(ch1==2) {

                if(ch2==1) {

                Test2_Assignment obj2 = new
Test2_Assignment(c.valueOf("SUB"));

                        obj2.display(a, b);

                }

                if(ch2==2) {

                        Test2_Assignment obj2 = new
Test2_Assignment(c.valueOf("SUB"));

                                obj2.display(v1, b);

                }

        }

        if(ch1==3) {

                if(ch2==1) {

                        Test2_Assignment obj2 = new
Test2_Assignment(c.valueOf("MULTIPLY"));

                                obj2.display(a, b);

                }

                if(ch2==2) {

                                Test2_Assignment obj2 = new
Test2_Assignment(c.valueOf("MULTIPLY"));

                                obj2.display(v1, b);

                }

        }
```

```java
if(ch1==4) {
        if(ch2==1) {
                obj3.display(a,b);
        }
        if(ch2==2) {
                obj3.display(v1,b);
        }
}
if(ch1==5) {
        System.out.println("Enter values: ");
        Float A = s.nextFloat();
        Float B = s.nextFloat();
        obj1.MOD(A.floatValue(), B.floatValue());
        obj1.display("Mod");

}
if(ch1==6) {
        System.out.println("1.AND \t  2.OR");
        int ch3 = s.nextInt();
        System.out.println("Enter value for i: ");
        float i = s.nextFloat();
        if(ch3==1) {
                if(ch2==1) {
                        AND obj5 = new AND(a,b,i);
                        System.out.println("The greatest value is
returned as result.");
                        obj5.logic_display();
                }
                if(ch2==2) {
                        AND obj5 = new AND(v1,b,i);
```

```java
                                        System.out.println("The greatest value is
returned as result.");

                                        obj5.logic_display();
                                }
                        }
                        if(ch3==2) {
                                if(ch2==1) {
                                        OR obj6 = new OR(a,b,i);
                                        System.out.println("A value is certainly less
than the other.");

                                        obj6.logic_display();
                                }
                                if(ch2==2) {
                                        OR obj6 = new OR(v1,b,i);
                                        System.out.println("A value is certainly less
than the other.");

                                        obj6.logic_display();
                                }
                        }
                }
                if(ch1==7) {
                        System.out.println("Choose from the following bitwise
operations:-");
                        System.out.println("1.AND \t  2.OR \t  3.XOR");
                        int ch4 = s.nextInt();
                        if(ch4==1) {
                                if(ch2==1) {
                                        int a1 = (int)a;
                                        int b1 = (int)b;
                                        bitAND obj7 = new bitAND();
                                        obj7.bit_display(a1, b1);
                                }
```

```
        if(ch2==2) {

                int a1 = (int)v1;

                int b1 = (int)b;

                bitAND obj7 = new bitAND();

                obj7.bit_display(a1, b1);

        }

}

if(ch4==2) {

        if(ch2==1) {

                int a1 = (int)a;

                int b1 = (int)b;

                bitOR obj8 = new bitOR();

                obj8.bit_display(a1, b1);

        }

        if(ch2==2) {

                int a1 = (int)v1;

                int b1 = (int)b;

                bitOR obj8 = new bitOR();

                obj8.bit_display(a1, b1);

        }

}

if(ch4==3) {

        if(ch2==1) {

                int a1 = (int)a;

                int b1 = (int)b;

                bitXOR obj9 = new bitXOR();

                obj9.bit_display(a1, b1);

        }

        if(ch2==2) {

                int a1 = (int)v1;
```

```java
                              int b1 = (int)b;

                              bitXOR obj9 = new bitXOR();

                              obj9.bit_display(a1, b1);

                       }

                }

         }
         if(ch1==8) {

                System.out.println();

                if (ch2==1){

                       Relational obj4 = new Relational(a,b);

                       obj4.display();

                }
                if (ch2==2){

                       Relational obj4 = new Relational(v1,b);

                       obj4.display();

                }

         }
         if(ch1==9) {

                break;

         }

       }

   }


}
```

(Package imported)

```java
package Div_test2;

public class div_display {

     public void display(float x, float y) {
          try {
```

```java
                System.out.println("\nDivision Result: "+(x/y));
            }
            catch(Exception e) {
                System.out.println("Exception: "+e);
            }
        }

}
```

Output ss:

```
----------------*** Advanced Calculator Program***----------------------

Select from the following for input values:-
1.Take single input and use final variable
2.Take two new inputs
3.Exit    4.Move to options
1
Enter a value: 6

Select from the following options:-
1.Addition      2.Subtraction
3.Multiplication      4.Division
5.Modulous
6.Logical Operations
7.Bitwise Operations
8.Relational Operations
9.Exit
1

Addition Operation result: 16.0


Select from the following for input values:-
1.Take single input and use final variable
2.Take two new inputs
3.Exit    4.Move to options
2
Enter two value:-
Enter v1: 9
Enter v2: 3

Select from the following options:-
1.Addition      2.Subtraction
3.Multiplication      4.Division
5.Modulous
6.Logical Operations
7.Bitwise Operations
8.Relational Operations
9.Exit
2

Subtraction result: 6.0
```

```
Select from the following for input values:-
1.Take single input and use final variable
2.Take two new inputs
3.Exit    4.Move to options
1
Enter a value: 5

Select from the following options:-
1.Addition      2.Subtraction
3.Multiplication        4.Division
5.Modulous
6.Logical Operations
7.Bitwise Operations
8.Relational Operations
9.Exit
3

Multiplication result: 50.0

Select from the following for input values:-
1.Take single input and use final variable
2.Take two new inputs
3.Exit    4.Move to options
1
Enter a value: 0

Select from the following options:-
1.Addition      2.Subtraction
3.Multiplication        4.Division
5.Modulous
6.Logical Operations
7.Bitwise Operations
8.Relational Operations
9.Exit
4

Division Result: Infinity
```

```
Select from the following for input values:-
1.Take single input and use final variable
2.Take two new inputs
3.Exit    4.Move to options
4


Select from the following options:-
1.Addition      2.Subtraction
3.Multiplication      4.Division
5.Modulous
6.Logical Operations
7.Bitwise Operations
8.Relational Operations
9.Exit
5
Enter values:
8
5

Mod Operation result: 3.0


Select from the following for input values:-
1.Take single input and use final variable
2.Take two new inputs
3.Exit    4.Move to options
6

Select from the following options:-
1.Addition      2.Subtraction
3.Multiplication      4.Division
5.Modulous
6.Logical Operations
7.Bitwise Operations
8.Relational Operations
9.Exit
5
```

```
Enter values:
9
4

Mod Operation result: 1.0


Select from the following for input values:-
1.Take single input and use final variable
2.Take two new inputs
3.Exit    4.Move to options
2
Enter two value:-
Enter v1: 8
Enter v2: 6

Select from the following options:-
1.Addition       2.Subtraction
3.Multiplication          4.Division
5.Modulous
6.Logical Operations
7.Bitwise Operations
8.Relational Operations
9.Exit
6
1.AND      2.OR
1
Enter value for i:
5
The greatest value is returned as result.
8.0 is greater than 5.0 and 6.0

Select from the following for input values:-
1.Take single input and use final variable
2.Take two new inputs
3.Exit    4.Move to options
2
Enter two value:-
Enter v1: 8
Enter v2: 6
```

```
Select from the following options:-
1.Addition        2.Subtraction
3.Multiplication         4.Division
5.Modulous
6.Logical Operations
7.Bitwise Operations
8.Relational Operations
9.Exit
6
1.AND      2.OR
2
Enter value for i:
9
A value is certainly less than the other.
6.0 is less than 17.0
8.0 is less than 15.0

Select from the following for input values:-
1.Take single input and use final variable
2.Take two new inputs
3.Exit     4.Move to options
2
Enter two value:-
Enter v1: 8
Enter v2: 7

Select from the following options:-
1.Addition        2.Subtraction
3.Multiplication         4.Division
5.Modulous
6.Logical Operations
7.Bitwise Operations
8.Relational Operations
9.Exit
8

8.0 is greater than 7.0
```

```
Select from the following for input values:-
1.Take single input and use final variable
2.Take two new inputs
3.Exit    4.Move to options
1
Enter a value: 5

Select from the following options:-
1.Addition      2.Subtraction
3.Multiplication        4.Division
5.Modulous
6.Logical Operations
7.Bitwise Operations
8.Relational Operations
9.Exit
7
Choose from the following bitwise operations:-
1.AND     2.OR    3.XOR
1
Bitwise AND result: 0

Select from the following for input values:-
1.Take single input and use final variable
2.Take two new inputs
3.Exit    4.Move to options
2
Enter two value:-
Enter v1: 5
Enter v2: 6

Select from the following options:-
1.Addition      2.Subtraction
3.Multiplication        4.Division
5.Modulous
6.Logical Operations
7.Bitwise Operations
8.Relational Operations
9.Exit
7
```

```
Choose from the following bitwise operations:-
1.AND      2.OR     3.XOR
2
Bitwise OR result: 7

Select from the following for input values:-
1.Take single input and use final variable
2.Take two new inputs
3.Exit    4.Move to options
2
Enter two value:-
Enter v1: 5
Enter v2: 6

Select from the following options:-
1.Addition       2.Subtraction
3.Multiplication        4.Division
5.Modulous
6.Logical Operations
7.Bitwise Operations
8.Relational Operations
9.Exit
7
Choose from the following bitwise operations:-
1.AND      2.OR     3.XOR
3
Bitwise XOR result: 3

Select from the following for input values:-
1.Take single input and use final variable
2.Take two new inputs
3.Exit    4.Move to options
3
```