Experiment No. 6

Aim :

Write a generic class having a function addArray() to add all elements of the array and print the sum. Write a class to

test the generic class and its method.

Define a method isEqual() to test whether the sum of two arrays is the same or not.

Define a user defined exception class 'UnmatchedSum' which is thrown if two sums are not equal.

Use this class to throw an exception in the method isEqual() if the sums are different.

Code :

ArrayOp.java

```java
class ArrayOp <T extends Number>{

    T[] obj;

    ArrayOp(T[] obj){
        this.obj = obj;
    }
    double addArray(){
        double sum = 0;
        for(int i = 0; i < obj.length; i++){
            sum += obj[i].doubleValue();
        }
        return sum;
    }
    void isEqual(ArrayOp<? extends Number> obj2) throws UnmatchedSumException{
        double sum1 = this.addArray();
        double sum2 = obj2.addArray();
        if(sum1 != sum2){
            throw new UnmatchedSumException("Arrays Sum are not Equal!");
        }
            System.out.println("Sums are equal!");
    }
}
```

UnmatchedSumException.java

```java
class UnmatchedSumException extends Exception{
    UnmatchedSumException(String message){
        super(message);
    }
}
```

Date :- 01-07-2023
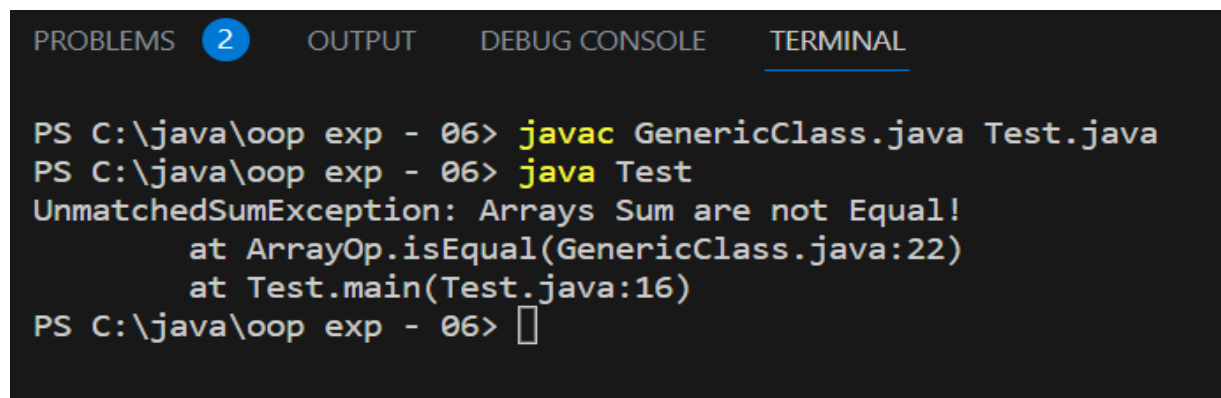
Test.java(main method)

```java
class Test{
    public static void main(String h[]){
        Integer[] a = {1, 2, 3, 4, 5};
        Integer[] b = {7, 6, 2, 1, 5};
        Double[] d = {1.0, 2.0, 3.0, 4.0, 5.0};
        Double[] c = {4.0, 6.0, 3.0, 4.0, 5.0};
        ArrayOp<Integer> array1 = new ArrayOp<Integer>(a);
        ArrayOp<Integer> array2 = new ArrayOp<Integer>(b);
        ArrayOp<Double> array3 = new ArrayOp<Double>(c);

        // System.out.println(array1.addArray());
        // System.out.println(array2.addArray());

        try{
            // System.out.println();
            // array1.isEqual(array2);
            // array1.isEqual(array1);
            // array1.isEqual(array3);
             array3.isEqual(array3);
        }
        catch(UnmatchedSumException e){
            e.printStackTrace();
        }
    }
}
```

Test Cases(output ScreenShot) :

array1 = {1, 2, 3, 4, 5};   array2 = {7, 6, 2, 1, 5};

```
PROBLEMS  2    OUTPUT    DEBUG CONSOLE    TERMINAL


PS C:\java\oop exp - 06> javac GenericClass.java Test.java
PS C:\java\oop exp - 06> java Test
UnmatchedSumException: Arrays Sum are not Equal!
        at ArrayOp.isEqual(GenericClass.java:22)
        at Test.main(Test.java:16)
PS C:\java\oop exp - 06> []
```

array1 = {1, 2, 3, 4, 5};   array2 = {1, 2, 3, 4, 5};

```
PROBLEMS  3     OUTPUT     DEBUG CONSOLE    TERMINAL

PS C:\java\oop exp - 06> javac GenericClass.java Test.java
PS C:\java\oop exp - 06> java Test
Sums are equal!
PS C:\java\oop exp - 06>
```

array1 = {1, 2, 3, 4,5};   array2 = {1.0,2.0, 3.0,4.0, 5.0};

```
PROBLEMS  3     OUTPUT     DEBUG CONSOLE    TERMINAL

PS C:\java\oop exp - 06> javac GenericClass.java Test.java
PS C:\java\oop exp - 06> java Test
Sums are equal!
PS C:\java\oop exp - 06>
```

array1 = {1, 2, 3, 4,5};   array2 = {4.0,6.0, 3.0,4.0, 5.0};

```
PROBLEMS  2     OUTPUT     DEBUG CONSOLE    TERMINAL

PS C:\java\oop exp - 06> javac GenericClass.java Test.java
PS C:\java\oop exp - 06> java Test
UnmatchedSumException: Arrays Sum are not Equal!
        at ArrayOp.isEqual(GenericClass.java:22)
        at Test.main(Test.java:16)
PS C:\java\oop exp - 06>
```

array1 = {4.0,6.0, 3.0,4.0, 5.0};   array2 = {4.0,6.0, 3.0,4.0, 5.0};

```
PROBLEMS  3     OUTPUT     DEBUG CONSOLE    TERMINAL

PS C:\java\oop exp - 06> javac GenericClass.java Test.java
PS C:\java\oop exp - 06> java Test
Sums are equal!
PS C:\java\oop exp - 06>
```