LAB 16: ITECalculator

If you do all lab in semester 1, your calculator should have wide variety of operators. Semester 2, in the lab, you will continue to add new features to your ITECalculator application. In this lab, you will add a new features that allow the user to perform set operation. So, you are required to do the following tasks:

A. Create a new SetTheory class in a new java file

B. In the SetTheory class, it should contain methods and three interfaces such as UnionHelper, IntersectionHelper, SetDifferenceHelper.

C. Create a method inside SetTheory class named it createSet. This method is allowed the user to create set.

D. In the UnionHelper interface, it consists two methods including:

   - unionOperation method that perform union operation on set that return the result as list of elements of set
   - display method that output the result of the from the unionOperation method

E. In the IntersectionHelper interface, it consists two methods including:

   - intersectionOperation method that perform intersection operation on set that return the result as list of elements of set
   - display method that output the result of the from the intersectionOperation method

F. In the SetDifferenceHelper interface, it consists two methods including:

- differenceOperation method that perform set difference operation on set that return the result as list of elements of set
- display method that output the result of the from the differenceOperation method

G. Create an inner class named it SetUnion by implementing the UnionHelper interface. Please override the two methods of the UnionHelper interface

H. Create a method inside SetTheory class named it union. In this method, please instantiate the SetUnion inner class and call createSet method of SetTheory class. After the two sets has been created, please call unionOperation method of SetUnion to perform union operation and then call display methods of SetUnion class to display the result.

I. Create a method inside SetTheory class named it intersection. In this method, please created a local class named it SetIntersection by implementing IntersectionHelper and override the two methods of it. After that inside intersection method, please instantiate the SetIntersection local class and call createSet method of SetTheory class. After the two sets has been created, please call intersectionOperation method of SetIntersection local class to perform intersection operation and then call display methods of SetIntersection class to display the result.

J. Create a method inside SetTheory class named it setDiff. In this method, please created an anonymous inner class named it SetDifference by implementing SetDifferenceHelper and override the two methods of it. After that inside setDiff method, please call createSet method of SetTheory class. After the two sets has been created, please call differenceOperation method of SetDifference anonymous

inner class to perform set difference operation and then call display methods of SetDifference class to display the result.

K. Add SetTheory to your available menu that allows the user to perform set operations.

Note: Syntax to create an interface in java using keyword interface

```
interface interface-identifier{
   // interface methods without definition there




}
```

Please read more chapter 11 in the book "Java Programming 8th Edition" by Joyce Farrell that I gave you. If you do not know about operation of set please go to read about union, intersection, and set difference of set with this link https://en.wikipedia.org/wiki/Set_(mathematics).