PPJ06

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1 Problem 1

Given three intervals as following:

- A = (-15,-10]$\cup(-5, 0) \cup (5, 10)$
- B = $(\infty, -13] \cup (-8, -3]$
- C = [-4,∞) Create a program that will check in which intervals a value read from the console is contained.

2 Problem 2

Define in your program four numbers of type int — a1, a2, b1, b2 — which we interpret as coordinates on the number axis of end points of two intervals: A = [a1, a2] and B = [b1, b2]. The program reads from the user one number (say, x) of type int and prints whether it is true that:

- x $\in A$
- x $\in B$
- x $\in A \backslash B$
- x $\in B \backslash A$
- x $\in A \cap B$
- x $\in A \cup B$
- x $\in A \Theta B$

where \ denotes the set difference and $\Theta$the symmetric difference.

For example, if the defined intervals are A = [2, 4] and B = [1, 6] and the number read is x = 5, the program should print something like:

```
Interval A = [2, 4]
Interval B = [1, 6]
Enter x 5
x in A: false
x in B: true
x in A\B: false
x in B\A: true
x in intersection of A and B: false
x in union of A and B: true
x in symm. diff. of A and B: true
```

Do not use **if** statements (use logical variables instead).

3 Problem 3

In places marked with /* ... */, insert conditional expressions (using the ternary operator) such that strings s1 and s2 contain symbols of appropriate relational operators (as stated in the comments) and the program

```
import java.util.Scanner;
public class Cond {
    public static void main (String[] args) {
        Scanner scan = new Scanner(System.in);
        System.out.print("Enter a -> ");
        int a = scan.nextInt();
        System.out.print("Enter b -> ");
        int b = scan.nextInt();
        scan.close();
        // s1 should be " = " or " != "
        String s1 = /* ... */
        // s2 should be " = " or " < " or " > "
        String s2 = /* ... */
        System.out.println(a + s1 + b);
        System.out.println(a + s2 + b);
    }
}
```

prints, for example,

```
Enter a -> 4
Enter b -> 7
4 != 7
4 < 7
```

or

```
Enter a -> 2
Enter b -> 2
2 = 2
2 = 2
```

or

```
Enter a -> 9
Enter b -> 2
9 != 2
9 > 2
```