420-201-RE	Assignment 3-A	Due date: 17 October 2016

Program 1

Suppose that you have been saving the loose change in your pockets for the past n weeks, and that you have kept a weekly record of the number of the quarters, dimes, nickels, and pennies you have collected for each week. For example, your savings record for the past four weeks ($n = 4$) might look like this:

Your assignment is to write a program to compute the total number of coins of each type and to estimate yearly savings based on the number of coins saved in n weeks, where n is specified by the user.

	Quarters	Dimes	Nickels	Pennies
week 1	13	5	2	8
week 2	5	3	23	4
week 3	11	3	17	19
week 4	3	16	5	8

A Sample run of your program should produce the following output:

```
Tell me your weekly savings of quarters (Q), dimes (D),
nickels (N), and pennies (P) and I estimate your yearly savings.

How many weeks of coin savings? 6

Enter week 1 savings of Q D N P: 1   2   3   4
Enter week 2 savings of Q D N P: 5   6   7   8
Enter week 3 savings of Q D N P: 9   10  11  12
Enter week 4 savings of Q D N P: 13  14  15  16
Enter week 5 savings of Q D N P: 17  18  19  20
Enter week 6 savings of Q D N P: 21  22  23  24

Your 6-week coin savings
------------------------
66   quarters
72   dimes
78   nickels
84   pennies
------------------------
Total 6-week savings:       $28.44
Weekly average savings:      $4.74
Estimated yearly savings:  $246.48

Thank you for using my program!
```

Program 2

Write an interactive program named `NumberRange` that prompts the user to enter three integers, say, n, x, and y, and then prints the range of all integers *starting* at x and *ending* at y, n numbers per line.

For example, the following image shows the range of all integers from $x = 1$ to $y = 32$ with $n = 13$ numbers per line.

1 2 3 4 5 6 7 8 9 10 11 12 13
14 15 16 17 18 19 20 21 22 23 24 25 26
27 28 29 30 31 32

Your program should repeat the interactive process until the user enters a non-positive (≤ 0) value for n.

The input values for x and y must both be in the range $[-99, +99]$; otherwise, your program should repeatedly prompt the user for two integers that are in the range $[-99, +99]$.

Note that the printed list of numbers should be in *increasing* order if $x \leq y$, or in *decreasing* order if $x > y$.

Here is a sample run of the program:

```
Given two integers x and y in the range [-99, +99] and a positive
integer n, this program prints all integers from x through y,
n numbers per line. The program ends when the user enters a
negative value or zero for n.

How many numbers per line? 4

Enter two integers in the range [-99, +99]: 5 -6

Range:   [ -6, 5 ]
Size:    12
Columns: 4
Order:   Decreasing
--------------------
    5    4    3    2
    1    0   -1   -2
   -3   -4   -5   -6
--------------------
```

```
How many numbers per line? 4

Enter two integers in the range [-99, +99]: -100 100
Error: your first number -100 is out of range
Error: your second number 100 is out of range

Enter two integers in the range [-99, +99]: 100 -10
Error: your first number 100 is out of range

Enter two integers in the range [-99, +99]: -10 100
Error: your second number 100 is out of range

Enter two integers in the range [-99, +99]: -6 5

Range:   [ -6, 5 ]
Size:    12
Columns: 4
Order:   Increasing
--------------------
   -6   -5   -4   -3
   -2   -1    0    1
    2    3    4    5
--------------------

How many numbers per line? 8

Enter two integers in the range [-99, +99]: -10 10

Range:   [ -10, 10 ]
Size:    21
Columns: 8
Order:   Increasing
----------------------------------------
  -10   -9   -8   -7   -6   -5   -4   -3
   -2   -1    0    1    2    3    4    5
    6    7    8    9   10
----------------------------------------

How many numbers per line? 13

Enter two integers in the range [-99, +99]: -15 -50

Range:   [ -50, -15 ]
Size:    36
Columns: 13
Order:   Decreasing
```

```
-----------------------------------------------------------------
  -15  -16  -17  -18  -19  -20  -21  -22  -23  -24  -25  -26  -27
  -28  -29  -30  -31  -32  -33  -34  -35  -36  -37  -38  -39  -40
  -41  -42  -43  -44  -45  -46  -47  -48  -49  -50
-----------------------------------------------------------------

How many numbers per line? 10

Enter two integers in the range [-99, +99]: -2 3

Range:   [ -2, 3 ]
Size:    6
Columns: 10
Order:   Increasing
--------------------------------------------------
   -2   -1    0    1    2    3
--------------------------------------------------

How many numbers per line? -1

goodbye!
```

Evaluation Criteria

Correctness of execution of your program	60%
Proper use of required Java concepts	20%
Java API documentation style	10%
Comments on nontrivial steps in code, Choice of meaningful variable names, Indentation and readability of program	10%