

CMPE 150 Fall 2015

Project I

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Project Description:

Problem 1: In this problem, we need a triangle. But with numbers, not with stars or spaces. Each point equal to product of line number and column number. In other word, product of its coordinates. Triangle's height and width should be equal to n (It's given constant).

Problem 2: For this problem we have to do 4 iterations. In each iteration we calculate the number of digits in previous number and multiple with n . Print the result, and go next iteration. For first iteration, we accept m constant as the previous number.

Project Solution:

Totally I used 4 loops, 2 for problem 1, 2 for problem 2.

I have to static method because we have two problems. Each method responses from one of the problems.

problem1() method solves first problem and create a triangle with numbers. There are 2 for loops in this method. First loop is managing number of lines, so i is line number. It iterate until $i = 4$. So it prints 4 line. Second loop is managing number of columns and printing result , so j is column number. j depends on i (line number). First line has one column, second line has two columns etc. *print()* function prints product of line and column numbers and give a space. *println()* function goes next line at end of the each line.

problem2() method solves second problem. I keep previous number in *pNumber* variable. At first time, *pNumber* is equal to M . Problem asks us to make 4 iterations. Third loop used for making 4 iterations. For each iteration, we need to calculate number of digits in the previous number. digits variable becomes zero at each iterations, because each previous number might has different number of digits, and we should to calculate it again. Forth loop makes integer dividing with the previous number and 10 until j is equal to zero. For each iteration, it increases number of digits by 1. After the calculate digits, previous number becomes equal to product of the number of digits and n . We print it, and go next iteration.

Implementation:

```
public class MEC2013400105 {
    public static final int N = 4; // It keeps given n variable.
    public static final int M = 23415; // It keeps given m variable

    /*
     * This method is our main method, so it says to compiler what it needs execute.
     */
    public static void main(String[] args) {
        problem1();
        System.out.println();
        problem2();
    }

    /*
     * This method solves first problem. It creates kind of multiplication table for the kids. It is goes up to n*n.
     */
    public static void problem1(){

        // First Loop: It used for managing number of lines, so i is line number.
        for ( int i = 1; i <= N; i++ ){
            // Second Loop: It used for managing number of columns and printing result , so j is column number.
            for( int j = 1; j <= i; j++ ){
                System.out.print( i * j + " " );
            }
            System.out.println();
        }

    }

    /*
     * This method solves second problem. It calculate product of the number of digits in the previous number and n,
     * and do it for 4 times.
     */
    public static void problem2(){
        int pNumber = M; // pNumber is the previous number.

        // Third Loop: It used for making 4 iterations and print result for each iteration.
        for ( int i = 1; i <= 4; i++ ){
            int digits = 0; // digits is the number of digits in the previous number.

            // Forth Loop: It used for calculating the number of digits in the previous number.
            for ( int j = pNumber; j > 0; j = j / 10){
                digits++;
            }
            pNumber = digits * N;
            System.out.println( pNumber );
        }

    }
}
```

Output of The Program:

N = 4 1
M = 23415 2 4
 3 6 9
 4 8 12 16

 20
 8
 4
 4

N = 5 1
M = 123 2 4
 3 6 9
 4 8 12 16
 5 10 15 20 25

 15
 10
 10
 10

Conclusion:

I think I solved problem with convient way. It was clean work. It minimize number of loops and variables.