844. Number Pair Statistics

* [Description](http://www.lintcode.com/en/problem/number-pair-statistics/" \l "description)
* [Notes](http://www.lintcode.com/en/problem/number-pair-statistics/#note)
* [Testcase](http://www.lintcode.com/en/problem/number-pair-statistics/#testcase)
* [Judge](http://www.lintcode.com/en/problem/number-pair-statistics/#judge)

Given a List <Point> p, find the number of (i,j) pairs that satisfy both p[i].x + p[j].x and p[i].y + p[j].y(i < j) can be divisible by 2.

 Notice

* The length of given list len <= 10000.

Have you met this question in a real interview?

Yes

**Example**

Given p = [[1,2],[3,4],[5,6]], return 3.

Explanation:

p[0],p[1],p[2] Pairwise Covering, the sum of their x and y can be divided by 2

Given p = [[0,3],[1,1],[3,4],[5,6]], return 1.

Explanation:

Only when p [2] and p [3] are combined, their sum of x and y can be divided by two.

<http://www.lintcode.com/en/problem/number-pair-statistics/>

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*\*/*

**package** javaapplication6;

**import** java.awt.Point;

**import** java.util.Arrays;

**import** java.util.Collections;

**import** java.util.List;

***/\*\****

***\****

***\* @author Usuario***

***\*/***

**public** **class** JavaApplication6 {

***/\*\****

***\* @param args the command line arguments***

***\*/***

**public** **int** pairNumbers(Point[] p) {

*// Write your code here*

**int** ans =0;

**for**(**int** i =0; i<p.length; i++) {

**for**(**int** j =i+1; j<p.length; j++){

**if**(p[i].x + p[j].x %2 ==0 && p[i].y + p[j].y %2==0) {

                   ans++;

                }

            }

        }

**return** ans;

    }

**public** **static** **void** main(String[] args) {

*// TODO code application logic here*

    }

}

----solucion eficiente------------

<https://brain.dennyzhang.com/number-pair-statistics>

*## Blog link: https://brain.dennyzhang.com/number-pair-statistics*

**class** **Solution**:

**"""**

**@param p: the point List**

**@return: the numbers of pairs which meet the requirements**

**"""**

**def** pairNumbers(**self**, p):

*## Basic Ideas: Types of odd and event*

*## Complexity: Time O(n), Space O(1)*

*# odd\_odd odd\_even, even\_odd, even\_even*

***l*** = [0]\*4

**for** point **in** p:

***x***, ***y*** = point.x, point.y

**if** x%2 == 1 **and** y%2 == 1: ***l***[0] += 1

**if** x%2 == 1 **and** y%2 == 0: ***l***[1] += 1

**if** x%2 == 0 **and** y%2 == 1: ***l***[2] += 1

**if** x%2 == 0 **and** y%2 == 0: ***l***[3] += 1

***res*** = 0

**for** i **in** range(4):

**if** l[i] >= 2: ***res*** += int(l[i]\*(l[i]-1)/2)

**return** res

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***\* @author Usuario***

***\*/***

**public** **class** JavaApplication6 {

***/\*\****

***\* @param args the command line arguments***

***\*/***

**public** **int** pairNumbers(Point[] p) {

*// Write your code here*

**int**[] l = **new** **int**[4];

**for**(Point point : p) {

**int** x = point.x;

**int** y = point.y;

**if** (x%2 == 1 && y%2 == 1) l[0] += 1;

**if** (x%2 == 1 && y%2 == 0) l[1] += 1;

**if** (x%2 == 0 && y%2 == 1) l[2] += 1;

**if** (x%2 == 0 && y%2 == 0) l[3] += 1;

        }

**int** res =0;

**for**(**int** i =0; i<4; i++) {

**if**(l[i] >= 2) res += (**int**)(l[i]\*(l[i]-1)/2);

        }

**return** res;

    }

**public** **static** **void** main(String[] args) {

*// TODO code application logic here*

    }

}