Qn Link : <https://www.desiqna.in/17097/de-shaw-oa-sde-coding-questions-2024-set-69>

Question Summary :

* You are given an array and an interger k .You need to find the pair (I , j) such that
* | a[i] + a[j] | + |a[i] – a[j] | = K
* Count that kind of pairs and return the ans

Observation :

* There is no change in this eqn | a[i] + a[j] | because of ABS.
* For the second eqn , there are two cases

Case 1 : a[i] < a[j]

Case 2 : a[j] < a[i]

When case 1 , then the eqn becomes

a[j] – a[i] + a[i] + a[j] = K

2 a[j] = k

A[j] = k / 2

Similarly for case 2 ,

A[i] = k / 2

* So there is no need for the I , which ever the element which is equal to k / 2 , then it forms a valid pair.
* But with which are the elements , let’s consider [1 , 2 , -1 , 3 , 4 , 1 , 0] k = 4

2 - 3 + 2 + 3 🡺 NO

2 - 4 + 2 + 4 🡪 NO

1 – 2 + 1 + 2 🡪 YES

-1 – 2 + -1 + 2 🡪 YES

0 – 2 + 0 + 2 🡪YES

So the number which are less than or equal to k / 2 are valid pairs

* And we can’t find answer when k is odd

class Solution {

    public int validABS(int [] nums , int k) {

        if(k & 1 == 1){

            return -1;

        }

        int n = nums.length

        int count = 0;

        for(int i : nums){

            if(i == k / 2){

                count++;

            }

        }

        // numbers which are equal to k existing more than once

        int ans = count \* (count - 1 ) / 2;

        int cnt = 0;

        //Calculating numbers which are less than k/ 2

        for(int i = 0 ; i < n ; i++){

            if(nums[i] < k / 2){

                cnt++;

            }

        }

        ans \*= cnt;

        return ans;

    }

}