← Problems / Fredo and Sums

Fredo and Sums

Max. Marks: 100

Fredo has an array A consisting of N elements. He wants to divide the array into $N/2$ pairs where each array element comes in exactly one pair. Say that pair i has elements X_i and Y_i, he defines S as :

$$S = \sum_{i=1}^{N/2} abs(X_i - Y_i)$$

He asks you to find the minimum and maximum value of S.

Input Format:

First line consists of an integer T denoting the number of test cases.
Each test case:
First line consists of an integer N denoting the number of elements in the array.
Second line consists of N space separated integers denoting the array elements.

Output Format:
For each test case, print the minimum and maximum sum (space separated). Answer for each test case should come in a new line.

Input Constraints:

$1 \le T \le 10$
$1 \le N \le 10^5$
$-10^9 \le A[i] \le 10^9$
$N\ is\ even$

SAMPLE INPUT
1 4 10 20 -10 0

SAMPLE OUTPUT
20 40

Explanation

For minimum sum, we take pairs $(10, 20)$ and $(-10, 0)$.
For maximum sum, we take pairs $(20, 0)$ and $(10, -10)$.

Time Limit:	1.0 sec(s) for each input file.
Memory Limit:	256 MB
Source Limit:	1024 KB
Marking Scheme:	Marks are awarded if any testcase passes.
Allowed Languages:	C, C++, C++14, Clojure, C#, D, Erlang, F#, Go, Groovy, Haskell, Java, Java 8, JavaScript(Rhino), JavaScript(Node.js), Julia, Lisp, Lisp (SBCL), Lua, Objective-C, OCaml, Octave, Pascal, Perl, PHP, Python, Python 3, R(RScript), Racket, Ruby, Rust, Scala, Swift, Visual Basic, Kotlin

CODE EDITOR

Enter your code or Upload your code as file.   Save   C (gcc 5.4.0) ▼

```c
25            int pi = partition(arr, low, high);
26            quickSort(arr, low, pi - 1);
27            quickSort(arr, pi + 1, high);
28        }
29    }
30
31    /* Function to print an array
32    void printArray(int arr[], int size){
33        int i;
34        for (i=0; i < size; i++)
35            printf("%d ", arr[i]);
36    }*/
37
38
39    // Driver program to test above functions
40    int main(){
41        int t,n,k;
42        long minsum=0,maxsum=0;
43        scanf("%d",&t);
44        while(t>0){
45            scanf("%d",&n);
46            long arr[n];
47            for(k=0;k<n;k++)
48            scanf("%ld",&arr[k]);
49            //int n = sizeof(arr)/sizeof(arr[0]);
50            quickSort(arr, 0, n-1);
51
52
53            for(k=0;k<n;k+=2)
54                minsum+=arr[k+1]-arr[k];
55            for(k=0;k<n/2;k++){
56                maxsum+=arr[n-k-1]-arr[k];
57            }
58
59            printf("\n%ld %ld\n",minsum,maxsum);
60            t--;
61        }
62        return 0;
63    }
```

64:1

COMPILE & TEST   SUBMIT

Submission ID: 10212126 / 3 seconds ago

RESULT: ❌ Wrong Answer

Score	Time (sec)	Memory (KiB)	Language
0	1.97032	980	C

Input	Result	Time (sec)	Memory (KiB)	Score
Input #1	❌	0.108199	64	0
Input #2	❌	0.109604	64	0
Input #3	❌	0.106206	64	0
Input #4	❌	0.1094	64	0
Input #5	❌	0.257009	976	0
Input #6	❌	0.255965	980	0
Input #7	❌	0.253706	976	0
Input #8	❌	0.25625	976	0
Input #9	❌	0.256524	976	0
Input #10	❌	0.25746	980	0

Compilation Log

No compilation log for this submission.

🪄 **Tip:** You can submit any number of times you want. Your best submission is considered for computing total score.

Your Rating: ⭐⭐⭐⭐⭐   Like 0 Share   Tweet

COMMENTS (47) 🔄

SORT BY: Relevance ▾

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Vipin Yadav a day ago

can someone give me an i/p o/p of an array of size 6 or 8?

▲ 1 vote ● Reply ● Message ● Permalink

Jason Whisnant a day ago

I/P: 0 -50 234 81 -914 8 1302 11 O/P: 2010 2584

▲ 3 votes ● Reply ● Message ● Permalink

Rohan Sukumaran a day ago

can u explain?

▲ 0 votes ● Reply ● Message ● Permalink

Jason Whisnant a day ago

Since this problem involves the absolute value of the difference, this means that the closer together two numbers are, the smaller the number and the farther apart they are the greater the difference will be, absolute value allows this to hold true whether the numbers are both positive, both negative, or a mix.

▲ 3 votes ● Reply ● Message ● Permalink

Rohan Sukumaran a day ago

Can U please expain the question,I'm kind of new to competitive coding?

▲ 0 votes ● Reply ● Message ● Permalink

Jason Whisnant 21 hours ago

Given an array of numbers, you have to determine what the minimum and maximum possible total that can be achieved by arranging them into pairs, calculating the absolute value of the difference between the pairs, and adding all of those values together.

With the example given: the numbers are 10, 20, -10, and 0. Possible combinations are:
10,20 and -10,0
10, -10 and 20, 0
10, 0 and 20, -10
Any other possibilites are duplicates of the above pairs.
The absolute values of the differences for the above would be:
10 and 10
20 and 20
10 and 30
Thus the minimum possible sum of the pairs would be 20 (10 and 10) and the maximum would be 40(10 and 30).

▲ 3 votes ● Reply ● Message ● Permalink

Raja Babu 12 hours ago

plz explain me how these combinations are made by N/2 and where X,Y belongs first half of array or second.

▲ 0 votes ● Reply ● Message ● Permalink

Vipin Yadav ✎ Edited a day ago

thank u for giving me an example of i/p o/p ... my code is accepted now

▲ 0 votes ● Reply ● Message ● Permalink

Yusy 16 hours ago

Anything wrong with the compiler? My logic works fine for sample input as well your input but getting wrong answer for all test case also the test cases are not visible

▲ 0 votes ● Reply ● Message ● Permalink

Yusy 16 hours ago

Ok i got it. it was just silly mistake of not giving "\n" in print statement

▲ 0 votes ● Reply ● Message ● Permalink

Gunda Shiva Kumar ✎ Edited 2 hours ago

same thing happens with my code. Don't know what to do

▲ 0 votes ● Reply ● Message ● Permalink

Raja Babu ✎ Edited 11 hours ago

plz explain the pairs having 6 or 8 elements.

▲ 1 vote ● Reply ● Message ● Permalink

Gunda Shiva Kumar 3 hours ago

I have used your sample input and my code can able to generate the correct output, but unable to pass the test cases that are given.

▲ 0 votes ● Reply ● Message ● Permalink

Kaustubh D 3 hours ago

Please explain how minimum sum is 2010.

▲ 0 votes ● Reply ● Message ● Permalink

Ishan Anand ✎ Edited 8 minutes ago

Java Timeout Issue
I initially wrote a Java code for this problem but 3-4 cases would timeout. So,I used the same algorithm and wrote the code in C++ which ran without any timeout.I used Arrays.sort() function in Java.

▲ 2 votes ● Reply ● Message ● Permalink

Rajesh M D 6 hours ago

Thanks. :)
written in java - WA and TLE
written in python. AC

▲ 1 vote ● Reply ● Message ● Permalink

Abhishek Inamdar a day ago

I am not getting the result of sample I/O.

▲ 1 vote ● Reply ● Message ● Permalink

Rohan Sukumaran a day ago

shouldn't max sum be 60.if not then why?

▲ 1 vote ● Reply ● Message ● Permalink

Rahul Singh 15 hours ago

The max is 50 not 60.

▲ 0 votes ● Reply ● Message ● Permalink

Arjun Singh 14 hours ago

No ,it should be 40 only , you cannot repeat any element . You are taking pair of (20,-10), (10,-10) , which is wrong you have to take every element once only. Read the instructions.

▲ 0 votes ● Reply ● Message ● Permalink

Deepak Kumar Gour 11 hours ago

what if n is not even??

▲ 1 vote ● Reply ● Message ● Permalink

VANDANA KUMARI 9 hours ago

n is always even as mentioned in the constraint.

▲ 0 votes ● Reply ● Message ● Permalink

thepurpleowl 9 hours ago

can we check inputs for some specific case, i.e. for which I am getting wrong answer??

▲ 1 vote ● Reply ● Message ● Permalink

Manmohan Singh thakur 5 hours ago

Please resolve the java timeout issue

▲ 1 vote ● Reply ● Message ● Permalink

Shalitha Suranga an hour ago

Good problem..

▲ 1 vote ● Reply ● Message ● Permalink

Krishna Kanth Juluru a day ago

How are the pairs taken ?

▲ 0 votes ● Reply ● Message ● Permalink

Rohan Sukumaran a day ago

i think all possible pairs are considered

● 0 votes ● Reply ● Message ● Permalink

Amitrajit Bose 21 hours ago

That is what the question is all about!
Since an online competition is going on it is prohibited from discussing solutions or hints.

▲ 0 votes ● Reply ● Message ● Permalink

Rahul Singh ✎ Edited 15 hours ago

The max sum should be 50 pairs are ((10, -10),(20,-10)) The sample given is wrong. The combinations are [((10, 20), (10, -10)), ((10, 20), (10, 0)), ((10, 20), (20, -10)), ((10, 20), (20, 0)), ((10, 20), (-10, 0)), ((10, -10), (10, 0)), ((10, -10), (20, -10)), ((10, -10), (20, 0)), ((10, -10), (-10, 0)), ((10, 0), (20, -10)), ((10, 0), (20, 0)), ((10, 0), (-10, 0)), ((20, -10), (20, 0)), ((20, -10), (-10, 0)), ((20, 0), (-10, 0))]

▲ 0 votes ● Reply ● Message ● Permalink

Arjun Singh 14 hours ago

Read the question properly : "Each array element comes in exactly one pair."

▲ 0 votes ● Reply ● Message ● Permalink

Raja Babu 11 hours ago

i don't understand how to make combinations using N/2 .for n=4 there will be 2 pairs .

▲ 0 votes ● Reply ● Message ● Permalink

Kushagra Kumar 9 hours ago

Remember long long int as it may lead to a few wrong answers.

▲ 0 votes ● Reply ● Message ● Permalink

KARAN RAWAT 7 hours ago

i don't think so

▲ 0 votes ● Reply ● Message ● Permalink

Kushagra Kumar 6 hours ago

Not wrong answers, but 8 cases fail in the absence of long long int.

▲ 0 votes ● Reply ● Message ● Permalink

KARAN RAWAT 6 hours ago

i have used long int and all my test cases were passed

▲ 0 votes ● Reply ● Message ● Permalink

Shriya Kaneriya 8 hours ago

I keep getting timeouts. Can someone help me with what could i be doing wrong?

▲ 0 votes ● Reply ● Message ● Permalink

KARAN RAWAT 6 hours ago

use quick sort or merge sort

▲ 0 votes ● Reply ● Message ● Permalink

Sathish Kumar 6 hours ago

karan, my algorithm used sort. Arrays.sort from java. still it is going to timeout. is java too slow or anything else is problem.

▲ 0 votes ● Reply ● Message ● Permalink

KARAN RAWAT 6 hours ago

Put this statement at the beginning of your code:
import java.util.Scanner;

▲ 0 votes ● Reply ● Message ● Permalink

Sathish Kumar 5 hours ago

dude, i'm talking about TLE. Arrays.sort causing TLE. i dont see any better way to sort in java. what my question is, is this drawback of java? coz i saw ppl sorted without TLE in c++, python etc..

▲ 0 votes ● Reply ● Message ● Permalink

KARAN RAWAT 5 hours ago

https://stackoverflow.com/questions/44041403/how-to-solve-this-terminated-due-to-timeout-in-java

▲ 0 votes ● Reply ● Message ● Permalink

KARAN RAWAT 5 hours ago
i don't know much about java , i use to code in c++
▲ 0 votes ● Reply ● Message ● Permalink

Ujwal Pansari 5 hours ago
I'm getting TLE for 3 testcases 5,6,10. M using java and sorting numbers using Arrays.sort(), can this be the reason for TLE?
▲ 0 votes ● Reply ● Message ● Permalink

Kaustubh D 3 hours ago
I passed the sample case but not input#1. Does anyone know what it is ?
▲ 0 votes ● Reply ● Message ● Permalink

khamar ali shaikh 2 hours ago
should the max for the test case be 60 for the pairs (10,20) and (20,-10)
▲ 0 votes ● Reply ● Message ● Permalink

Arju Ali an hour ago
result of sample test case and the first two inputs are right but the other 8 inputs are showing wrong ..why??
▲ 0 votes ● Reply ● Message ● Permalink

Abhishek Kapoor an hour ago
What is the significance of T test case?
▲ 0 votes ● Reply ● Message ● Permalink

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