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## ● Fredo and Sums

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Tag(s): Algorithms, Arrays, Easy-Medium, Greedy, Sorting



PROBLEM

EDITORIAL

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### Problem:

Given a list of  $N$  elements  $A$ , you have to divide the elements into  $N/2$  and find the minimum and maximum values of  $S = \sum_{i=1}^{N/2} \text{abs}(X_i - Y_i)$ , where  $X_i$  and  $Y_i$  are the elements of the  $i^{\text{th}}$  group.

### Solution:

We solve the problem using a greedy approach.

In order to find the minimum value of  $S$ , it makes sense to choose the pairs such that the elements are adjacent when they are placed in a sorting order. So, we sort the given array  $A$  and then make pairs of the elements  $A_i$  and  $A_i + 1$ , for  $i = 1, 3, 5, \dots, n - 1$ .

For finding the maximum value of  $S$ , we will do the opposite. From the sorted order, we make pairs of the form:  $A_i$  with  $A_{N-i+1}$ , for  $i = 1, 2, 3, \dots, N/2$ .

### IS THIS EDITORIAL HELPFUL?



Yes, it's helpful



No, it's not helpful

2 developer(s) found this editorial helpful.

Author Solution by [Shubham Gupta](#)

```
1. #include<bits/stdc++.h>
2. #define ll long long
3. using namespace std;
4. int main()
5. {
6.     int t;
7.     cin>>t;
8.     assert(t>=1 && t<=10);
9.     while(t-->0)
10.    {
11.        int n,a[100005];
12.        cin>>n;
```

```
13.     assert(n>=1 & n<=1e5);
14.     assert(!(n&1));
15.     for(int i=0;i<n;i++)
16.     {
17.         cin>>a[i];
18.         assert(a[i]>=-1e9 && a[i]<=1e9);
19.     }
20.     sort(a,a+n);
21.     ll mins=0,maxs=0;
22.     for(int i=1;i<n;i+=2)
23.         mins+=(ll)(a[i]-a[i-1]);
24.     for(int i=0;i<n/2;i++)
25.         maxs+=(ll)(a[n-1-i]-a[i]);
26.     cout<<mins<<" "<<maxs<<"\n";
27. }
28. return 0;
29. }
```

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