H   🏠 **Practice**   🕐 **Compete**   💼 **Jobs**   🏅 **Rank**   🏆 **Leaderboard**   🔍_____   💬   📢

Dashboard ❯ Algorithms ❯ Greedy ❯ Minimum Absolute Difference in an Array   **Badge Progress** (Details)   ⭐⭐   **Points: 781 Rank: 50578**

Minimum Absolute Difference in an Array 🔖

👤 by **shashank21j**

Problem	Submissions	Leaderboard	Discussions	Editorial 🔒

Consider an array of integers, $A = a_0, a_1, \ldots, a_{n-1}$. We define the absolute difference between two elements, a_i and a_j (where $i \neq j$), to be the absolute value of $a_i - a_j$.

Given an array of n integers, find and print the minimum absolute difference between any two elements in the array.

Input Format

The first line contains a single integer denoting n (the number of integers).
The second line contains n space-separated integers describing the respective values of $a_0, a_1, \ldots, a_{n-1}$.

Constraints

- $2 \leq n \leq 10^5$
- $-10^9 \leq a_i \leq 10^9$

Output Format

Print the minimum absolute difference between any two elements in the array.

Sample Input 0

```
3
3 -7 0
```

Sample Output 0

```
3
```

Explanation 0

With $n = 3$ integers in our array, we have three possible pairs: $(3, -7)$, $(3, 0)$, and $(-7, 0)$. The absolute values of the differences between these pairs are as follows:

- $|3 - -7| \Rightarrow 10$
- $|3 - 0| \Rightarrow 3$
- $|-7 - 0| \Rightarrow 7$

Notice that if we were to switch the order of the numbers in these pairs, the resulting absolute values would still be the same. The smallest of these possible absolute differences is 3, so we print 3 as our answer.

f 🐦 in

Submissions:19402

Max Score:15
Difficulty: Easy

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More

Current Buffer (saved locally, editable)   ⑂ ⟳

C++14   ▼   ⤢   ⚙

```cpp
1  #include <cmath>
2  #include <limits>
3  #include <set>
4  #include <iostream>
5  #include <algorithm>
6  #include <iterator>
7  using namespace std;
8
9  #define ll long long int
10 int main()
11 {
12     ios_base::sync_with_stdio(0);
13     cin.tie(0);
14     cout.tie(0);
15     ll n, ans=numeric_limits<ll>::max();
16     cin>>n;
17     multiset<ll> mySet;
18     for(auto i=0; i<n;++i)
19     {
20         ll temp=0;
21         cin>>temp;
22         mySet.insert(temp);
23     }
24
25     for(auto itr=mySet.begin(); itr!=mySet.end(); ++itr)
26     {
27         if(itr!=mySet.begin())
28         {
29             ll a=*(itr--);
30             ll b=*(itr++);
31             ans=min(ans, abs(a-b));
32
33         }
34     }
35     cout<<ans<<endl;
36     return 0;
37 }
38
```

Line: 38 Col: 1

☐ Test against custom input

Run Code   **Submit Code**

⬆ Upload Code as File

```
6
1 2 -88 -1 0 1
```

Accepted

✔ Test Case #0   ✔ Test Case #1   ✔ Test Case #2
✔ Test Case #3