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Minimum Absolute Difference in an Array

👤 by shashank21j

Problem	Submissions	Leaderboard	Discussions

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

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

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.

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Contest ends in 2 days

Submissions: 1263
Max Score: 15
Difficulty: Easy

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```csharp
1  using System;
2  using System.Collections.Generic;
3  using System.IO;
4  using System.Linq;
5 ▾ class Solution {
6
7 ▾    static void Main(String[] args) {
8          int n = Convert.ToInt32(Console.ReadLine());
9          string[] a_temp = Console.ReadLine().Split(' ');
10         int[] a = Array.ConvertAll(a_temp,Int32.Parse);
11         // your code goes here
12
13          Array.Sort(a);
14
15         int min_dif = int.MaxValue;
16         for (int i = 0; i + 1 < a.Length; i++)
17 ▾       {
18             min_dif = Math.Min(min_dif, Math.Abs(a[i] - a[i + 1]));
19         }
20
21         Console.WriteLine(min_dif);
22
23     }
24  }
25
```

Line: 18 Col: 17

⬆ Upload Code as File   ☐ Test against custom input   Run Code   Submit Code

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