



# Minimum Absolute Difference in an Array

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Problem

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Consider an array of integers,  $A = a_0, a_1, \dots, a_{n-1}$ . 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  $a_0, a_1, \dots, a_{n-1}$ .

## 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.

Submissions: [16320](#)

Max Score: 15

Difficulty: Easy

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Java 7



```
1 import java.io.*;
2 import java.util.*;
3 import java.text.*;
4 import java.math.*;
5 import java.util.regex.*;
6
7 public class Solution {
8
9     static int minimumAbsoluteDifference(int n, int[] arr) {
10         // Complete this function
11     }
12
13     public static void main(String[] args) {
14         Scanner in = new Scanner(System.in);
15         int n = in.nextInt();
16         int[] arr = new int[n];
17         for(int arr_i = 0; arr_i < n; arr_i++){
18             arr[arr_i] = in.nextInt();
19         }
20         int result = minimumAbsoluteDifference(n, arr);
21         System.out.println(result);
22         in.close();
23     }
24 }
25
```

Line: 1 Col: 1

 [Upload Code as File](#)☐ Test against custom input

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