Minimum Absolute Difference in an Array

The absolute difference is the positive difference between two values a and b, is written $|a - b|$ or $|b - a|$ and they are equal. If $a = 3$ and $b = 2$, $|3 - 2| = |2 - 3| = 1$. Given an array of integers, find the minimum absolute difference between any two elements in the array.

Example. $arr = [-2, 2, 4]$

There are 3 pairs of numbers: $[-2, 2], [-2, 4]$ and $[2, 4]$. The absolute differences for these pairs are $|(-2) - 2| = 4$, $|(-2) - 4| = 6$ and $|2 - 4| = 2$. The minimum absolute difference is 2.

Function Description

Complete the *minimumAbsoluteDifference* function in the editor below. It should return an integer that represents the minimum absolute difference between any pair of elements.

minimumAbsoluteDifference has the following parameter(s):

- *int arr[n]:* an array of integers

Returns

- *int:* the minimum absolute difference found

Input Format

The first line contains a single integer n, the size of arr.
The second line contains n space-separated integers, $arr[i]$.

Constraints

- $2 \leq n \leq 10^5$
- $-10^9 \leq arr[i] \leq 10^9$

Sample Input 0

```
3
3 -7 0
```

Sample Output 0

```
3
```

Explanation 0

The first line of input is the number of array elements. The array, $arr = [3, -7, 0]$ There are three pairs to test: $(3, -7)$, $(3, 0)$, and $(-7, 0)$. The absolute differences are:

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

Remember that the order of values in the subtraction does not influence the result. The smallest of these absolute differences is 3.

Sample Input 1

```
10
-59 -36 -13 1 -53 -92 -2 -96 -54 75
```

Sample Output 1

```
1
```

Explanation 1

The smallest absolute difference is $|-54 - -53| = 1$.

Sample Input 2

```
5
1 -3 71 68 17
```

Sample Output 2

```
3
```

Explanation 2

The minimum absolute difference is $|71 - 68| = 3$.