

Day 16: Sorting!

Start learning about Exceptions in [Day 16's](#) video or just jump into this sorting challenge!

Sorting is an important basic algorithmic concept used to organize data so coders can better solve problems. You may find our [interactive article](#) on widely-used sorting algorithms and [this article](#) on *Insertion Sort* helpful in solving today's problem.

The *absolute difference* between two integers, a and b , is $|a - b|$. The *minimum absolute difference* between two integers in a list A of positive integers, is the smallest absolute difference between any two integers in A .

Given a list $A = \{a_0, a_1, \dots, a_{N-1}\}$ of unsorted integers, find and print the pair (or pairs) of elements having the *minimum absolute difference*.

Note: More than one pair of elements may have the same absolute difference.

Input Format

The first line contains a single integer N , denoting the *length* of list A .

The second line contains N space-separated integers, a_0, a_1, \dots, a_{N-1} , representing the elements in A .

Constraints

- $2 \leq N \leq 2 \times 10^5$
- $-10^7 \leq A_i \leq 10^7$
- $A_i \neq A_j$, where $0 \leq i < j \leq N-1$

Output Format

Print the space-separated *pair* of elements having the *minimum absolute difference* in ascending order. If more than one pair meets this criterion, print them consecutively, separated by a space, in ascending order on a single line. Because we are printing space-separated *pairs*, some elements may appear more than once in your output.

Sample Input 1

```
10
-20 -3916237 -357920 -3620601 7374819 -7330761 30 6246457 -6461594 266854
```

Sample Output 1

```
-20 30
```

Explanation

The *minimum absolute difference* is 50 ($ABS(30 - (-20)) = 50$). The only pair having this difference is $(-20, 30)$.

Sample Input 2

```
12
```

```
-20 -3916237 -357920 -3620601 7374819 -7330761 30 6246457 -6461594 266854 -520 -470
```

Sample Output 2

```
-520 -470 -20 30
```

Explanation

Our *minimum absolute difference* is \$50\$. The pairs $(-470, -520)$ and $(-20, 30)$ both have this difference.

Sample Input 3

```
4
5 4 3 2
```

Sample Output 3

```
2 3 3 4 4 5
```

Explanation

Our *minimum absolute difference* is \$1\$. The pairs $(2, 3)$, $(3, 4)$, and $(4, 5)$ all have this difference. Notice that \$3\$ and \$4\$ appear multiple times, because they are components of more than one pair.

Note: Recall that pairs in the output must be printed in ascending order.