# Closest Numbers

by HackerRank

Problem Submissions Leaderboard Discussions Topics

Sorting is often useful as the first step in many different tasks. The most common task is to make finding things easier, but there are other uses, as well.

**Challenge**
Given a list of unsorted integers, $A = \{a_1, a_2, \ldots, a_N\}$, can you find the pair of elements that have the smallest absolute difference between them? If there are multiple pairs, find them all.

**Input Format**
The first line of input contains a single integer, $N$, representing the length of array $A$.
In the second line, there are $N$ space-separated integers, $a_1, a_2, \ldots, a_N$, representing the elements of array $A$.

**Output Format**
Output the pairs of elements with the smallest difference. If there are multiple pairs, output all of them in ascending order, all on the same line (consecutively) with just a single space between each pair of numbers. If there's a number which lies in two pair, print it two times (see the sample case #3 for explanation).

**Constraints**

- $2 \leq N \leq 200000$
- $-10^7 \leq a_i \leq 10^7$
- $a_i \neq a_j, where\ 1 \leq i < j \leq N$

**Sample Input #1**

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

**Sample Output #1**

```
-20 30
```

**Explanation**
*(30) - (-20) = 50*, which is the smallest difference.

**Sample Input #2**

```
12
-20 -3916237 -357920 -3620601 7374819 -7330761 30 6246457 -6461594 266854 -520 -470
```

**Sample Output #2**

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

**Explanation**

*(-470) - (-520) = 30 - (-20) = 50*, which is the smallest difference.

**Sample Input #3**

```
4
5 4 3 2
```

**Sample Output #3**

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

**Explanation**

Here, the minimum difference will be *1*. So valid pairs are *(2, 3)*, *(3, 4)*, and *(4, 5)*. So we have to print *2* once, *3* and *4* twice each, and *5* once.

Submissions: 19371
Max Score: 35
Difficulty: Easy

Rate This Challenge:
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Greedy Technique
Sorting
Pair
More

Current Buffer (saved locally, editable) C#

```
using System;
using System.Collections.Generic;
using System.IO;
class Solution {
    static void Main(String[] args) {
        /* Enter your code here. Read input from STDIN. Print output to STDOUT. Your class should be named Solution
*/


         int n = int.Parse(Console.ReadLine());
            int[] a = Array.ConvertAll(Console.ReadLine().Split(' '), e => int.Parse(e));

            Array.Sort(a);

            int min_dif = int.MaxValue;

            List<int> pares = new List<int> ();
            for (int i = 0; i + 1 < a.Length; i++)
            {
                int dif = Math.Abs(a[i] - a[i + 1]);

                if (dif < min_dif)
                {
                    min_dif = dif;
                    pares = new List<int>();

                    pares.Add(a[i]);
                    pares.Add(a[i+1]);
                }
                else if (dif == min_dif)
                {
                    pares.Add(a[i]);
```

```
32                      pares.Add(a[i+1]);
33                  }
34
35              }
36
37              foreach (int elem in pares)
38              {
39                  Console.Write(elem + " ");
40              }
41
42
43      }
44  }
```

Line: 41 Col: 13

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

## Congrats, you solved this challenge!

- ✔ Test Case #0
- ✔ Test Case #1
- ✔ Test Case #2
- ✔ Test Case #3
- ✔ Test Case #4

Next Challenge