

Programming Assignments 1 - Closest Numbers

HackerRank_Username = **s_tassiga**

Problem Statement

The screenshot shows the HackerRank website interface. At the top, there's a navigation bar with 'HackerRank' logo and links for PRACTICE, CERTIFICATION, COMPETE, and CAREER FAIR. A green banner below the navigation bar states: 'The email address you signed up with has not been verified. You won't be ranked on the leaderboard until you verify your account.' with a 'SEND AGAIN' button. The main content area shows the 'Closest Numbers' problem page. A success message box in the center reads: 'You have successfully solved Closest Numbers' with 'Share' and 'Tweet' buttons. Below this, it says 'You are now 65 points away from the 2nd star for your problem solving badge.' and provides links to 'Try the next challenge' and 'Try a Random Challenge'. The problem details on the right include: Author: HackerRank, Difficulty: Easy, Max Score: 35, Submitted By: 58780, and a 'NEED HELP?' section. The problem description on the left explains that sorting is useful for finding the minimum difference between elements in an array. An example is given: `arr = [5, 2, 3, 4, 1]`. The sorted array is `[1, 2, 3, 4, 5]`, and several pairs have the minimum difference of 1: $((1, 2), (2, 3), (3, 4), (4, 5))$. The task is to return the array.

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Sorting is 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. In this case, it will make it easier to determine which pair or pairs of elements have the smallest absolute difference between them.

Example

`arr = [5, 2, 3, 4, 1]`

Sorted, `arr' = [1, 2, 3, 4, 5]`. Several pairs have the minimum difference of 1: `[(1, 2), (2, 3), (3, 4), (4, 5)]`. Return the array `[1, 2, 3, 3, 4, 4, 5]`.

Note

As shown in the example, pairs may overlap.

Given a list of unsorted integers, `arr`, find the pair of elements that have the smallest absolute difference between them. If there are multiple pairs, find them all.

Function Description

Complete the `closestNumbers` function in the editor below.

`closestNumbers` has the following parameter(s):

- `arr[n]`: an array of integers

Returns

`int[]`: an array of integers as described

Input Format

The first line contains a single integer `n`, the length of `arr`.

The second line contains `n` space-separated integers, `arr[i]`.

Constraints

Author HackerRank

Difficulty Easy

Max Score 35

Submitted By 58780

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$2 \leq n \leq 200000$

$-10^7 \leq arr[i] \leq 10^7$

All $a[i]$ are unique in `arr`.

Output Format

Sample Input 0

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

Sample Output 0

```
-20 30
```

Explanation 0

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

Sample Input 1

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

Sample Output 1

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

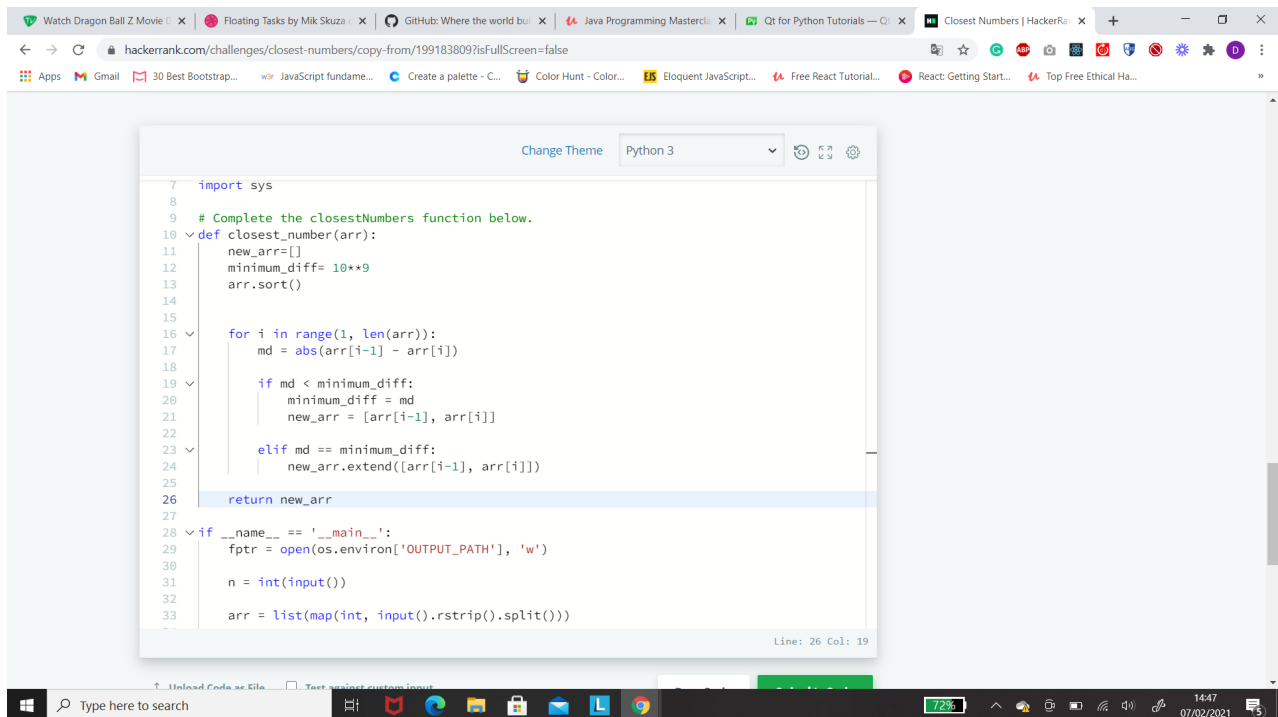
Explanation 1

`(-470) - (-520) = 50`, which is the smallest difference.

Type here to search

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Code Submitted



The screenshot shows a code editor with Python 3 code. The code defines a function `closest_number(arr)` that finds the closest numbers in an array. It sorts the array and iterates through it to find the minimum difference between adjacent elements. The code also includes a main block that reads input from the user and prints the result.

```
import sys

# Complete the closestNumbers function below.
def closest_number(arr):
    new_arr=[]
    minimum_diff= 10**9
    arr.sort()

    for i in range(1, len(arr)):
        md = abs(arr[i-1] - arr[i])

        if md < minimum_diff:
            minimum_diff = md
            new_arr = [arr[i-1], arr[i]]

        elif md == minimum_diff:
            new_arr.extend([arr[i-1], arr[i]])

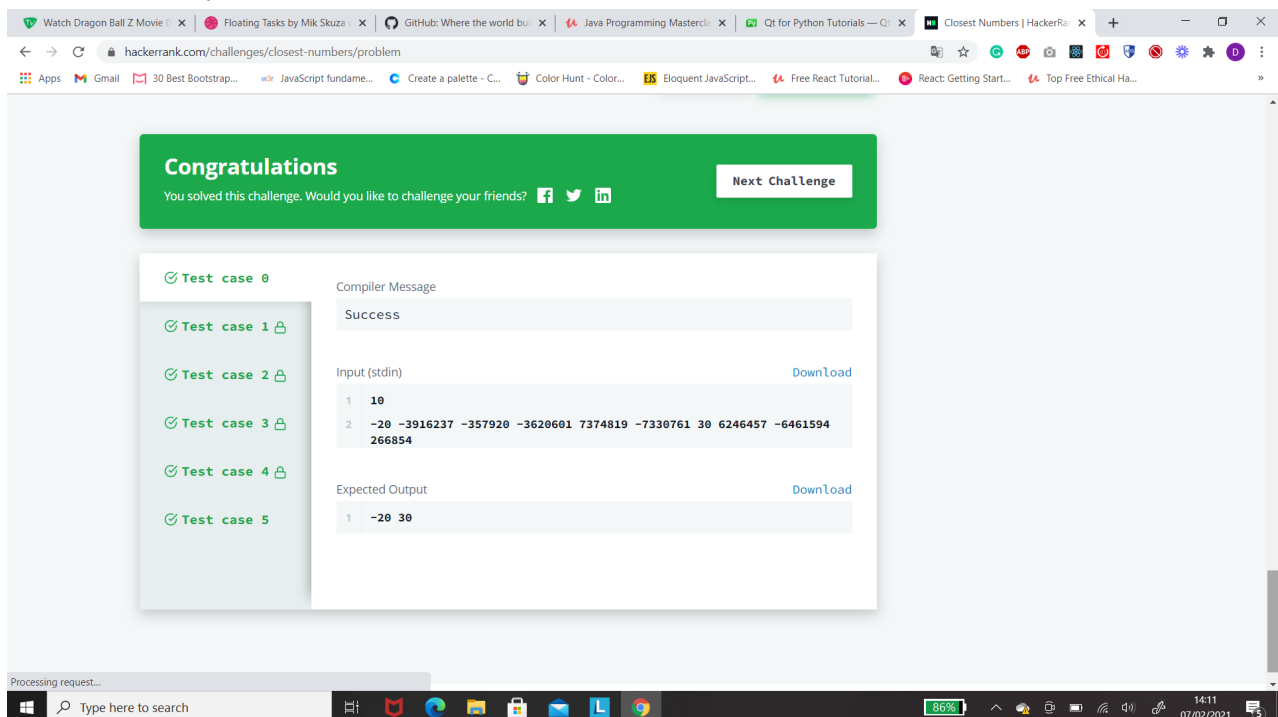
    return new_arr

if __name__ == '__main__':
    fptr = open(os.environ['OUTPUT_PATH'], 'w')

    n = int(input())

    arr = list(map(int, input().rstrip().split()))
```

Code Successfully



The screenshot shows the HackerRank challenge page for 'Closest Numbers'. It displays a 'Congratulations' message and a list of test cases. The first test case is highlighted, showing the input array and the expected output.

Congratulations
You solved this challenge. Would you like to challenge your friends?

Test case 0

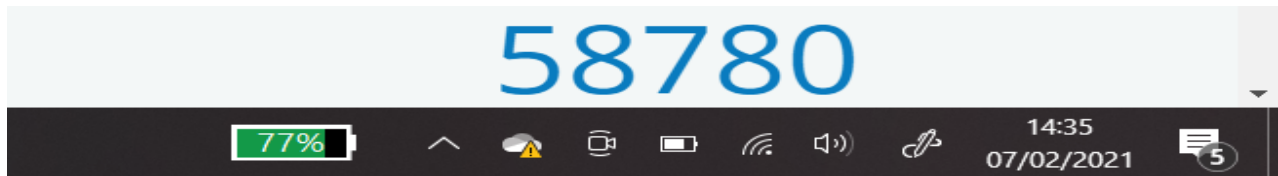
Compiler Message: Success

Input (stdin):
10
-20 -3916237 -357920 -3620601 7374819 -7330761 30 6246457 -6461594 266854

Expected Output:
1 -20 30

Programming Language Used: **PYTHON 3**

Time Submitted:



Code User

```
def closest_number(arr):  
    new_arr=[]  
    minimum_diff= 10**9  
    arr.sort()  
  
    for i in range(1, len(arr)):  
        md = abs(arr[i-1] - arr[i])  
  
        if md < minimum_diff:  
            minimum_diff = md  
            new_arr = [arr[i-1], arr[i]]  
  
        elif md == minimum_diff:  
            new_arr.extend([arr[i-1], arr[i]])  
  
    return new_arr
```