Programming Assignments 1 - Closest Numbers

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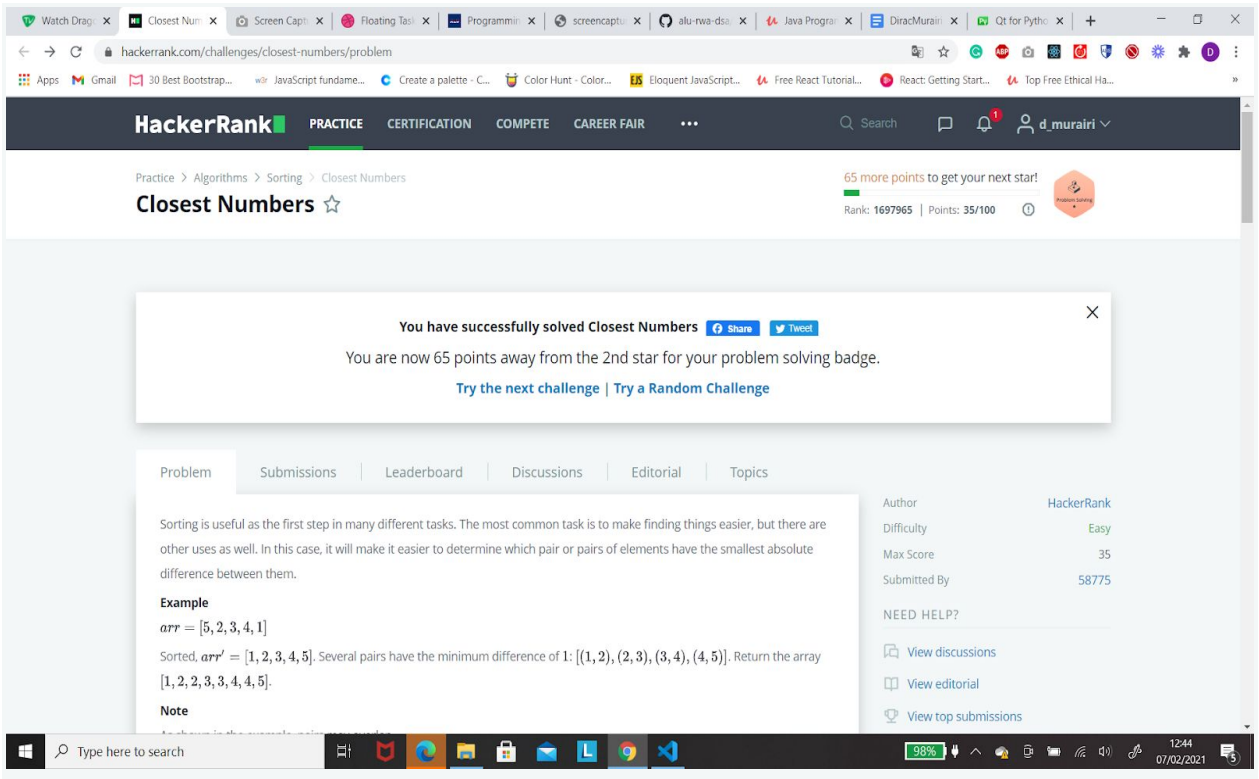
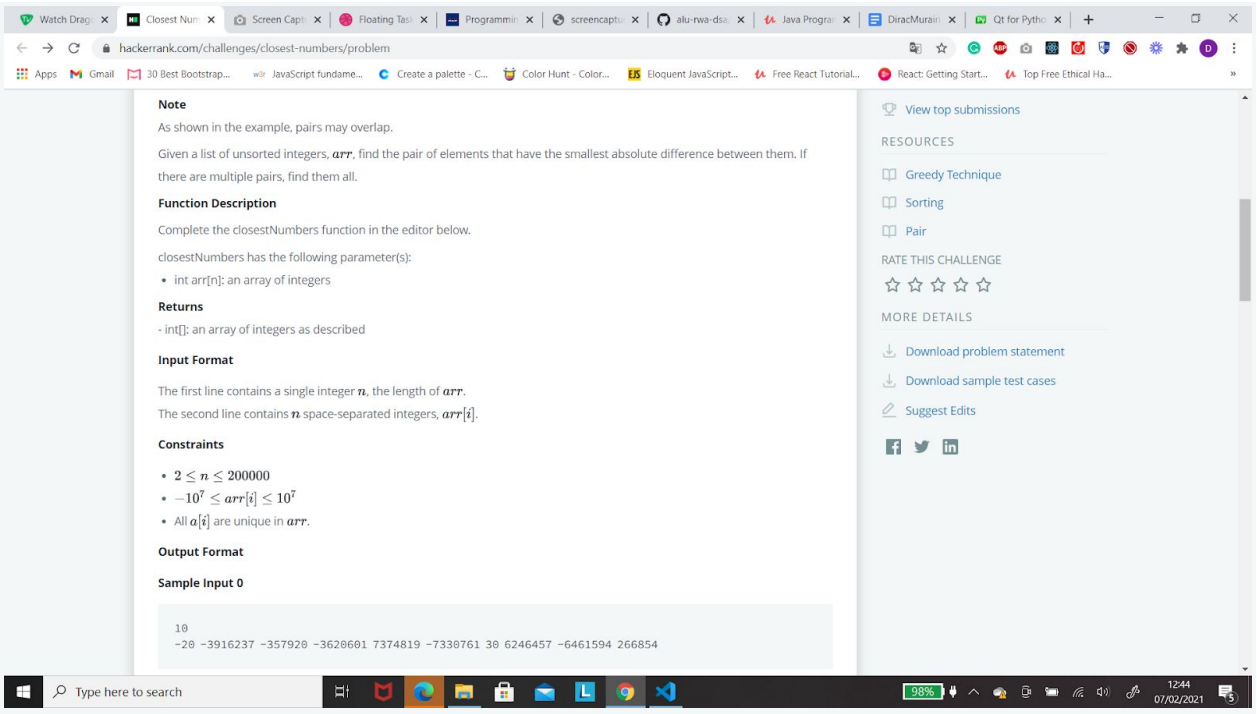
`Question`





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):

- int 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

- $2 \leq n \leq 200000$
- $-10^7 \leq arr[i] \leq 10^7$
- All $a[i]$ are unique in arr.

Output Format

Sample Input 0

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

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RESOURCES

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Sorting

Pair

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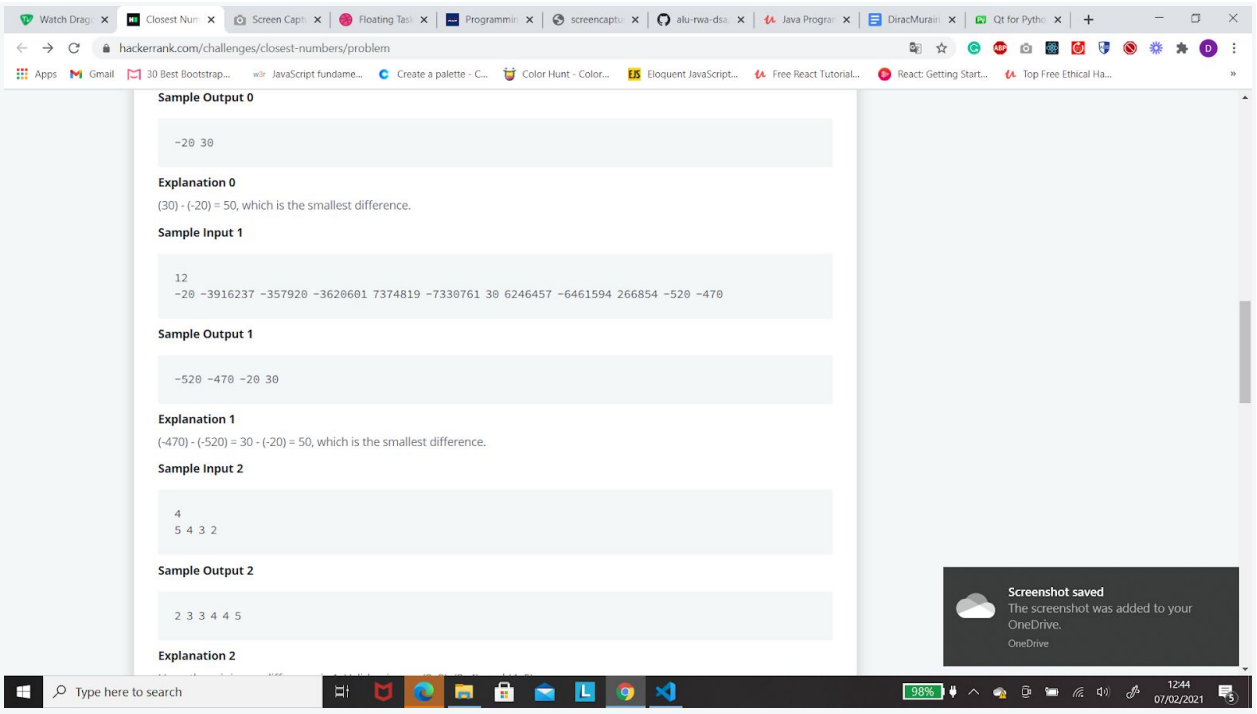
Suggest Edits



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

Sample Input 2

```
4
5 4 3 2
```

Sample Output 2

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

Explanation 2

Screenshot saved
The screenshot was added to your OneDrive.
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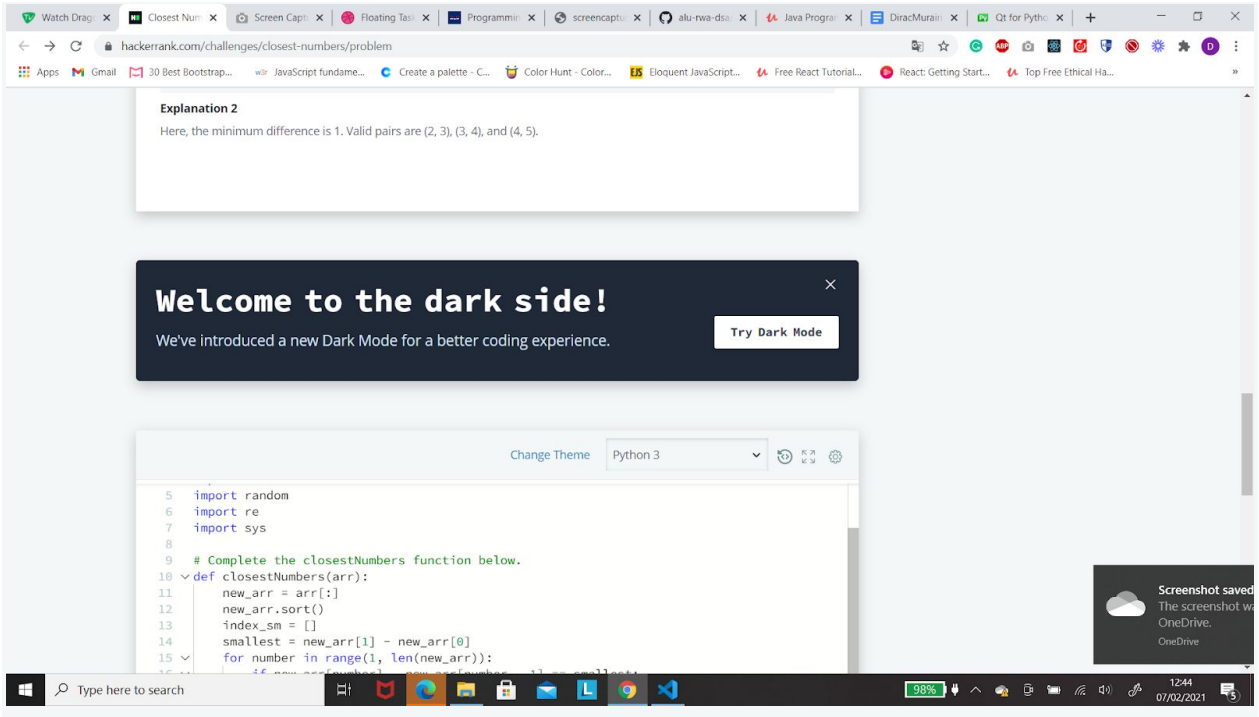
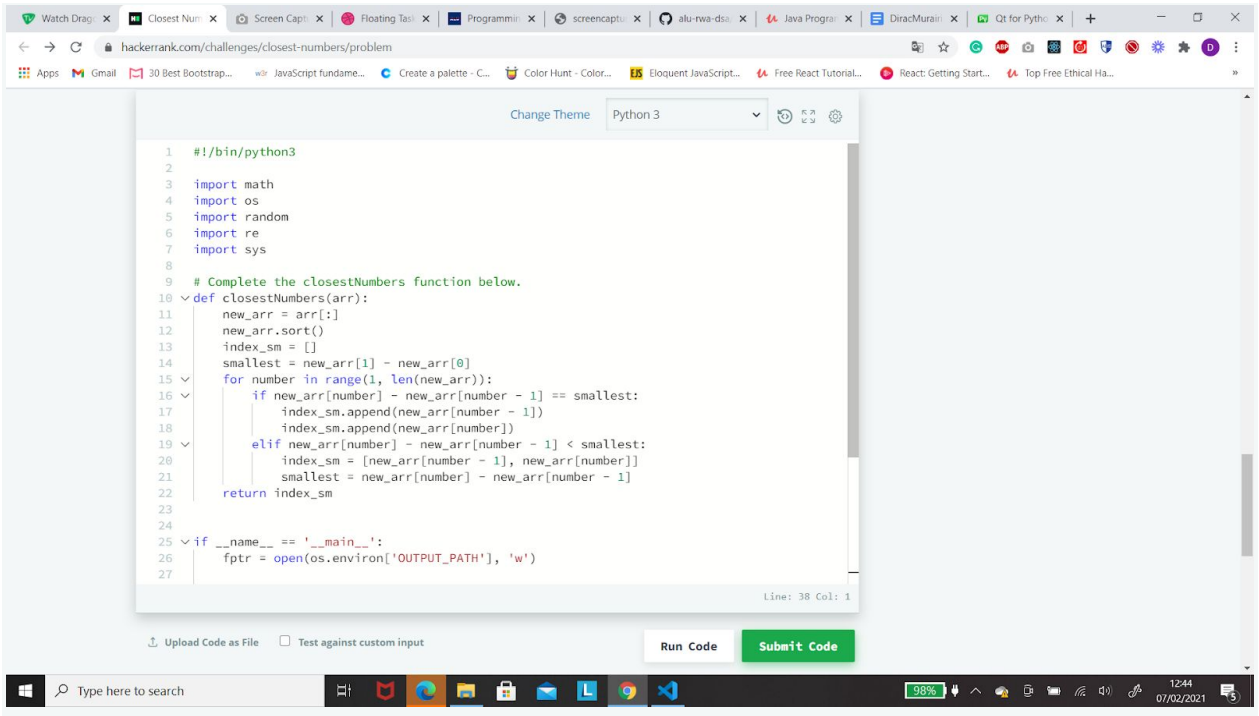
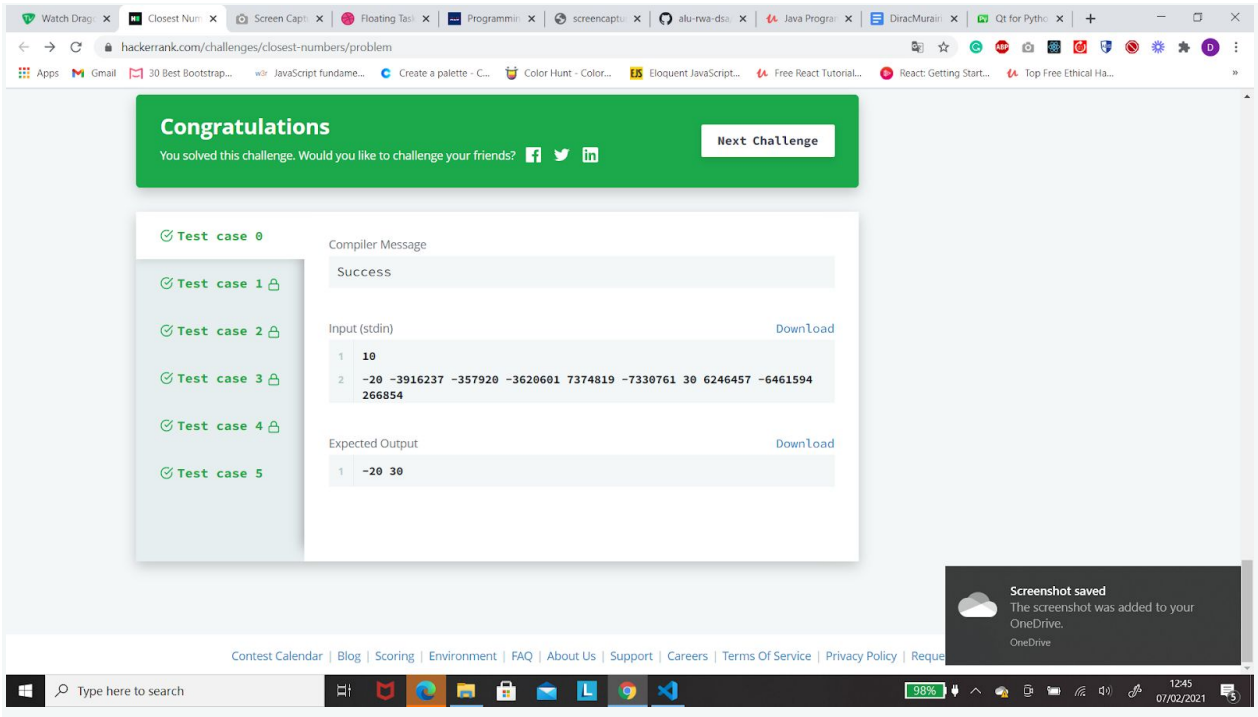
Code submitted

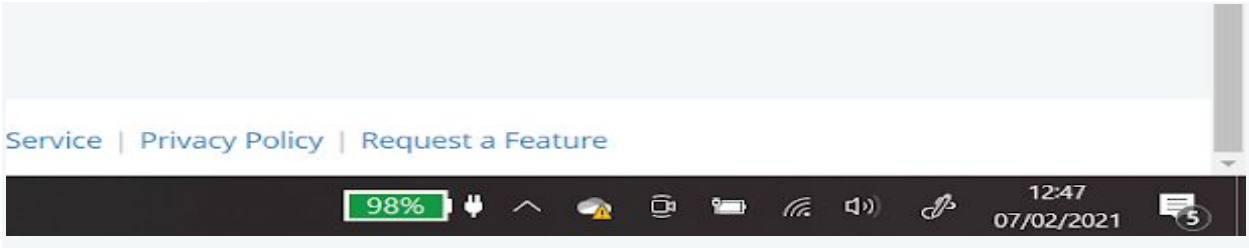




Requirement passed



Time submitted



Code used

```
def closestNumbers(arr):
    new_arr = arr[:]
    new_arr.sort()
    index_sm = []
    smallest = new_arr[1] - new_arr[0]
    for number in range(1, len(new_arr)):
        if new_arr[number] - new_arr[number - 1] == smallest:
            index_sm.append(new_arr[number - 1])
            index_sm.append(new_arr[number])
        elif new_arr[number] - new_arr[number - 1] < smallest:
            index_sm = [new_arr[number - 1], new_arr[number]]
            smallest = new_arr[number] - new_arr[number - 1]
    return index_sm
```