

GE23131-Programming Using C-2024

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Status	Finished
Started	Sunday, 12 January 2025, 11:43 PM
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Question 1

Correct

☐ Flag question

Given an array of numbers, find the index of the smallest array element (the pivot), for which the left and to the right are equal. The array may not be reordered.

Example

arr=[1,2,3,4,6]

- the sum of the first three elements, 1+2+3=6. The value of the last element is 6.
- Using zero based indexing, arr[3]=4 is the pivot between the two subarrays.
- The index of the pivot is 3.

Function Description

Complete the function balancedSum in the editor below.

balancedSum has the following parameter(s):

int arr[n]: an array of integers

Returns:

int: an integer representing the index of the pivot

Constraints

- $3 \leq n \leq 10^5$
- $1 \leq arr[i] \leq 2 \times 10^4$, where $0 \leq i < n$
- It is guaranteed that a solution always exists.

Input Format for Custom Testing

Input from stdin will be processed as follows and passed to the function.

The first line contains an integer n, the size of the array arr.
Each of the next n lines contains an integer, arr[i], where $0 \leq i < n$.

Sample Case 0

Sample Input 0

STDIN Function Parameters

```
4      → arr[] size n = 4
1      → arr = [1, 2, 3, 3]
2
3
3
```

Sample Output 0

Explanation 0

- The sum of the first two elements, 1+2=3. The value of the last element is 3.
- Using zero based indexing, arr[2]=3 is the pivot between the two subarrays.
- The index of the pivot is 2.

Sample Case 1

Sample Input 1

STDIN Function Parameters

3 → arr[] size n = 3

1 → arr = [1, 2, 1]

2

1

Sample Output 1

1

Explanation 1

- The first and last elements are equal to 1.
- Using zero based indexing, arr[1]=2 is the pivot between the two subarrays.
- The index of the pivot is 1.

Answer: (penalty regime: 0 %)

Reset answer

	Test	Expected	Got	
	int arr[] = {1,2,3,3}; printf("%d", balancedSum(4, arr))	2	2	

Passed all tests!

Question **2**
Correct
☐ Flag question

Calculate the sum of an array of integers.

Example

The sum is $3 + 13 + 4 + 11 + 9 = 40$.

Function Description

Complete the function `arraySum` in the editor below.

`arraySum` has the following parameter(s):

`int numbers[n]`: an array of integers

Returns

`int`: integer sum of the numbers array

Constraints

$$1 \leq n \leq 10^4$$

$$1 \leq \text{numbers}[i] \leq 10^4$$

Input Format for Custom Testing

Input from `stdin` will be processed as follows and passed to the function.

The first line contains an integer `n`, the size of the array `numbers`.

Each of the next `n` lines contains an integer `numbers[i]` where $0 \leq i < n$.

Sample Case 0

Sample Input 0

STDIN	Function
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-----	-----
-------	-------

5	→ numbers[] size n = 5
---	------------------------

1	→ numbers = [1, 2, 3, 4, 5]
---	-----------------------------

2	
---	--

3	
---	--

4	
---	--

5	
---	--

Sample Output 0

15

Explanation 0

$$1 + 2 + 3 + 4 + 5 = 15.$$

Sample Case 1

Sample Input 1

STDIN	Function
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-----	-----
-------	-------

2	→ numbers[] size n = 2
---	------------------------

12	→ numbers = [12, 12]
----	----------------------

12	
----	--

Sample Output 1

24

12 + 12 = 24.

Answer: (penalty regime: 0 %)

Reset answer

	Test	Expected	Got	
	<pre>int arr[] = {1,2,3,4,5}; printf("%d", arraySum(5, arr))</pre>	15	15	

Passed all tests!

Question **3**

Correct

☐ Flag question

Given an array of n integers, rearrange them so that the sum of the absolute differences of all adjacent elements is minimized. Then, compute the sum of those absolute differences. Example $n = 5$ $arr = [1, 3, 3, 3, 4]$ as $arr' = [1, 2, 3, 3, 4]$, the absolute differences are $|1 - 2| = 1, |2 - 3| = 1, |3 - 3| = 0, |3 - 4| = 1$ and the sum of differences is $1 + 1 + 0 + 1 = 3$. Function Description Complete the function `minDiff` in the editor below. Function parameter: `arr`: an integer array Returns: `int`: the sum of the absolute differences of all adjacent elements in the rearranged array Constraints $2 \leq n \leq 105$ $0 \leq arr[i] \leq 109$, where $0 \leq i < n$ Input Format For Custom Testing The first line contains an integer, n , the size of `arr`. Each of the following n lines contains an integer that describes an element in `arr`. Sample Case 0 Sample Input For Custom Testing STDIN Function ----- 5 \rightarrow `arr[]` size $n = 5$ 1 3 3 3 4 Sample Output 6 Explanation $n = 5$ $arr = [5, 1, 3, 7, 3]$ If `arr` is rearranged as $arr' = [1, 3, 3, 7, 5]$, the absolute differences are $|1 - 3| = 2, |3 - 3| = 0, |3 - 7| = 4, |7 - 5| = 2$ and the sum of differences is $2 + 0 + 4 + 2 = 8$. The final answer is $|1 - 3| + |3 - 3| + |3 - 7| + |7 - 5| = 8$. Sample Case 1 Sample Input For Custom Testing STDIN Function ----- 2 \rightarrow `arr[]` size $n = 2$ 3 2 Sample Output 1 Explanation $n = 2$ $arr = [3, 2]$ The final answer is $|3 - 2| = 1$.

Answer: (penalty regime: 0 %)

Reset answer

	Test	Expected	Got	
	<pre>int arr[] = {5, 1, 3, 7, 3}; printf("%d", minDiff(5, arr))</pre>	6	6	

Save the state of the flags