PassingArraysandStringstoFunctions

Ex.No.: **Date:**

BalancedArray

ProblemStatement:

Given an array of numbers, find the index of the smallest array element (the pivot), for whichthesumsofallelementstotheleftandtotherightareequal.Thearraymaynotbe reordered.

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

- thesumofthefirstthreeelements,1+2+3=6.Thevalueofthelastelementis6.
- Usingzerobasedindexing,arr[3]=4isthepivotbetweenthetwosubarrays.
- Theindexofthepivotis3.

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≤n≤105
- 1≤arr[i]≤2×104,where0≤i<n
- Itisguaranteedthatasolutionalways exists.

InputFormatforCustom Testing
Input from stdin will be processed as follows and passed to the function. The first line containsanintegern,thesizeofthearrayarr.Eachofthenextnlinescontainsaninteger, arr[i], where 0 ≤ i < n.

SampleInput

STDIN		FunctionParameters
-----		----------
4	→	arr[]sizen=4
1	→	arr=[1,2,3,3]
2		
3		
3		

SampleOutput0
2

Explanation0

- Thesumofthefirsttwoelements,1+2=3.Thevalueofthelastelementis3.
- Usingzerobasedindexing,arr[2]=3isthepivotbetweenthetwosubarrays.
- Theindexofthepivotis2.

Program:

```c
/*
 * Complete the 'balancedSum' function below.
 *
 * The function is expected to return an INTEGER.
 * The function accepts INTEGER_ARRAY arr as parameter.
 */

int balancedSum(int arr_count, int* arr)
{
int left=0,right=0;
for(int i=0;i<arr_count;i++){
    right +=arr[i];

}
for(int i=0;i<arr_count;i++)
 {
     if(left==right-arr[i])
       return i;
      left+=arr[i];
      right-=arr[i];
 }
 return 1;
}
```

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

Passed all tests! ✓

Ex.No.: **Date:**

SumThemAll

ProblemStatement:

Calculatethesumofanarrayofintegers.

Example
numbers=[3,13,4,11,9]
Thesumis3+13+4+11+9=40.

FunctionDescription
Completethefunctionarraysumintheeditorbelow.

arraySum has the following parameter(s):
int numbers[n]: an array of integers

Returns
int:integersumofthenumbersarray

Constraints
1≤n≤104
1≤numbers[i]≤104

InputFormatforCustom Testing
Inputfromstdinwillbeprocessedasfollowsandpassedtothefunction.
Thefirstlinecontainsanintegern,thesizeofthearraynumbers.
Eachofthenextnlinescontainsanintegernumbers[i]where0≤i<n.

SampleInput

STDIN		Function
5	→	numbers[]sizen=5
1	→	numbers=[1,2,3,4,5]
2		
3		
4		
5		

Sample Output
15

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

Program:

```
 * Complete the 'arraySum' function below.
 *
 * The function is expected to return an INTEGER.
 * The function accepts INTEGER_ARRAY numbers as parameter.
 */

int arraySum(int numbers_count, int *numbers)
{
    int sum=0;
    for(int i=0;i<numbers_count;i++)
    {
        sum+=numbers[i];
    }
    return sum;
}
```

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

Ex.No.: **Date:**

MinimumDifferenceSum

ProblemStatement:

Givenanarrayofnintegers,rearrangethemsothatthesumoftheabsolutedifferencesof alladjacentelementsisminimized.Then,computethesumofthoseabsolutedifferences.

Example
n= 5,arr=[1,3, 3,2,4]
Ifthelistisrearrangedasarr'=[1,2,3,3,4],theabsolutedifferencesare|1 -2|=1,|2- 3| = 1,|3 - 3| = 0, |3 - 4| = 1. The sum of those differences is 1 + 1 + 0 + 1 = 3.

FunctionDescription
Completethefunction minDiff in the editor below.

minDiff has the following parameter:
arr: an integer array

Returns:
int:thesumoftheabsolutedifferencesofadjacentelements

Constraints
2≤n≤105
0≤arr[i]≤109,where0≤i<n

InputFormatForCustom Testing
Thefirstlineofinputcontainsaninteger,n,thesizeofarr.
Eachofthefollowingnlinescontainsanintegerthatdescribesarr[i](where0≤i<n).

Sample Input For Custom Testing

STDIN		Function
5	→	arr[]sizen=5
5	→	arr[]=[5,1,3,7,3]
1		
3		
7		
3		

Sample Output
6

Explanation
n= 5, arr =[5,1,3,7,3]
Ifarrisrearrangedasarr'=[1,3,3,5,7],thedifferencesareminimized. The final answer is |1 - 3| + |3 - 3| + |3 - 5| + |5 - 7| = 6.

Program:

```c
/*
 * Complete the 'minDiff' function below.
 *
 * The function is expected to return an INTEGER.
 * The function accepts INTEGER_ARRAY arr as parameter.
 */

int minDiff(int arr_count, int* arr)
{
    for(int i=0;i<arr_count-1;i++)
    {
        for(int j=0;j<arr_count-i-1;j++){
            if(arr[j]>arr[j+1]){
                int temp=arr[j];
                arr[j]=arr[j+1];
                arr[j+1]=temp;
            }
        }
    }
    int sum=0;
    for(int i=0;i<arr_count-1;i++){
        sum+=abs(arr[i]-arr[i+1]);
    }
    return sum;
}
```

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

Passed all tests! ✓