Ex. No. : 5.1 **Date:**

Register No: 231501049 **Name: GNAANESH B B**

Balanced Array

Given an array of numbers, find the index of the smallest array element (the pivot), for which the sums of all elements to 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.

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.

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
4
1
2
3
3
Sample Output 0
2
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
3
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.

For example:

Input	Result
4 1 2 3 3	2
3 1 2 1	1

PROGRAM:

```
a=int(input())
l=[]
for i in range(a):
    c=int(input())
    l.append(c)
for i in range(1,a):
    d=sum(l[0:i])
    r=sum(l[i+1:])
    if(d==r):
        print(i)
```

	Input	Expected	Got	
✔	4 1 2 3 3	2	2	✔
✔	3 1 2 1	1	1	✔

Passed all tests! ✔

Ex. No. : 5.2 **Date:**

Register No: 231501049 **Name: GNAANESH B B**

Check pair with difference k

Given an array A of sorted integers and another non negative integer k, find if there exists 2 indices i and j such that A[i] - A[j] = k, i != j.

Input Format

1. First line is number of test cases T. Following T lines contain:
2. N, followed by N integers of the array
3. The non-negative integer k

Output format

Print 1 if such a pair exists and 0 if it doesn't

Input
1
3
1
3
5
4
Output:
1
Input
1
3
1
3
5
99
Output
0

For example:

Input	Result
1 3 1 3 5 4	1

Input	Result
1 3 1 3 5 99	0

PROGRAM:

```
a=int(input())
while(a!=0):
    b=int(input())
    l=[]
    f=0
    for i in range(b):
        c=int(input())
        l.append(c)
    k=int(input())
    a-=1
    for i in range(b):
        for j in range(b):
            if(l[i]-l[j]==k and i!=j):
                f=1
                break
    if(f==1):
        print(1)
    else:
        print(0)
```

	Input	Expected	Got	
✔	1 3 1 3 5 4	1	1	✔
✔	1 3 1 3 5 99	0	0	✔

Passed all tests! ✔

Ex. No. : 5.3 **Date:**

Register No: 231501049 **Name: GNAANESH B B**

Count Elements

Complete the program to count frequency of each element of an array. Frequency of a particular element will be printed once.

Sample Test Cases

Test Case 1

Input

7

23

45

23

56

45

23

40

Output

23 occurs 3 times

45 occurs 2 times

56 occurs 1 times

40 occurs 1 times

PROGRAM:

```
import collections
def CountFrequency(arr):
        return collections.Counter(arr)

if __name__ == "__main__":
        # Input size of array
        n = int(input())

        # Input elements in array
        arr = []
        for _ in range(n):
        ele = int(input())
        arr.append(ele)

        # Calculate frequency of each element
        freq = CountFrequency(arr)


        for key, value in freq.items():
        print(f"{key} occurs {value} times")
```

	Input	Expected	Got
✔	7 23 45 23 56 45 23 40	23 occurs 3 times 45 occurs 2 times 56 occurs 1 times 40 occurs 1 times	23 occurs 45 occurs 56 occurs 40 occurs

Passed all tests! ✔

Ex. No. : 5.4 **Date:**

Register No: 231501049 **Name: GNAANESH B B**

Distinct Elements in an Array

Program to print all the distinct elements in an array. Distinct elements are nothing but the unique (non-duplicate) elements present in the given array.
Input Format:
First line take an Integer input from stdin which is array length n.
Second line take n Integers which is inputs of array.
Output Format:
Print the Distinct Elements in Array in single line which is space Separated

Example Input:
5
1
2
2
3
4
Output:
1 2 3 4
Example Input:
6
1
1
2
2
3
3
Output:
1 2 3

For example:
Input Result
5
1
2
2
3
4
1 2 3 4
6
1

1
2
2
3
3
1 2 3

PROGRAM:

```
def merge_arrays_without_duplicates(arr1, arr2):
    result_set = set(arr1 + arr2)
    merged_sorted_array = sorted(result_set)
    return merged_sorted_array
def process_input():
    n1 = int(input())
    array1 = []
    for _ in range(n1):
        element = int(input())
        array1.append(element)

    n2 = int(input())
    array2 = []
    for _ in range(n2):
        element = int(input())
        array2.append(element)

    result = merge_arrays_without_duplicates(array1, array2)
```

```
print(" ".join(map(str, result)))
```

	Input	Expected
✔	5 1 2 3 6 9 4 2 4 5 10	1 2 3 4 5 6 9 10
✔	7 4 7 8 10 12 30 35 9 1 3 4 5 7 8 11 13 22	1 3 4 5 7 8 10 11 12 13 22 3(

Passed all tests! ✔

Ex. No. : 5.5 **Date:**

Register No: 231501049 **Name: GNAANESH B B**

Element Insertion

Consider a program to insert an element / item in the sorted array. Complete the logic by filling up required code in editable section. Consider an array of size 10. The eleventh item is the data is to be inserted.

Sample Test Cases
Test Case 1
Input
1
3
4
5
6
7
8
9
10
11
2

Output
ITEM to be inserted:2
After insertion array is:
1
2
3
4
5
6
7
8
9
10
11

22
33
55
66
77
88
99
110
120
44

Output

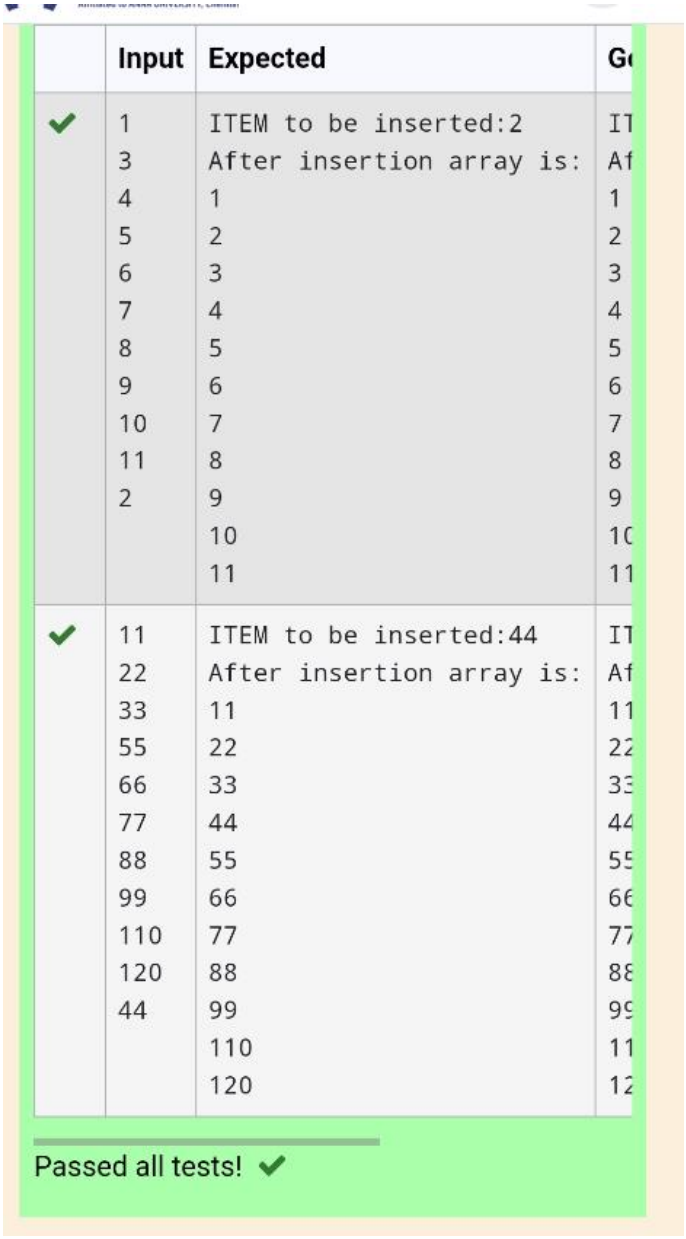
ITEM to be inserted:44
After insertion array is:
11
22
33
44
55
66
77
88
99
110
120

Test Case 2
Input
11

PROGRAM:

```
def insert_sorted(list, n):
    list.append(n)
    sorted_list = sorted(list)
    print("After insertion array is:")
    for i in range(11):
        print(sorted_list[i])


sorted_list = [int(input()) for i in range(10)]
new_element = int(input())
print("ITEM to be inserted:", new_element, sep='')
insert_sorted(sorted_list, new_element)
```



	Input	Expected	G
✔	1 3 4 5 6 7 8 9 10 11 2	ITEM to be inserted:2 After insertion array is: 1 2 3 4 5 6 7 8 9 10 11	IT Af 1 2 3 4 5 6 7 8 9 10 11
✔	11 22 33 55 66 77 88 99 110 120 44	ITEM to be inserted:44 After insertion array is: 11 22 33 44 55 66 77 88 99 110 120	IT Af 11 22 33 44 55 66 77 88 99 11 12

Passed all tests! ✔