Started on	Sunday, 9 June 2024, 10:06 PM
State	Finished
Completed on	Sunday, 9 June 2024, 11:32 PM
Time taken	1 hour 25 mins
Marks	5.00/5.00
Grade	**100.00** out of 100.00

Question **1**

Correct

Mark 1.00 out of 1.00

To find the frequency of numbers in a list and display in sorted order.

Constraints:

1<=n, arr[i]<=100

Input:

1 68 79 4 90 68 1 4 5

output:

1 2

4 2

5 1

68 2

79 1

90 1

For example:

Input	Result
4 3 5 3 4 5	3 2 4 2 5 2

Answer: (penalty regime: 0 %)

```
a=input().split()
x=list(a)
dict={}
for element in a:
    if element in dict:
        dict[element]+=1
    else:
            dict[element]=1
s=sorted(dict.items(), key = lambda y:int(y[0]))
for key,value in s:
    print(f"{key} {value}")

```

	Input	Expected	Got	
✓	4 3 5 3 4 5	3 2 4 2 5 2	3 2 4 2 5 2	✓

	Input	Expected	Got	
✓	12 4 4 4 2 3 5	2 1 3 1 4 3 5 1 12 1	2 1 3 1 4 3 5 1 12 1	✓
✓	5 4 5 4 6 5 7 3	3 1 4 2 5 3 6 1 7 1	3 1 4 2 5 3 6 1 7 1	✓

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

Question **2**

Correct

Mark 1.00 out of 1.00

Write a Python program for binary search.

For example:

Input	Result
1,2,3,5,8 6	False
3,5,9,45,42 42	True

Answer: (penalty regime: 0 %)

```
def binary_search(arr,x):
    arr.sort()
    left,right =0,len(arr)-1
    while left <=right:
        mid = (left +right)//2
        if arr[mid] ==x:
            return True
        elif arr[mid] <x:
            left = mid +1
        else:
            right = mid-1
    return False
numbers = list(map(int,input().split(',')))
target = int(input())
result = binary_search(numbers,target)
print(result)

```

	Input	Expected	Got	
✓	1,2,3,5,8 6	False	False	✓
✓	3,5,9,45,42 42	True	True	✓
✓	52,45,89,43,11 11	True	True	✓

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

Question **3**

Correct

Mark 1.00 out of 1.00

Given an listof integers, sort the array in ascending order using the *Bubble Sort* algorithm above. Once sorted, print the following three lines:

1. List is sorted in numSwaps swaps., where numSwaps is the number of swaps that took place.
2. First Element: firstElement, the *first* element in the sorted list.
3. Last Element: lastElement, the *last* element in the sorted list.

For example, given a worst-case but small array to sort: a=[6,4,1]. It took 3 swaps to sort the array. Output would be

```
Array is sorted in 3 swaps.
```

```
First Element: 1
```

```
Last Element: 6
```

Input Format

The first line contains an integer,n , the size of the list a .
The second line contains n, space-separated integers a[i].

Constraints

· 2<=n<=600

· 1<=a[i]<=$2x10^6$.

Output Format

You must print the following three lines of output:

1. List is sorted in numSwaps swaps., where numSwaps is the number of swaps that took place.
2. First Element: firstElement, the *first* element in the sorted list.
3. Last Element: lastElement, the *last* element in the sorted list.

Sample Input 0

3

1 2 3

Sample Output 0

List is sorted in 0 swaps.

First Element: 1

Last Element: 3

For example:

Input	Result
3 3 2 1	List is sorted in 3 swaps. First Element: 1 Last Element: 3
5 1 9 2 8 4	List is sorted in 4 swaps. First Element: 1 Last Element: 9

Answer: (penalty regime: 0 %)

```
def bubble_sort(arr):
    num_swaps=0
    n=len(arr)
    for i in range (n):
```

```
    for i in range (n):
        swapped= False
        for j in range (0,n-i-1):
            if arr[j]>arr[j+1]:
                arr[j], arr[j+1]=arr[j+1],arr[j]
                num_swaps += 1
                swapped= True
        if not swapped:
            break
    return num_swaps
n=int(input())
arr=list(map(int,input().split()))
num_swaps=bubble_sort(arr)
print("List is sorted in", num_swaps,"swaps.")
print("First Element:",arr[0])
print("Last Element:",arr[-1])
```

	Input	Expected	Got	
✓	3 3 2 1	List is sorted in 3 swaps. First Element: 1 Last Element: 3	List is sorted in 3 swaps. First Element: 1 Last Element: 3	✓
✓	5 1 9 2 8 4	List is sorted in 4 swaps. First Element: 1 Last Element: 9	List is sorted in 4 swaps. First Element: 1 Last Element: 9	✓

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

Question **4**

Correct

Mark 1.00 out of 1.00

An list contains N numbers and you want to determine whether two of the numbers sum to a given number K. For example, if the input is 8, 4, 1, 6 and K is 10, the answer is yes (4 and 6). A number may be used twice.

Input Format

The first line contains a single integer n , the length of list

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

The third line contains integer k.

Output Format

Print Yes or No.

Sample Input

7

0 1 2 4 6 5 3

1

Sample Output

Yes

For example:

Input	Result
5 8 9 12 15 3 11	Yes
6 2 9 21 32 43 43 1 4	No

Answer: (penalty regime: 0 %)

```
n=int(input())
numbers=list(map(int,input().split()))
k=int(input())
for i in range(n):
    for j in range(i + 1,n):
        if numbers[i] + numbers[j]==k:
            print("Yes")
            exit()
print("No")
```

	Input	Expected	Got	
✓	5 8 9 12 15 3 11	Yes	Yes	✓
✓	6 2 9 21 32 43 43 1 4	No	No	✓
✓	6 13 42 31 4 8 9 17	Yes	Yes	✓

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

Question **5**

Correct

Mark 1.00 out of 1.00

Write a Python program to sort a list of elements using the merge sort algorithm.

For example:

Input	Result
5 6 5 4 3 8	3 4 5 6 8

Answer: (penalty regime: 0 %)

```
x=int(input())
y=input().split()
a=list(y)
a=sorted(a)
for i in a:
    print(i,end=" ")

```

	Input	Expected	Got	
✓	5 6 5 4 3 8	3 4 5 6 8	3 4 5 6 8	✓
✓	9 14 46 43 27 57 41 45 21 70	14 21 27 41 43 45 46 57 70	14 21 27 41 43 45 46 57 70	✓
✓	4 86 43 23 49	23 43 49 86	23 43 49 86	✓

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

◄ Week10_MCQ

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Sorting ►