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#class program(16.1.25)
def find_missing_number(arr):
    n = len(arr) + 1#5+1=6
    total_sum = n * (n + 1) // 2#6*7//2=6*3.5=21.0
    actual_sum = sum(arr)#17
    return total_sum - actual_sum#21-17=4

arr = list(map(int, input("Enter the numbers in the array separated by space:
").split()))#[1,2,3,5,6]
print(find_missing_number(arr))

#2
def find_duplicate(arr):
    nums=set()
    duplicates=set()
    for i in arr:#iterating array
        if i in nums:
            duplicates.add(i)#append will not work in array
        nums.add(i)
    return [i for i in nums if i not in duplicates]


from array import *#import the array module
arr=array('i',[])# Initialize an empty array of integers
n=int(input("Enter how many values you need:"))# Get the number of values
for i in range(n):
    x=int(input("Enter the value:"))
    arr.append(x)
print(arr)
print(find_duplicate(arr))

#3
def find_sort(arr):
    if arr==sorted(arr):
        return true
    else:
        return sorted(arr)
from array import *
arr=array('i',[])
n=int(input("Enter how many values you need:"))
for i in range(n):
    x=int(input("Enter the value:"))
    arr.append(x)
print(arr)
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```
print(find_sort(arr))

#4
def find_majority_element(arr):
    count = {}
    for num in arr:
        if num in count:
            count[num] += 1
        else:
            count[num] = 1
    for num, freq in count.items():
        if freq > len(arr) // 2:
            return num

# Test the function
arr = list(map(int, input("Enter a list of numbers separated by spaces: ").split()))
print(find_majority_element(arr))  # Output: 4

#5

def check_balanced_array(arr):
    total_sum = sum(arr)  # Total sum of all elements in the array
    left_sum = 0  # Initialize left sum as 0

    # Iterate through the array
    for i in range(len(arr)):
        # Right sum can be calculated as total_sum - left_sum - arr[i]
        right_sum = total_sum - left_sum - arr[i]

        # Check if left_sum equals right_sum
        if left_sum == right_sum:
            return True

        left_sum += arr[i]

    return False  # If no such index is found


arr = list(map(int, input("Enter a list of numbers separated by spaces: ").split()))
print(check_balanced_array(arr))  # Output: True



#6
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def find_pairs(arr, target):
    pairs = []  # List to store the pairs
    for i in range(len(arr)):
        for j in range(i + 1, len(arr)):  #i + 1 ensures that the second loop starts from the next
element after i.
            if arr[i] + arr[j] == target:
                pairs.append((arr[i], arr[j]))
    return pairs

# Example usage
arr=list(map(int,input("Enter the elements in the list with space : ").split()))
target = int(input("Enter the target: "))
print(find_pairs(arr, target))
```