1. Write a program that asks the user to enter a list of at least five integers. Do the following: (a) Print out the total number of items in the list. (b) Print out the fourth item (index 3) in the list. (c) Print out the last three items in the list. (d) Print out all the items in the list except the first two. (e) Print out the list in reverse order. (f) Print out the largest and smallest values in the list. (g) Print out the sum of all the values in the list. (h) If the list contains a zero, print out the index of the first zero in the list, and otherwise print out a message saying there are no zeroes. (i) Sort the list and print out the list after sorting. (j) Delete the first item from the (now sorted) list and print out the new list. (k) Change the second-to-last item in the list to 9876 and print out the new list. (l) Append the value -500 to the end of the list and print out the new list.

In [1]:
```
user_input = input("Enter a list of at least five integers, separated by spaces: ")
integer_list = list(map(int, user_input.split()))

print("Total number of items in the list:", len(integer_list))
print("Fourth item in the list:", integer_list[3])
print("Last three items in the list:", integer_list[-3:])
print("Items in the list except the first two:", integer_list[2:])
print("Largest value in the list:", max(integer_list))
print("Smallest value in the list:", min(integer_list))
print("Sum of all values in the list:", sum(integer_list))

if 0 in integer_list:
    print("Index of the first zero in the list:", integer_list.index(0))
else:
    print("There are no zeroes in the list.")

sorted_list = sorted(integer_list)
print("List after sorting:", sorted_list)

del sorted_list[0]
print("List after deleting the first item:", sorted_list)

sorted_list[-2] = 9876
print("List after changing the second-to-last item:", sorted_list)

sorted_list.append(-500)
print("List after appending -500:", sorted_list)
```

```
Enter a list of at least five integers, separated by spaces: 1 2 3 4 5
Total number of items in the list: 5
Fourth item in the list: 4
Last three items in the list: [3, 4, 5]
Items in the list except the first two: [3, 4, 5]
Largest value in the list: 5
Smallest value in the list: 1
Sum of all values in the list: 15
There are no zeroes in the list.
List after sorting: [1, 2, 3, 4, 5]
List after deleting the first item: [2, 3, 4, 5]
List after changing the second-to-last item: [2, 3, 9876, 5]
List after appending -500: [2, 3, 9876, 5, -500]
```

2. Write a program that asks the user to enter a list of numbers. Then print out the smallest thing in the list and the first index at which it appears in the list.

In [2]:
```
numbers = input("Enter a list of numbers, separated by spaces: ").split()
numbers = list(map(float, numbers))

smallest_value = min(numbers)
smallest_index = numbers.index(smallest_value)

print("Smallest value:", smallest_value)
print("First index of smallest value:", smallest_index)
```

```
Enter a list of numbers, separated by spaces:  1 23 345 23 21
Smallest value: 1.0
First index of smallest value: 0
```

Write a program that asks the user to enter a string of lowercase letters and creates a list containing counts of how many times each letter appears in the string. The first index is how many a's are in the string, the second is how many b's, etc.

In [3]:
```
string = input("Enter a string of lowercase letters: ")
letter_counts = [0] * 26

for letter in string:
    index = ord(letter) - ord('a')
    letter_counts[index] += 1

print("Letter counts:", letter_counts)
```

```
Enter a string of lowercase letters: alphabets
Letter counts: [2, 1, 0, 0, 1, 0, 0, 1, 0, 0, 0, 1, 0, 0, 0, 1, 0, 0, 1, 1, 0, 0, 0, 0, 0, 0]
```

Create a dictionary whose keys are the strings 'abc', 'def', 'ghi', 'jkl', and 'mno' and whose corresponding values are 7, 11, 13, 17, and 19. Then write dictionary code that does the following: (a) Print the value in the dictionary associated with the key 'def'. (b) Use the keys() method to print out all the keys. (c) Loop over the dictionary and print out all the keys and their associated values. (d) Use an if statement to check if the dictionary contains the key 'pqr' and print out an appropriate message indicating whether it does or doesn't. (e) Change the value associated with the key 'abc' to 23 and then print out all the values in the dictionary using the values() method.

In [4]:
```
my_dict = {
    'abc': 7,
    'def': 11,
    'ghi': 13,
    'jkl': 17,
```

```
    'mno': 19
}

print("Value associated with 'def':", my_dict['def'])
print("All keys in the dictionary:", list(my_dict.keys()))

print("Keys and their associated values:")
for key, value in my_dict.items():
    print(key, "->", value)

if 'pqr' in my_dict:
    print("The dictionary contains the key 'pqr'.")
else:
    print("The dictionary does not contain the key 'pqr'.")

my_dict['abc'] = 23
print("All values in the dictionary:", list(my_dict.values()))
```

```
Value associated with 'def': 11
All keys in the dictionary: ['abc', 'def', 'ghi', 'jkl', 'mno']
Keys and their associated values:
abc -> 7
def -> 11
ghi -> 13
jkl -> 17
mno -> 19
The dictionary does not contain the key 'pqr'.
All values in the dictionary: [23, 11, 13, 17, 19]
```

In [ ]: