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 [3]:
```python
user_input = input("Enter a list of at least five integers, separated by spaces: ")
numbers = list(map(int, user_input.split()))

# (a) Print the total number of items in the list
print("Total number of items:", len(numbers))

# (b) Print the fourth item (index 3) in the list
print("Fourth item:", numbers[3])

# (c) Print the last three items in the list
print("Last three items:", numbers[-3:])

# (d) Print all items in the list except the first two
print("Items except the first two:", numbers[2:])

# (e) Print the list in reverse order
print("List in reverse order:", numbers[::-1])

# (f) Print the largest and smallest values in the list
print("Largest value:", max(numbers))
print("Smallest value:", min(numbers))

# (g) Print the sum of all the values in the list
print("Sum of values:", sum(numbers))

# (h) Check if the list contains a zero and print the index or a message
if 0 in numbers:
    print("Index of the first zero:", numbers.index(0))
else:
    print("No zeroes in the list.")

# (i) Sort the list and print it
sorted_list = sorted(numbers)
print("Sorted list:", sorted_list)

# (j) Delete the first item from the sorted list and print it
del sorted_list[0]
print("List after deleting the first item:", sorted_list)

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

# (l) Append -500 to the end of the list and print it
sorted_list.append(-500)
print("List after appending -500:", sorted_list)
```
```
Enter a list of at least five integers, separated by spaces: 2 5 3 7 4
Total number of items: 5
Fourth item: 7
Last three items: [3, 7, 4]
Items except the first two: [3, 7, 4]
List in reverse order: [4, 7, 3, 5, 2]
Largest value: 7
Smallest value: 2
Sum of values: 21
No zeroes in the list.
Sorted list: [2, 3, 4, 5, 7]
List after deleting the first item: [3, 4, 5, 7]
List after changing the second-to-last item: [3, 4, 9876, 7]
List after appending -500: [3, 4, 9876, 7, -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 [5]:
```python
user_input = input("Enter a list of numbers, separated by spaces: ")
numbers = list(map(int, user_input.split()))

# Find the smallest value in the list
smallest = min(numbers)

# Find the first index of the smallest value
index = numbers.index(smallest)

# Print the smallest value and its first index
print("Smallest value:", smallest)
print("First index of the smallest value:", index)
```
```
Enter a list of numbers, separated by spaces: 4 3 5 2 5
Smallest value: 2
First index of the smallest value: 3
```

3. 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 [6]:
```python
user_input = input("Enter a string of lowercase letters: ")

# Initialize the count list with zeros for each lowercase letter
count_list = [0] * 26

# Iterate through each character in the input string
for char in user_input:
    # Check if the character is a lowercase letter
    if char.islower():
        # Increment the count at the corresponding index
        count_list[ord(char) - ord('a')] += 1
print(count_list)
```
```
Enter a string of lowercase letters: jvnfjlndfhakjg
[1, 0, 0, 1, 0, 2, 1, 1, 0, 3, 1, 1, 0, 2, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0]
```

4. 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 [7]:
```python
my_dict = {'abc': 7, 'def': 11, 'ghi': 13, 'jkl': 17, 'mno': 19}

# (a) Print the value associated with the key 'def'
print("Value associated with 'def':", my_dict['def'])

# (b) Print all the keys using the keys() method
print("Keys in the dictionary:", list(my_dict.keys()))

# (c) Loop over the dictionary and print keys and their values
for key, value in my_dict.items():
    print("Key:", key, "Value:", value)

# (d) Check if the key 'pqr' is in the dictionary
if 'pqr' in my_dict:
    print("'pqr' is in the dictionary.")
else:
    print("'pqr' is not in the dictionary.")

# (e) Change the value associated with 'abc' to 23
my_dict['abc'] = 23

# Print all the values using the values() method
print("Values in the dictionary:", list(my_dict.values()))
```
```
Value associated with 'def': 11
Keys in the dictionary: ['abc', 'def', 'ghi', 'jkl', 'mno']
Key: abc Value: 7
Key: def Value: 11
Key: ghi Value: 13
Key: jkl Value: 17
Key: mno Value: 19
'pqr' is not in the dictionary.
Values in the dictionary: [23, 11, 13, 17, 19]
```