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]:
```python
# Step (a)
num_list = input("Enter a list of at least five integers (comma-separated): ").split(",")
num_list = [int(num) for num in num_list]

# Step (b)
print("Fourth item:", num_list[3])

# Step (c)
print("Last three items:", num_list[-3:])

# Step (d)
print("Items except the first two:", num_list[2:])

# Step (e)
print("Reversed list:", num_list[::-1])

# Step (f)
print("Largest value:", max(num_list))
print("Smallest value:", min(num_list))

# Step (g)
print("Sum of all values:", sum(num_list))

# Step (h)
if 0 in num_list:
    print("Index of first zero:", num_list.index(0))
else:
    print("There are no zeroes.")

# Step (i)
sorted_list = sorted(num_list)
print("Sorted list:", sorted_list)

# Step (j)
del sorted_list[0]
print("New list after deleting first item:", sorted_list)

# Step (k)
sorted_list[-2] = 9876
print("New list after changing second-to-last item:", sorted_list)

# Step (l)
sorted_list.append(-500)
print("New list after appending -500:", sorted_list)
```
```
Enter a list of at least five integers (comma-separated): 47,54,71,09,21,23,96
Fourth item: 9
Last three items: [21, 23, 96]
Items except the first two: [71, 9, 21, 23, 96]
Reversed list: [96, 23, 21, 9, 71, 54, 47]
Largest value: 96
Smallest value: 9
Sum of all values: 321
There are no zeroes.
Sorted list: [9, 21, 23, 47, 54, 71, 96]
New list after deleting first item [21, 23, 47, 54, 71, 96]
New list after changing second-to-last item: [21, 23, 47, 54, 9876, 96]
New list after appending -500: [21, 23, 47, 54, 9876, 96, -500]
```

1. 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]:
```python
num_list = input("Enter a list of numbers (comma-separated): ").split(",")
num_list = [float(num) for num in num_list]

smallest = min(num_list)
index = num_list.index(smallest)

print("Smallest value:", smallest)
print("First index of smallest value:", index)
```
```
Enter a list of numbers (comma-separated): 12,41,35,67,98,66,71
Smallest value: 12.0
First index of smallest value: 0
```

1. 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 [2]:
```python
string = input("Enter a string of lowercase letters: ")

letter_counts = [0] * 26

for char in string:
    if char.islower():
        index = ord(char) - ord('a')
        letter_counts[index] += 1

for i in range(26):
    letter = chr(ord('a') + i)
    count = letter_counts[i]
    print(f"{letter}: {count}")
```
```
Enter a string of lowercase letters: hello how are you
a: 1
b: 0
c: 0
d: 0
e: 2
f: 0
g: 0
h: 2
i: 0
j: 0
k: 0
l: 2
m: 0
n: 0
o: 3
p: 0
q: 0
r: 1
s: 0
t: 0
u: 1
v: 0
w: 1
x: 0
y: 1
z: 0
```

1. 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]:
```python
my_dict = {'abc': 7, 'def': 11, 'ghi': 13, 'jkl': 17, 'mno': 19}

# Step (a)
print("Value associated with 'def':", my_dict['def'])

# Step (b)
print("All keys in the dictionary:", list(my_dict.keys()))

# Step (c)
print("Keys and their associated values:")
for key, value in my_dict.items():
    print(key, ":", value)

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

# Step (e)
my_dict['abc'] = 23
print("All values in the dictionary after changing 'abc' to 23:", 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
'pqr' is not in the dictionary.
All values in the dictionary after changing 'abc' to 23: [23, 11, 13, 17, 19]
```