1. Use the command below to create an empty list and print it to verify it is empty

   list = [] #defines an empty list

2. Create a list with the values 1 to 20 and use it to test the commands below:

   list[i] = x #stores x with index i
   list[i] #retrieves the item with index i
   list[-i] #retrieves last i item from list
   list[i:j] #retrieves items in the range i to j
   list[i:] #retrieves items from i to the end
   del list[i] #removes the item with index i

   list.append(x) #appends x to the end of the list
   list.extend(L) #appends L to the end of the list
   list.insert(i,x) #inserts x at i position
   list.remove(x) #removes the first list item whose value is x
   list.pop(i) #removes the item at position i and returns its value
   list.clear() #removes all items from the list
   list.index(x) #returns the position of the first occurrence of x in a list
   list.count(x) #returns the number of times x appears in a list
   list.reverse() #reverses list elements
   list.copy() #returns a copy of the list

list.sort() #sorts items in a list

sorted(L) #returns a new list with L items sorted

Note: By default, the items are sorted from smallest to largest. You can reverse this by adding – reverse = True – in brackets.

By default, you cannot use the sort commands on a list of mixed data-types.

```
list5 = [3,2,7,9,5]

list5.sort()

print(list5) # output [2,3,5,7,9]


list5 = [3,2,7,9,5]

list5.sort(reverse=True)

print(list5) # output [9,7,5,3,2]
```

3. Write a program with the following menu options:

1. Append an element
2. Insert an element
3. Append a list to the given list
4. Modify an existing element
5. Delete an existing element from its position
6. Delete an existing element with a given value
7. Sort the list in the ascending order
8. Sort the list in descending order
9. Display the list.

Please enter your choice (1-9):

```
Python 3.7.9 (bundled)
>>> %Run listMenu.py

  1. Append an element
  2. Insert an element
  3. Append a list to the given list
  4. Modify an existing element
  5. Delete an existing element from its position
  6. Delete an existing element with a given value
  7. Sort the list in the ascending order
  8. Sort the list in descending order
  9. Display the list.
  Please enter your choice (1-9):
```

The program should start with the default list = [‘a’, ‘b’, ‘c’, ‘d’] and the user should be able to choose any option.

Whichever option the user chooses, they should be able to implement that operation on the default list. The pre- and post-altered lists should be printed as confirmation to the user that the operation was successful.

All input will be treated as text. The user input will only be inputting single values but, for option 3, they may enter more than one comma separated value at the same time (e.g. 23,34,45,57) – **do not use the string.split() command to add this input to the list**. **You must come up with your own solution.** For option 2, in addition to the element, the user must provide the position in the list they wish the element to be inserted. For option 6 if a value exists multiple times all instances should be removed.

Once a user has completed an option, they should be able to choose to repeat the option or return to the main screen. (To achieve this, you could run the main menu in an infinite while loop, and run each option in its own infinite loop which fails when the user enters 0.)

Example running of Option 1:

```
Python 3.7.9 (bundled)
>>> %Run listMenu.py
1. Append an element
2. Insert an element
3. Append a list to the given list
4. Modify an existing element
5. Delete an existing element from its position
6. Delete an existing element with a given value
7. Sort the list in the ascending order
8. Sort the list in descending order
9. Display the list.
Please enter your choice (1-9): 1

**************************************
Option 1: Append an element
**************************************
Enter the element to be appended to the list: 3
List before operation:  ['a', 'b', 'c', 'd']
List after operation:  ['a', 'b', 'c', 'd', '3']


Press 0 to return to the menu or 1 to append another item: 1

**************************************
Option 1: Append an element
**************************************
Enter the element to be appended to the list: 56
List before operation:  ['a', 'b', 'c', 'd', '3']
List after operation:  ['a', 'b', 'c', 'd', '3', '56']


Press 0 to return to the menu or 1 to append another item: 0
1. Append an element
2. Insert an element
3. Append a list to the given list
4. Modify an existing element
5. Delete an existing element from its position
6. Delete an existing element with a given value
7. Sort the list in the ascending order
8. Sort the list in descending order
9. Display the list.
Please enter your choice (1-9):
```