List

```
lst1 = []         # empty list

lst1.append(2)    # add 2 to the end of lst1
print(lst1)       # [2]

lst1.append(3)    # add 3 to the end of lst1
print(lst1)       # [2, 3]

print(len(lst1)) # length of lst1 is 2

# access list by index
print(lst1[0])    # 2
print(lst1[1])    # 3
# print(lst1[5])    # index out of range

lst1.insert(1, 10)
print(lst1)       # [2, 10, 3]
```

List

```
lst1.pop(1)       # remove item at index 1
print(lst1)       # [2, 3]

lst1[1] = 5       # update list, list is mutable
print(lst1)       # [2, 5]

lst1.clear()      # remove all items
print(len(lst1))  # 0
```

List

```
lst2 = ['Hydrogen', 'Oxygen']  # list of strings
print(lst2)

lst2.append('Xenon')
print(lst2)       # ['Hydrogen', 'Oxygen', 'Xenon']

# insert item at index
lst2.insert(1, 'Calcium')    # insert at index 1
print(lst2)                  # ['Hydrogen', 'Calcium', 'Oxygen', 'Xenon']

# slicing
lst2[1:3]         # extract item(s) from index 1 to index 2-1, this does not modify lst2
print(lst2)       # ['Hydrogen', 'Calcium', 'Oxygen', 'Xenon'], original lst2 is not changed,

# access by index
print(lst2[1])  # 'Calcium'
```

List

```
# list of different types
lst3 = [2, 3.14, 'Carbon']

# list of lists
# a matrix
lst4 = [[4, 0], [3, 5]]
```