# Lecture 23: Lists Continued



## CMPT 120-D400 Surrey, Fall 2022

What is **mutability**? What is **immutability**?



Are Python **strings** mutable or immutable?

Are Python **lists** mutable or immutable?

Why might you want to mutate a list?

Does list mutation work with indexing? Slicing?

How can you delete **Alan** from this list?



L = ['Pim', 'Charlie', 'Alan', 'Glep']



How can you delete **Charlie** and **Alan** (in a single statement)?



L = ['Pim', 'Charlie', 'Alan', 'Glep']



When you del something from a list, does it return a modified copy of the list?



>>> a = [1, 2, 3]



>>> b = a

>>> a[0] = -1



>>> a

[-1, 2, 3]

>>> b

[-1, 2, 3]



>>> del b[0]

>>> a

[2, 3]

>>> b

[2, 3]

What does **concatenation** mean?

>>> a = [1, 2]

>>> b = [5, 6, 7]

>>> a + b  
[1, 2, 5, 6, 7]

>>> b + a

[5, 6, 7, 1, 2]

What is a **method**? How is it different than a **function**?



>>> lst = [1, 2, 3]

>>> lst.append('cat')

>>> lst

[1, 2, 3, 'cat']



>>> lst.append([4, 5])

>>> lst

[1, 2, 3, 'cat', [4, 5]]

>>> lst = [1, 2, 3]

>>> lst.clear()

>>> lst

[]

>>> lst = [5, 1, [1, 2], 2, 1, 9, 0, 1]



>>> lst.count(1)



3

>>> lst.count(2)

1

>>> lst.count('shoe')

0



>>> lst = [4, 7, 5, 4]

>>> lst.index(4)

0

>>> lst.index(5)

2

>>> lst.index(6)

Traceback (most recent call last):

File "\_\_main\_\_", line 1, in <module>

ValueError: 6 is not in list

>>> lst = [4, 8, 9]

>>> lst.insert(0, 'A')

['A', 4, 8, 9]

>>> lst.insert(0, 'B')

>>> lst



['B', 'A', 4, 8, 9]

>>> lst.insert(3, 'C')

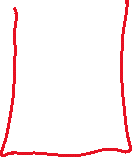
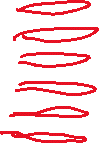
>>> lst

['B', 'A', 4, 'C', 3, 9]

>>> lst = [1, 2, 3]

>>> lst.pop()

3



>>> lst

[1, 2]

>>> lst.pop()

2

>>> lst

[1]

>>> lst.pop()

1

>>> lst

[]

>>> lst.pop()

Traceback (most recent call last):

File "\_\_main\_\_", line 1, in <module>

IndexError: pop from empty list

>>> lst = [5, 1, [1, 2], 2, 1, 9, 0, 1]



>>> lst.remove(1)

>>> lst

[5, [1, 2], 2, 1, 9, 0, 1]



>>> lst.remove(1)

>>> lst

[5, [1, 2], 2, 9, 0, 1]



>>> lst.remove(1)



>>> lst

[5, [1, 2], 2, 9, 0]



>>> lst.remove(1)

Traceback (most recent call last):

File "\_\_main\_\_", line 1, in <module>

ValueError: list.remove(x): x not in list

>>> lst = [1, 2, 3]

>>> lst.reverse()

>>> lst

[1, 2, 3]



>>> lst = [5, 1, 2, 1, 9, 0, 1]

>>> lst.sort()

>>> lst

[0, 1, 1, 1, 2, 5, 9]