Lists in Python

Dr. Amer Almahdawi

Lists (Sequence)

- The most basic data structure in Python is the **sequence**. Each element of a sequence is assigned a number - its position or index. The first index is zero, the second index is one, and so forth.
- There are certain things you can do with all sequence types. These operations include indexing, slicing, adding, multiplying, and checking for membership. In addition, Python has built-in functions for finding the length of a sequence and for finding its largest and smallest elements.
- The list is a most versatile datatype available in Python which can be written as a list of comma-separated values (items) between square brackets. Important thing about a list is that items in a list need not be of the same type.

Lists

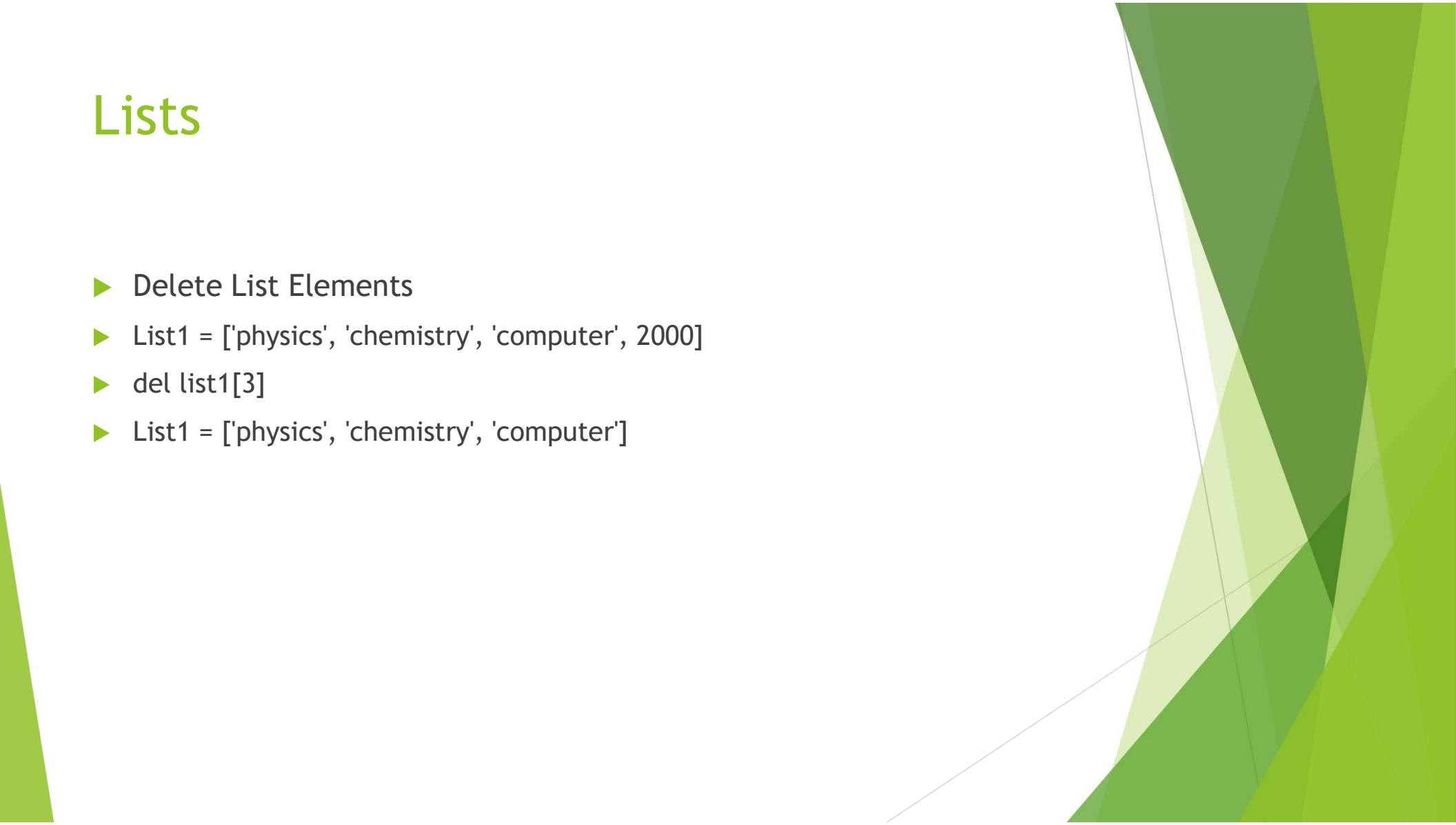
- Creating a list is as simple as putting different comma-separated values between square brackets. For example:
- List1 = [‘Computer’, ‘Physics’, ‘Chemistry’, 1997, 2000]
- List2 = [1, 2, 3, 4, 5, 6]
- List3 = [“a”, “b”, “c”, “d”]
- Accessing Values in Lists
- Print (list1[0])
- Computer
- Print (list2[1:5])
- [2, 3, 4, 5]

Lists

- Updating Lists
- You can update single or multiple elements of lists by giving the slice on the left-hand side of the assignment operator, and you can add to elements in a list with the append() method. For example:
- List1 = [‘Computer’, ‘Physics’, ‘Chemistry’, 1997, 2000]
- Print (“ Available value at index 3 is: “, list1[3])
- Available value at index 3 is: 1997
- List1[3] = 2001
- Print (“ Available value at index 3 is: “, list1[3])
- Available value at index 3 is: 2001

Lists

- Delete List Elements
- List1 = ['physics', 'chemistry', 'computer', 2000]
- del list1[3]
- List1 = ['physics', 'chemistry', 'computer']



Basic List Operations

- Length:
- Len([1,2,3]) = 3
- Concatenation:
- [1,2,3] + [4,5,6] = [1,2,3,4,5,6]
- Repetition
- [‘Hi’]*4 = ['Hi', 'Hi', 'Hi', 'Hi']
- Membership
- 3 in [1,2,3] =True
- Iteration
- For x in [1,2,3]: print (x)

1
2
3

Basic List Operations

- L = [‘car’, ‘Car’, ‘CAR!’]
- L[2] = CAR!
- L[-2] = Car
- L[1:] = [‘Car’, ‘CAR!’]
- alist=['Ahmed', 2, 123, 'Jeep']
- alist.append(2000)
- ['Ahmed', 2, 123, 'Jeep', 2000]
- alist.count(2)
- 1

Basic List Operations

- alist= ['Ahmed', 2, 123, 'Jeep', 2000]
- alist.index(123)
- 2
- alist.insert(3, 'Laptop')
- alist=['Ahmed', 2, 123, 'Laptop', 'Jeep', 2000]
- alist.pop()
- 2000
- alist=['Ahmed', 2, 123, 'Laptop', 'Jeep']
- alist.remove(2)
- alist=['Ahmed', 123, 'Laptop', 'Jeep']

Basic List Operations

- alist=['Ahmed', 123, 'Laptop', 'Jeep']
- alist.reverse()
- alist=['Jeep', 'Laptop', 123, 'Ahmed']
- alist=['Jeep', 'Laptop', 'Ahmed']
- alist.sort()
- alist=['Ahmed', 'Jeep', 'Laptop']