

M1.3.a: What are Lists

What are Lists

Lists:

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 are collections of items where each

item in the list has an assigned index value.

- The lists are **mutable** objects.
- Lists work similarly to strings -- use the len() function and square brackets [] to access data, with the first element at index 0.
- Create an empty list simply by using []

```
# empty list

>>> my_list = []
>>> my_list
[]

#List of integers

>>> my_list = [1,2,3,4,5,6,7]
>>> my_list
[1,2,3,4,5,6,7]

#List of mixed data-types

>>> my_list = [1,2,3,"helo",'magic']
>>> my_list
[1,2,3,"helo",'magic']
```

Accessing Values in List:

- We can use the index operator [] to access an item in a list. Index starts from 0.
- Negative indexing also there. index -1 refers to the last element in the list and -2 refers to the second last element and so on.
- Trying to access an element other than that will raise an IndexError. The index must be an integer.
- Slicing also be possible [:] with lists.

```
>>> list = ['physics', 'chemistry', 1997, 2000];
>>> list[:]
['physics', 'chemistry', 1997, 2000]

>>> list[2:]
[1997, 2000]

>>> list[:3]
['physics', 'chemistry', 1997]
```

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```
>>> list[3]
2000
>>> list[-1]
2000
```

Deleting a list:

- To delete an entire list use **del** command.
- We can delete a list element also.

```
>>> list1
['physics', 'chemistry', 1997, 2000]

# delete element on the 2nd position
>>> del list1[2]
>>> list1
['physics', 'chemistry', 2000]

#delete the entire list
>>> del list1
>>> list1
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
NameError: name 'list1' is not defined
>>>
```

Updating a list:

You can update single or multiple elements of lists by giving the slice on the left hand side of the assignment operator, or by `append()`.

```
# updating the 2nd element
>>> list1 = [12,34,56,90]
>>>list1
[12,34,56,90]
>>>list1[1] = 24
>>>list1
[12,24,56,90]

# add new element to the list
>>>list1[4] = 84
>>>list1
[12,24,56,90,84]
```

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