PythonTip 02 - List Slicing

February 15, 2023

1   List Slicing

List slicing is a way to get not just one element of a list, but a whole portion.

```
[1]: L = ["a", "b", "c", "d", "e", "f"]
     L[2]
```

```
[1]: 'c'
```

L[a:b] means the portion of the list from index a (inclusive) to index b (exclusive).

```
[2]: L[2:5]
```

```
[2]: ['c', 'd', 'e']
```

If you leave out a, it starts from the beginning of the list. If you leave out b, it goes to the end.

```
[3]: L[:4]
```

```
[3]: ['a', 'b', 'c', 'd']
```

```
[4]: L[1:]
```

```
[4]: ['b', 'c', 'd', 'e', 'f']
```

```
[5]: R = L[:] # a copy of the list!
     R = list(L) # another way to do the same thing
```

```
[13]: L = ['a', 'b', 'c', 'd', 'e', 'f']
      R = list(L)
      print(L)
      print(R)
```

```
['a', 'b', 'c', 'd', 'e', 'f']
['a', 'b', 'c', 'd', 'e', 'f']
```

```
[14]: R.pop(0)
      print(R)
      print(L)
```

```
['b', 'c', 'd', 'e', 'f']
['a', 'b', 'c', 'd', 'e', 'f']
```

[9]: `print(L)`

```
['b', 'c', 'd', 'e', 'f']
```

[ ]:

You can use a third piece `L[a:b:c]`, and `c` means how much to go up by each time.

[17]:
```
print(L[1:5:2])
print([L[1], L[3]])
```

```
['b', 'd']
['b', 'd']
```

[18]:
```
L = list(range(0, 21))
print(L)
```

```
[0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20]
```

[19]: `L[::3]`

[19]: `[0, 3, 6, 9, 12, 15, 18]`

[ ]:

[20]: `L[::-1]`

[20]: `[20, 19, 18, 17, 16, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 0]`

[21]: `L[::-2]`

[21]: `[20, 18, 16, 14, 12, 10, 8, 6, 4, 2, 0]`

Lastly, you can use negative indexing too. For example, to get the last 3 elements of a list:

[22]: `L[-3]`

[22]: `18`

[23]: `L[-3:]`

[23]: `[18, 19, 20]`

[24]: `L[len(L)-3:]`

[24]: `[18, 19, 20]`

To get all except the last element:

```python
[25]: L[:len(L)-1]
```

[25]: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

```python
[26]: L[:-1]
```

[26]: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19]

```python
[ ]:
```

```python
[ ]:
```

```python
[27]: L
```

[27]: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20]

```python
[29]: L[:round(len(L)/2)]
```

[29]: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9]

```python
[30]: L[round(len(L)/2):]
```

[30]: [10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20]

```python
[35]: L[:5]
```

[35]: [0, 1, 2, 3, 4]

```python
[36]: L[5:]
```

[36]: [5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20]

```python
[33]: 23 // 5
```

[33]: 4

```python
[34]: int(23/5)
```

[34]: 4

```python
[ ]:
```