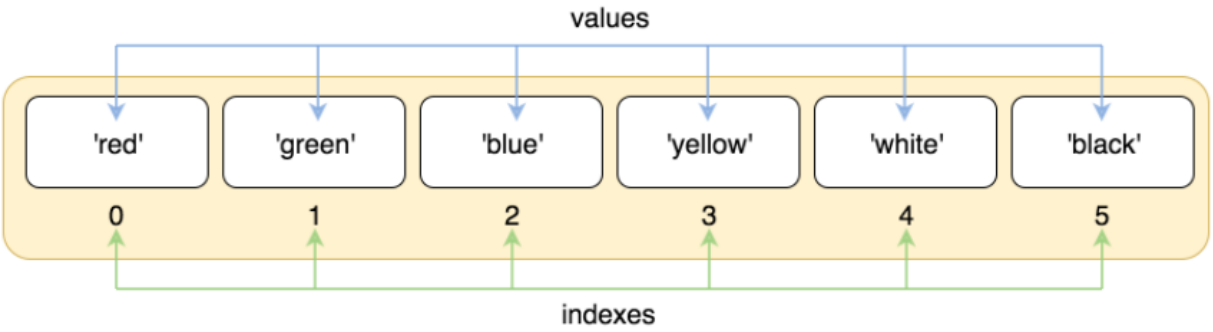
Tutorials on list structures in Python

Indexing:

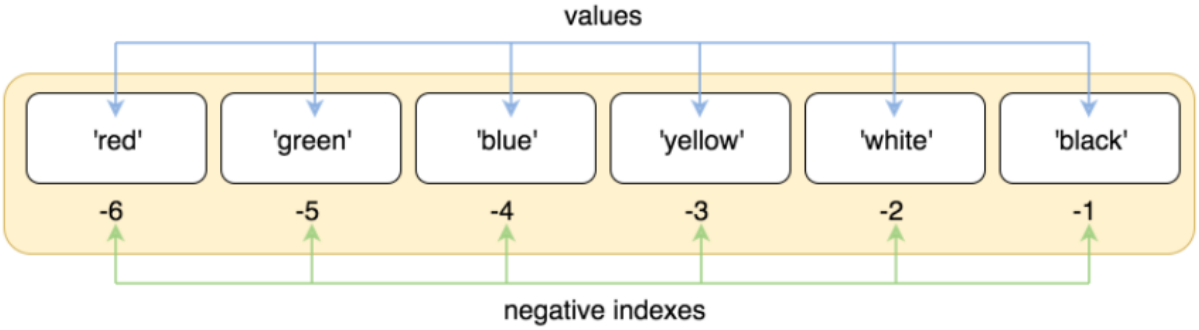
Let's take a simple example:

```
colors = ['red', 'green', 'blue', 'yellow', 'white', 'black']
```

Python uses zero-based indexing. That means, the first element(value 'red') has an index 0, the second(value 'green') has index 1, and so on.



To address this requirement there is negative indexing. So, instead of using indexes from zero and above, we can use indexes from -1 and below.



In negative indexing system -1 corresponds to the last element of the list(value 'black'), -2 to the penultimate (value 'white'), and so on.

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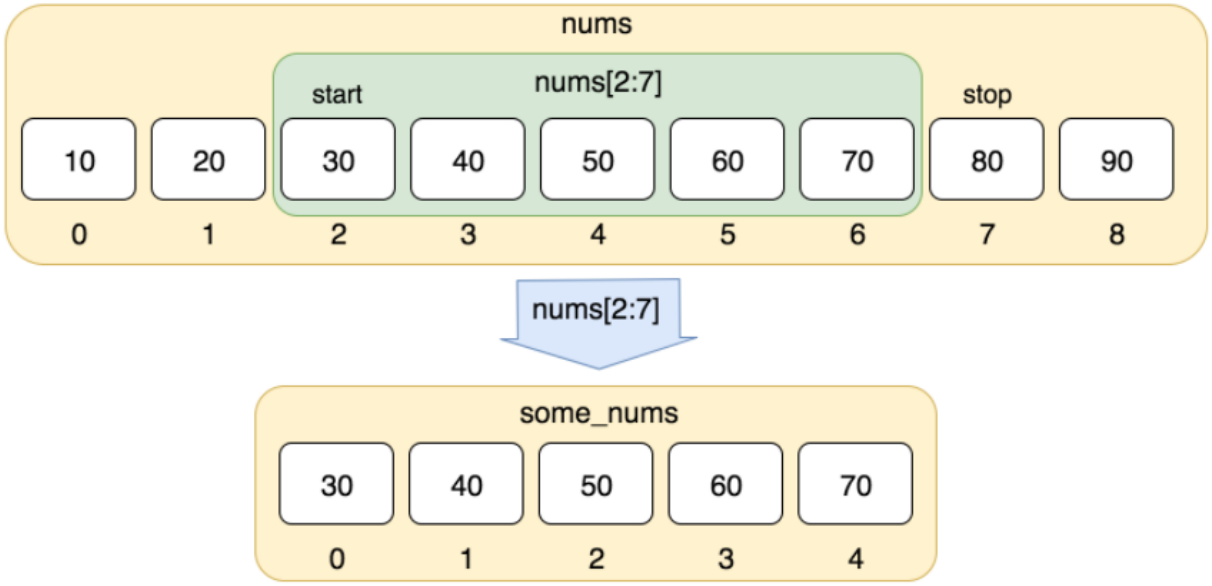
Slicing:




```
[start : stop : steps]

which means that slicing will start from index start
 will go up to stop in step of steps.
 Default value of start is 0, stop is last index of list
 and for step it is 1
```

Q 1> Predict the output:

```
x = "Bennett"
print(x[3])
print(x[1:4])
print(x[3: ])
print(x[ :4])
print(x[1 : -2])
print(x[-3 : ])
```

BENNETT UNIVERSITY
TIMES OF INDIA GROUP

```
print(x[ : -2])
print(x[1:6:2])
```

Q 2> Predict the output:

```
x= "Bennett"
print(x[3])
x= ["I" ,  "Am" , "Ironman"]
print(x[2])
x= [["I", "Am"] , ["Ironman"]]
print(x[0][1])
print(x[1][0])
```

Q 3> Predict the output

```
List = [['Python ', 'is' ], ['Easy']]
print("\nMulti-Dimensional List: ")
print(List)
List = [1, 2, 'Python', 4, 'is', 6, 'Easy']
print("\nList with the use of Mixed Values: ")
print(List)
```

Q 4> Predict the output: (difference between append, insert and extend)

```
List = [1,2,3,4]
List.append(12)
print(List)
List.insert(3, 12)
print(List)
List.extend([ 'Bennett', 'University'])
print(List)
```

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Q 5> Predict the output (difference between remove and pop)

```
List = [1, 2, 3, 4, 5, 6, 7, 8, 7, 10, 11, 12]
List.remove(7)
print(List)
for i in range(1, 5):
   List.remove(i)
print(List)
List = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12]
List.remove(7)
print(List)
List.pop(7)
print(List)
```

Q 6> What will be the output

```
data = [x for x in range(5)]
temp = [x for x in range(7) if x in data and x%2==0]
print(temp)
```

Q 7> What will be the output?

```
Data = ['bennett', 'university', 'rocks']
Temp = [i[0].upper() for i in Data]
print(Temp)
```

Q 8> What will be the output?

```
list1 = ['bennett', 'university', 1997, 2000]
print("list1[1][1]: ", list1[1][1])
```

```
print("list1[1][-1]: ", list1[1][-1])
```

Q 9> what will be the output? (justification of mutability of list)

```
x = [1]
print(id(x),':',x)
x.append(5)
x.extend([6,7])
print(id(x),':',x)
```

Q 10 > List stores values or pointers?

```
a = [1,2,3]
print( id(a))
print( id(a[0]))
print( id(a[1]))
```

Q 11> Shallow coping of a list by copy()

```
round1 = ['chuck norris', 'bruce lee', 'sonny chiba']
round2 = round1.copy()
round1.remove('sonny chiba')
print(round1)
print(round2)
```

Q 12> Predict the output

```
from collections import Counter
list = ['blue', 'pink', 'green', 'green', 'yellow', 'pink', 'orange']
print(Counter(list))
```

Q 13> Predict the output

```
lst = ['python', 'is', 'cool', 'language']
```


```
for i in range(len(lst)+1):
    print(lst[i])
```

Q 14> Predict the output

```
from functools import reduce
li = [5, 8, 10, 20, 50, 100]
sum = reduce((lambda x, y: x + y), li)
print (sum)
```