

RANGE

```
In [ ]: '''Range data type represents an immutable sequence of numbers.  
it is most commonly used for looping a specific number of times in for loop.  
instead of storing all the numbers in memory like list, a range object generates  
the numbers on the fly as you need them, which makes it incredibly memory efficient.  
# syntax : range() function can take up to three arguments  
range(start,stop,step)  
start : optional the starting value by default 0.  
stop : required...> the number to stop at.(the range goes up to ,but does not include)  
step : optional the increment value(how much to skip)default is 1.'''
```

```
In [ ]: #memory efficient  
'''a range object takes the same amount of memory regardless of the size  
of the range it represents.  
whether you have range(10) or range(100),  
python only stores start,stop and step values.  
  
immutability ----you can not change range object, once you created  
  
indexing and slicing  
even though it is not a list you can access specific elements or slice it.  
  
range can also convert in to list.'''
```

```
In [1]: # basic range  
range(5)
```

```
Out[1]: range(0, 5)
```

```
In [3]: #converting range to list  
list(range(5))
```

```
Out[3]: [0, 1, 2, 3, 4]
```

```
In [4]: #only stop(n)  
# prints (n-1)  
for i in range(5):  
    print(i)
```

```
0  
1  
2  
3  
4
```

```
In [5]: # start and stop  
  
for i in range(0,10):  
    print(i)
```

```
0  
1  
2  
3  
4  
5  
6  
7  
8  
9
```

In [6]: *# start, stop and step*

```
for i in range(0,20,2):  
    print(i)
```

```
0  
2  
4  
6  
8  
10  
12  
14  
16  
18
```

In [9]: *# reverse range(negative indexing):to print range in reverse order start should*

```
for i in range(10,0,-1):  
    print(i)
```

```
10  
9  
8  
7  
6  
5  
4  
3  
2  
1
```

In [10]: *for i in range(10,0,-2):*
 print(i)

```
10  
8  
6  
4  
2
```

In [21]: *# even is immutable we can access elements using indexing and slicing*

```
r = range(10)  
print(list(r))  
print(r[8])
```

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

In [18]: *r[0]*

```
Out[18]: 0
```

```
In [22]: r[4]
```

```
Out[22]: 4
```

```
In [23]: r1 = range(2,10)
```

```
In [24]: r1[0]
```

```
Out[24]: 2
```

```
In [26]: r1[4]
```

```
Out[26]: 6
```

```
In [27]: r1[6]
```

```
Out[27]: 8
```

```
In [28]: r1[2]
```

```
Out[28]: 4
```

```
In [29]: r = range(2,10)  
print(r[2:8])
```

```
range(4, 10)
```

```
In [30]: r = range(2,100,5)  
print(r[2:8])
```

```
range(12, 42, 5)
```

```
In [42]: list(r)
```

```
Out[42]: [2, 7, 12, 17, 22, 27, 32, 37, 42, 47, 52, 57, 62, 67, 72, 77, 82, 87, 92, 97]
```

```
In [33]: r = range(2,100,5)  
print(r[2:8])
```

```
range(12, 42, 5)
```

```
In [34]: list(r[2:8])
```

```
Out[34]: [12, 17, 22, 27, 32, 37]
```

```
In [35]: list(r[2:10])
```

```
Out[35]: [12, 17, 22, 27, 32, 37, 42, 47]
```

```
In [36]: list(r[0:10])
```

```
Out[36]: [2, 7, 12, 17, 22, 27, 32, 37, 42, 47]
```

```
In [41]: list(r[20:0:-2])
```

```
Out[41]: [97, 87, 77, 67, 57, 47, 37, 27, 17, 7]
```

```
In [44]: list(r[::-1])
```

```
Out[44]: [97, 92, 87, 82, 77, 72, 67, 62, 57, 52, 47, 42, 37, 32, 27, 22, 17, 12, 7, 2]
```

```
In [45]: list(r[::-2])
```

```
Out[45]: [97, 87, 77, 67, 57, 47, 37, 27, 17, 7]
```

```
In [46]: list(r[:])
```

```
Out[46]: [2, 7, 12, 17, 22, 27, 32, 37, 42, 47, 52, 57, 62, 67, 72, 77, 82, 87, 92, 97]
```

```
In [ ]:
```