

comprehension:

- comprehension in python to provide short and easy to create new sequences such as (list,dictionary,set)
- Three types of comprehension
 - * List comprehension
 - * dictionary comprehension
 - * set comprehension

List comprehension:

- By using list comprehension we can create new list from other iterables..

- syntax:

```
list_name = [output_expression for loop if(condition)]
```

```
In [1]: # To generate the natural numbers 1 to 10 using only List?  
L1 = []  
for i in range(1,11):  
    L1.append(i)  
print(L1)
```

```
[1, 2, 3, 4, 5, 6, 7, 8, 9, 10]
```

```
In [2]: # To generate the natural numbers 1 to 10 using List comprehension?  
L2 = [i for i in range(1,11)]  
print(L2)
```

```
[1, 2, 3, 4, 5, 6, 7, 8, 9, 10]
```

```
In [3]: # To print the even natural numbers 1 to 20 using LC?  
even = [i for i in range(1,21) if i%2==0]  
print(even)
```

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

```
In [4]: L4 = [23,45,-8,-4,100]  
# To print the only negative values from the above List?  
neg = [i for i in L4 if i<0]  
neg
```

```
Out[4]: [-8, -4]
```

Dictionay comprehension:

- to create new dictionary
- syntax:
dict_name = {key:value for loop if(condition)}

```
In [5]: # To generate the squares of a number in between 1 to 15?
#output: {1:1,2:4,3:9...}
d1 = {}
for i in range(1,16):
    d1[i]=i*i
print(d1)
```

```
{1: 1, 2: 4, 3: 9, 4: 16, 5: 25, 6: 36, 7: 49, 8: 64, 9: 81, 10: 100, 11: 121,
12: 144, 13: 169, 14: 196, 15: 225}
```

```
In [6]: # To generate the squares of a number in between 1 to 15?
#output: {1:1,2:4,3:9...} using dictionary comprehension
sq = {i:i*i for i in range(1,16)}
print(sq)
```

```
{1: 1, 2: 4, 3: 9, 4: 16, 5: 25, 6: 36, 7: 49, 8: 64, 9: 81, 10: 100, 11: 121,
12: 144, 13: 169, 14: 196, 15: 225}
```

```
In [9]: L3 = ['apple','mango','banana']
#output:{'apple':5,'mango':5..}
len1 = {i:len(i) for i in L3}
len1
```

```
Out[9]: {'apple': 5, 'mango': 5, 'banana': 6}
```

```
In [8]: for i in L3:
        print(i)
```

...

```
In [11]: L4=[10,20,30,40,10,20,30,40,50,60,10,20]
#output:{10:3,20:3...}->To count the element frequency..
freq = {i:L4.count(i) for i in L4}
freq
```

```
Out[11]: {10: 3, 20: 3, 30: 2, 40: 2, 50: 1, 60: 1}
```

```
In [12]: L4.count(10)# To count number of occurrences..
```

```
Out[12]: 3
```

```
In [16]: s="apssdcpythonprogrammingapssdc"
#To find the character frequency
#s.count('p')
chfreq = {i:s.count(i) for i in s}
print(chfreq)
```

```
{'a': 3, 'p': 4, 's': 4, 'd': 2, 'c': 2, 'y': 1, 't': 1, 'h': 1, 'o': 2, 'n': 2, 'r': 2, 'g': 2, 'm': 2, 'i': 1}
```

set comprehension:

- To create the new set.

- syntax:

```
set_name = {output_expression for loop if(condition)}
```

```
In [18]: L2 = [10,20,30,10,20,30,40]
s1 = {i for i in L2}
s1
```

```
Out[18]: {10, 20, 30, 40}
```

```
In [20]: s1="python programming"
s3 = {i for i in s1}
print(s3)
```

```
{'y', 'a', 'i', 'h', 'p', 'r', 'm', 'g', 't', ' ', 'o', 'n'}
```

```
In [ ]: # task1: d1={'raju':38,'ramu':55,'lokes':32}
#To print only even value item..
#output: {'raju':38,'lokes':32}
#task2: L3 = ['apssdc','welcome','python']
#To create a dictionary to convert the each word into uppercase..
#output: {'apssdc': 'APSSDC', 'welcome': 'WELCOME'...}
#task3: using List comprehension to print nth multiplication table..
#task4: using List comprehension to print the only alphabets from the given below
#s1="python programming@1234 welcome #$$^& good evening"
```

```
In [5]: #task3: using List comprehension to print nth multiplication table..
#n=4
#4*1=4(n*i)
#4*2=8()
def table(n):
    for i in range(1,11):
        print(n,"*",i,"=", (n*i))
L1 =[table(i) for i in range(24,29)]
```

...

```
In [7]: #task4:using List comprehension to print the only alphabets from the given below
s1="python programming@1234 welcome #$$^& good evening"
L2 = [i for i in s1 if i.isalpha()]
print(L2)
```

```
['p', 'y', 't', 'h', 'o', 'n', 'p', 'r', 'o', 'g', 'r', 'a', 'm', 'm', 'i',
'n', 'g', 'w', 'e', 'l', 'c', 'o', 'm', 'e', 'g', 'o', 'o', 'd', 'e', 'v', 'e',
'n', 'i', 'n', 'g']
```

```
In [8]: s1="python programming@1234 welcome #$$^& good evening"
L2 = [i for i in s1 if i.isdigit()]
print(L2)
```

```
['1', '2', '3', '4']
```

```
In [9]: i='c'
i.isalpha()
```

Out[9]: True

```
In [ ]:
```