Dictionary

python Dictionary is an unordered collection of items. While other compound data types have only values as an element, a dictionary has a key: value pair.its similiar as Hash table or hash data structure.

Dic creation

```
my_dic = {} # empty
print(my_dic)

my_dic = {1: "abc",2:'xyz'} #interger keys
print(my_dic)

my_dic = {'name':'Harsh', 1: ['abe', 'xyz']} # dic with mixed keys
print(my_dic)

my_dic = dict() # create empty dic using dict().

my_dic = dict([(1,'abc'),(2,'xyz')])  # element as a list tuple
print(my_dic)
```

```
{}
{1: 'abc', 2: 'xyz'}
{'name': 'Harsh', 1: ['abe', 'xyz']}
{1: 'abc', 2: 'xyz'}
```

Dic Access

```
my_dic = {1: 'harsh', 2:'raj', 3:'singh'}
print(my_dic[1])
```

```
harsh
```

```
#if key is not present it gives keyerror
print(my_dic[4])
```

```
---------------------------------------------------------------------------
KeyError                                  Traceback (most recent call last)
<ipython-input-4-e57cb0c056cd> in <module>
      1 #if key is not present it gives keyerror
----> 2 print(my_dic[4])

KeyError: 4
```

```
# another way of accessing key
print(my_dic.get(2))
```

```
raj
```

Dic Add and modify elements

```
my_dic = {1: 'harsh', 2:'raj', 3:'singh'}

my_dic[1] = 'shivam'
print(my_dic)

my_dic['degree'] = 'PhD'
print(my_dic)
```

```
{1: 'shivam', 2: 'raj', 3: 'singh'}
{1: 'shivam', 2: 'raj', 3: 'singh', 'degree': 'PhD'}
```

Dic Delete and Remove Element

```
dic = {1: 'Harsh', 2: 'raj', 3: 'singh', 'degree': 'PhD'}
print(dic.pop('degree'))
print(dic)
```

```
PhD
{1: 'Harsh', 2: 'raj', 3: 'singh'}
```

```
dic = {1: 'Harsh', 2: 'raj', 3: 'singh', 'degree': 'PhD'}
dic.popitem() # popitem() remove an arbitary key
print(dic)
dic.popitem()
print(dic)
```

```
{1: 'Harsh', 2: 'raj', 3: 'singh'}
{1: 'Harsh', 2: 'raj'}
```

```
squares = { 2:4, 3:9, 4:16, 5:25, 6:36 }
del squares[5]
print(squares)
```

```
{2: 4, 3: 9, 4: 16, 6: 36}
```

```
squares.clear()
print(squares)
```

```
{}
```

```
squares = { 2:4, 3:9, 4:16, 5:25, 6:36 }
a = squares
del squares
```

```
print(a)
print(squares) # name error becasue dict is deleted
```

```
{2: 4, 3: 9, 4: 16, 5: 25, 6: 36}

---------------------------------------------------------------------------
NameError                                 Traceback (most recent call
last)
<ipython-input-18-6c03d66c7227> in <module>
      3 del squares
      4 print(a)
----> 5 print(squares) # name error becasue dict is deleted

NameError: name 'squares' is not defined
```

Dictonary Methods

```
squares = { 2:4, 3:9, 4:16, 5:25, 6:36 }
dic = squares.copy()
print(dic)

# fromkeys[seq[,v]] -> return a new dictonary with key seq and values
subjects = {}.fromkeys(['maths', 'English', 'SST'],5)
print(subjects)

subjects = { 2:4, 3:9, 4:16, 5:25, 6:36 }
print(subjects.items())

print(subjects.keys())

# get list of all varible mathods and attributes of dictonary
d = {}
print(dir(d))
```

Dic Comprehension

```
d = { 2:4, 3:9, 4:16, 5:25, 6:36 }
for pair in d.items():
    print(pair)

d = { 2:4, 3:9, 4:16, 5:25, 6:36 }
new_d = { k: v for k, v in d.items() if v > 9}
print(new_d)

d = { 2:4, 3:9, 4:16, 5:25, 6:36 }
new_dic = { k+2:v*2 for k, v in d.items() if v > 4}
print(new_dic)
```