Dictionary (march 10)

- dictionary is a mutable data type in python.
- a python dictionary is a collection of key and value pairs seperated by a colon (:)& enclosed in curly braces{}.
- keys must be unique in a dictionary.
- Duplicate values are allowed.

create Dictionary

In [5]:
```
mydict =dict() #empty dictionary
mydict
```

Out[5]:
```
{}
```

In [7]:
```
type(mydict)
```

Out[7]:
```
dict
```

In [9]:
```
mydict ={} #empty dictionary
mydict
```

Out[9]:
```
{}
```

In [13]:
```
mydict = {1:'one', 2:'two',3:'three'}#dictionary with integer keys
mydict
```

Out[13]:
```
{1: 'one', 2: 'two', 3: 'three'}
```

In [15]:
```
mydict = dict({1:'one',2:'two',3:'three'})#create dictionary using dict()
mydict
```

Out[15]:
```
{1: 'one', 2: 'two', 3: 'three'}
```

In [17]:
```
mydict ={'A':'one','B':'two','c':'three'}#dictionary with character keys
mydict
```

Out[17]:
```
{'A': 'one', 'B': 'two', 'c': 'three'}
```

In [19]:
```
mydict ={1:'one','A':'two',3:'three'}#dictionary with mixed keys
mydict
```

Out[19]:
```
{1: 'one', 'A': 'two', 3: 'three'}
```

In [21]:
```
mydict.keys()# using key methods
```

Out[21]:
```
dict_keys([1, 'A', 3])
```

In [23]:
```
mydict.values()# using value methods
```

Out[23]:
```
dict_values(['one', 'two', 'three'])
```

In [25]:
```
mydict.items() # acess each key value pair within a dictionary
mydict
```

Out[25]:
```
{1: 'one', 'A': 'two', 3: 'three'}
```

In [27]:
```
mydict ={1:'one',2:'two','A':['nani','krishna','chinna']}
mydict
```

Out[27]:
```
{1: 'one', 2: 'two', 'A': ['nani', 'krishna', 'chinna']}
```

In [31]:
```
mydict={1:'one',2:'two','A':['nani','krishna','chinna'],'B':('bat','cat','hat')}
mydict
```

Out[31]:
```
{1: 'one',
 2: 'two',
 'A': ['nani', 'krishna', 'chinna'],
 'B': ('bat', 'cat', 'hat')}
```

In [33]:
```
keys={'a','b','c','d'}
mydict3 =dict.fromkeys(keys)#create a dictionary from a sequence of keys
mydict3
```

Out[33]:
```
{'b': None, 'c': None, 'd': None, 'a': None}
```

In [35]:
```
keys ={'a','b','c','d'}
value=10
mydict3=dict.fromkeys(keys,value)
mydict3
```

Out[35]:
```
{'b': 10, 'c': 10, 'd': 10, 'a': 10}
```

In [37]:
```
keys ={'a','b','c','d'}
value =[10,20,30]
mydict3 =dict.fromkeys(keys ,value)
mydict3
```

Out[37]:
```
{'b': [10, 20, 30], 'c': [10, 20, 30], 'd': [10, 20, 30], 'a': [10, 20, 30]}
```

In [3]:
```
keys ={'A','B','C','D'}
value =[1,2,3]
mydict3= dict.fromkeys(keys,value)
mydict3
```

Out[3]:
```
{'C': [1, 2, 3], 'D': [1, 2, 3], 'B': [1, 2, 3], 'A': [1, 2, 3]}
```

In [5]:
```
value.append(4)
mydict3
```

Out[5]:
```
{'C': [1, 2, 3, 4], 'D': [1, 2, 3, 4], 'B': [1, 2, 3, 4], 'A': [1, 2, 3, 4]}
```

In [7]:
```
keys ={'a','b','c','d'}
value =[10,20,30]
mydict3 =dict.fromkeys(keys ,value)
mydict3
```

Out[7]:
```
{'a': [10, 20, 30], 'd': [10, 20, 30], 'b': [10, 20, 30], 'c': [10, 20, 30]}
```

In [9]:
```
value.append(40)
mydict3
```

Out[9]:
```
{'a': [10, 20, 30, 40],
 'd': [10, 20, 30, 40],
 'b': [10, 20, 30, 40],
 'c': [10, 20, 30, 40]}
```

Accessing Items

In [12]:
```
mydict ={1:'one',2:'two',3:'three',4:'four'}
mydict
```

Out[12]:
```
{1: 'one', 2: 'two', 3: 'three', 4: 'four'}
```

In [14]:
```
mydict[1]# access item using key
```

Out[14]:
```
'one'
```

In [16]:
```
mydict.get(1)#acess item using get() method
```

Out[16]:
```
'one'
```

In [32]:
```
mydict1 ={'Name':'Nani','ID':76543,'DOB':2003,'job':'Analyst'}
mydict1
```

Out[32]:
```
{'Name': 'Nani', 'ID': 76543, 'DOB': 2003, 'job': 'Analyst'}
```

In [34]:
```
mydict1['Name']#access item using key
```

Out[34]:
```
'Nani'
```

In [36]:
```
mydict1.get('job')
```

Out[36]:
```
'Analyst'
```

In [38]:
```
mydict1.get('DOB')
```

Out[38]:
```
2003
```

In [42]:
```
mydict1.get('ID')
```

Out[42]:
```
76543
```

Add,Remove & Change Items

In [34]:
```
mydict1 ={'Name':'Nani','ID':54321,'DOB':2003,'Address':'balanagar'}
mydict1
```

Out[34]:
```
{'Name': 'Nani', 'ID': 54321, 'DOB': 2003, 'Address': 'balanagar'}
```

In [36]:
```
mydict1['DOB'] =2002 #changing dictionary items
mydict1['Address'] = 'tenali'
mydict1
```

Out[36]:
```
{'Name': 'Nani', 'ID': 54321, 'DOB': 2002, 'Address': 'tenali'}
```

In [38]:
```
dict1={'DOB':2000}
mydict1.update(dict1)
mydict1
```

Out[38]:
```
{'Name': 'Nani', 'ID': 54321, 'DOB': 2000, 'Address': 'tenali'}
```

In [40]:
```
mydict1['job'] ='Analyst' #adding items to the dictionary
mydict1
```

Out[40]:
```
{'Name': 'Nani',
 'ID': 54321,
 'DOB': 2000,
 'Address': 'tenali',
 'job': 'Analyst'}
```

In [42]:
```
mydict1.pop('job')
mydict1
```

Out[42]:
```
{'Name': 'Nani', 'ID': 54321, 'DOB': 2000, 'Address': 'tenali'}
```

In [44]:
```
mydict1.popitem()# arandom item is removed
mydict1
```

Out[44]:
```
{'Name': 'Nani', 'ID': 54321, 'DOB': 2000}
```

In [46]:
```
mydict1
```

Out[46]:
```
{'Name': 'Nani', 'ID': 54321, 'DOB': 2000}
```

In [48]:
```
mydict1
```

Out[48]:
```
{'Name': 'Nani', 'ID': 54321, 'DOB': 2000}
```

In [50]:
```
del[mydict1['ID']]#removing item using del method
mydict1
```

Out[50]:
```
{'Name': 'Nani', 'DOB': 2000}
```

In [57]:
```
mydict1.clear()#delete all items of dict using clear method
mydict1
```

Out[57]:
```
{}
```

In [59]:
```
del mydict1#delete the dictionary object
mydict1
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
Cell In[59], line 2
      1 del mydict1
----> 2 mydict1

NameError: name 'mydict1' is not defined
```

Copy Dictionary

In [62]:
```
mydict={'Name':'Nani','ID':12345,'DOB':2003,'Address':'balanagar'}
mydict
```

Out[62]:
```
{'Name': 'Nani', 'ID': 12345, 'DOB': 2003, 'Address': 'balanagar'}
```

In [66]:
```
mydict1 = mydict # create a new reference "mydict1"
```

In [68]:
```
id(mydict),id(mydict)# both address of mydict1 and mydict is same
```

Out[68]:
```
(1600214548672, 1600214548672)
```

In [70]:
```
mydict2=mydict.copy()
```

In [72]:
```
id(mydict2)
```

Out[72]:
```
1600214560256
```

In [74]:
```
mydict['Address']='tenali'
```

In [76]:
```
mydict
```

Out[76]:
```
{'Name': 'Nani', 'ID': 12345, 'DOB': 2003, 'Address': 'tenali'}
```

In [78]:
```
mydict1
```

Out[78]:
```
{'Name': 'Nani', 'ID': 12345, 'DOB': 2003, 'Address': 'tenali'}
```

In [80]:
```
mydict2
```

Out[80]:
```
{'Name': 'Nani', 'ID': 12345, 'DOB': 2003, 'Address': 'balanagar'}
```

Loop through a Dictionary

In [87]:
```
mydict1={'Name':'Nani','ID':12345,'DOB':2003,'Address':'balanagar','Job':'Analys
mydict
```

Out[87]:
```
{'Name': 'Nani', 'ID': 12345, 'DOB': 2003, 'Address': 'tenali'}
```

In [89]:
```
for i in mydict1:
    print(i,':',mydict1[i]) # key and value pair
```

```
Name : Nani
ID : 12345
DOB : 2003
Address : balanagar
Job : Analyst
```

In [91]:
```
for i in mydict1:
    print(mydict1[i]) # dictionary items
```

```
Nani
12345
2003
balanagar
Analyst
```

Dictionary membership

In [112…
```
mydict1 ={'Name':'krishna','ID':12345,'DOB':2002,'Job':'Analyst'}
mydict1
```

Out[112…
```
{'Name': 'krishna', 'ID': 12345, 'DOB': 2002, 'Job': 'Analyst'}
```

In [100…
```
'Name' in mydict1 #tets if a key is in a dictonary or not
```

Out[100…
```
True
```

In [102…
```
'krishna' in mydict1 #membership test can be only for keys
```

Out[102…
```
False
```

In [104…
```
'ID'in mydict1
```

Out[104…
```
True
```

In [106…
```
'Address'in mydict1
```

Out[106…
```
False
```

In [116…
```
'Job'in mydict1
```

Out[116…
```
True
```

In [118…
```
'DOB'in mydict1
```

Out[118…
```
True
```

All /Any

The all() methods returns:

- True-If all keys of the dictionary are True
- False-If any key of the dictionary is False the any() function return True if any key of the dictionary is True.If not any() returns False.

In [121…
```
mydict1 ={'Name':'krishna','ID':12345,'DOB':2002,'Job':'Analyst'}
mydict1
```

Out[121…
```
{'Name': 'krishna', 'ID': 12345, 'DOB': 2002, 'Job': 'Analyst'}
```

In [123…
```
all(mydict)
```

Out[123…
```
True
```

In [ ]: