Python Lab Batch S13 Date 27/01/2022, Batch Prof. Dr. Shachi Natu

Dictionaries

- stores key-value pairs
- key and values can be of any data type
- key has to be unique.
- keys are immutable and case sensitive
- values can be duplicated

In [1]:

```
1 d=dict()
```

In [2]:

```
1 d
```

Out[2]:

```
{}
```

In [3]:

```
1 print(type(d))
```

```
<class 'dict'>
```

In [4]:

```
1 d={'Name':"Shachi", 'Company':'TSEC', 'Designation':"AP",101:"Employee code"}
```

In [5]:

```
1 print(d)
```

```
{'Name': 'Shachi', 'Company': 'TSEC', 'Designation': 'AP', 101: 'Employee co
de'}
```

In [6]:

```
1 d
```

Out[6]:

```
{'Name': 'Shachi',
 'Company': 'TSEC',
 'Designation': 'AP',
 101: 'Employee code'}
```

In [9]:

```
1 d['Company']
```

Out[9]:

```
'TSEC'
```

In [10]:

```
1 d.keys()
```

Out[10]:

```
dict_keys(['Name', 'Company', 'Designation', 101])
```

In [11]:

```
1 print(type(d.keys()))
```

```
<class 'dict_keys'>
```

In [12]:

```
1 keys = list(d.keys())
```

In [13]:

```
1 keys
```

Out[13]:

```
['Name', 'Company', 'Designation', 101]
```

In [14]:

```
1 d.values()
```

Out[14]:

```
dict_values(['Shachi', 'TSEC', 'AP', 'Employee code'])
```

In [15]:

```
1 values=list(d.values())
```

In [16]:

```
1 values
```

Out[16]:

```
['Shachi', 'TSEC', 'AP', 'Employee code']
```

In [17]:

```
1 d['Name']="XYZ"
```

In [18]:

```
1 d
```

Out[18]:

```
{'Name': 'XYZ', 'Company': 'TSEC', 'Designation': 'AP', 101: 'Employee cod
e'}
```

In [19]:

```
1 items = d.items()
2 print(items)
3 print(type(items))
```

```
dict_items([('Name', 'XYZ'), ('Company', 'TSEC'), ('Designation', 'AP'), (10
1, 'Employee code')])
<class 'dict_items'>
```

In [20]:

```
1 items = list(items)
```

In [21]:

```
1 items
```

Out[21]:

```
[('Name', 'XYZ'),
 ('Company', 'TSEC'),
 ('Designation', 'AP'),
 (101, 'Employee code')]
```

In [22]:

```
1 items[0]
```

Out[22]:

```
('Name', 'XYZ')
```

In [23]:

```
1 items[0][1]
```

Out[23]:

```
'XYZ'
```

In [24]:

```
1 # Add element to dictionary
2 d["subject"]="Python"
```

In [25]:

```
1 d
```

Out[25]:

```
{'Name': 'XYZ',
 'Company': 'TSEC',
 'Designation': 'AP',
 101: 'Employee code',
 'subject': 'Python'}
```

In [26]:

```
1 del d["subject"]
```

In [27]:

```
1 d
```

Out[27]:

```
{'Name': 'XYZ', 'Company': 'TSEC', 'Designation': 'AP', 101: 'Employee cod
e'}
```

In [28]:

```
1 print("subject" in d)
```

```
False
```

In [29]:

```
1 d.get('Name')
```

Out[29]:

```
'XYZ'
```

In [31]:

```
1 print(d.get('subject'))
```

```
None
```

In [32]:

```
1 print(d.get('subject',"Not found"))
```

```
Not found
```

In [33]:

```
1 # updating elements in dictionary
2 d.update({'Marks':[70,65,45],102:"Java"})
```

In [34]:

```
1 d
```

Out[34]:

```
{'Name': 'XYZ',
 'Company': 'TSEC',
 'Designation': 'AP',
 101: 'Employee code',
 'Marks': [70, 65, 45],
 102: 'Java'}
```

In [36]:

```
1 d.pop(102)
```

Out[36]:

```
'Java'
```

In [37]:

```
1 d
```

Out[37]:

```
{'Name': 'XYZ',
 'Company': 'TSEC',
 'Designation': 'AP',
 101: 'Employee code',
 'Marks': [70, 65, 45]}
```

In [38]:

```
1 d.pop(101)
```

Out[38]:

```
'Employee code'
```

In [39]:

```
1 d
```

Out[39]:

```
{'Name': 'XYZ', 'Company': 'TSEC', 'Designation': 'AP', 'Marks': [70, 65, 4
5]}
```

In [40]:

```
1 d.popitem()
```

Out[40]:

```
('Marks', [70, 65, 45])
```

In [41]:

```
d
```

Out[41]:

```
{'Name': 'XYZ', 'Company': 'TSEC', 'Designation': 'AP'}
```

In [46]:

```
item = d.setdefault('Company')
```

In [47]:

```
print(item)
```

```
TSEC
```

In [62]:

```
item = d.setdefault("101","100")
```

In [63]:

```
print(item)
```

```
100
```

In [64]:

```
item = d.setdefault("subject","python")
print(item)
```

```
python
```

In [65]:

```
item = d.setdefault("Name","ABC")
print(item)
```

```
XYZ
```

In [67]:

```
#accessing elements using for loop
for key in d.keys():
    print(key, ":",d[key])
```

```
Name : XYZ
Company : TSEC
Designation : AP
Marks : None
101 : 100
101 : 100
subject : python
```

In [68]:

```
for key, value in d.items():
    print(key,":",value)
```

```
Name : XYZ
Company : TSEC
Designation : AP
Marks : None
101 : 100
101 : 100
subject : python
```

In [69]:

```
# Taking input from user and adding that element to dictionary

n = int(input("Enter number of elements: "))
mydict={}
for i in range(n):
    j=input("Enter the key:")
    mydict[j]=input("Enter the value") #mydict.update({k:v})
print(mydict)
```

```
Enter number of elements: 3
Enter the key:101
Enter the valuePython
Enter the key:102
Enter the valueJava
Enter the key:Name
Enter the valueShachi
{'101': 'Python', '102': 'Java', 'Name': 'Shachi'}
```

In [70]:

```
d2={}
keys=[101,102,103,104]
d2 = dict.fromkeys(keys)
print(d2)
```

```
{101: None, 102: None, 103: None, 104: None}
```

In [73]:

```
d2={}
keys=[101,102,103,104]
d2 = dict.fromkeys(keys,[201,202,203,204])
print(d2)
```

```
{101: [201, 202, 203, 204], 102: [201, 202, 203, 204], 103: [201, 202, 203,
204], 104: [201, 202, 203, 204]}
```

Nested Dictionary

In [74]:

```
nd = {1:{"Name":'ABC',
         "Courses":{101:"Python", 102:"ML",103:"AI"},
         "Marks":[70,65,65]},
       2:{"Name":'XYZ',
         "Courses":{102:"M", 104:"Cyber Seurity",103:"AI"},
         "Marks":[75,67,60]}


}
```

In [75]:

```
nd[1]
```

Out[75]:

```
{'Name': 'ABC',
 'Courses': {101: 'Python', 102: 'ML', 103: 'AI'},
 'Marks': [70, 65, 65]}
```

In [76]:

```
nd[1]["Name"]
```

Out[76]:

```
'ABC'
```

In [77]:

```
nd[1]["Courses"]
```

Out[77]:

```
{101: 'Python', 102: 'ML', 103: 'AI'}
```

In [78]:

```
nd[1]["Courses"][101]
```

Out[78]:

```
'Python'
```

In [80]:

```
print(sum(nd[1]['Marks']))
```

```
200
```

In [81]:

```
nd.get(2)["Courses"]
```

Out[81]:

```
{102: 'M', 104: 'Cyber Seurity', 103: 'AI'}
```

In [82]:

```
d1 = d.copy()
```

In [83]:

```
d1
```

Out[83]:

```
{'Name': 'XYZ',
 'Company': 'TSEC',
 'Designation': 'AP',
 'Marks': None,
 101: 100,
 '101': '100',
 'subject': 'python'}
```

In [84]:

```
print(id(d))
print(id(d1))
```

```
2070619389672
2070620615952
```

In [85]:

```
nd[1]["Marks"].append(80)
```

In [86]:

```
nd[1]["Marks"]
```

Out[86]:

```
[70, 65, 65, 80]
```

In [87]:

```
d.clear()
```

In [88]:

```
d
```

Out[88]:

```
{}
```

In [89]:

```
1 del d
```

In [90]:

```
1 d
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
<ipython-input-90-e983f374794d> in <module>()
----> 1 d

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

In [91]:

```
1 print(dir(dict))
```

```
['__class__', '__contains__', '__delattr__', '__delitem__', '__dir__', '__do
c__', '__eq__', '__format__', '__ge__', '__getattribute__', '__getitem__',
'__gt__', '__hash__', '__init__', '__init_subclass__', '__iter__', '__le__',
'__len__', '__lt__', '__ne__', '__new__', '__reduce__', '__reduce_ex__', '__
repr__', '__setattr__', '__setitem__', '__sizeof__', '__str__', '__subclassh
ook__', 'clear', 'copy', 'fromkeys', 'get', 'items', 'keys', 'pop', 'popite
m', 'setdefault', 'update', 'values']
```

In [92]:

```
1 len(d1)
```

Out[92]:

```
7
```

In [93]:

```
1 d1.__len__()
```

Out[93]:

```
7
```

In [ ]:

```
1
```