Dictionary:

- used to store keys
- keys are stored in random order
- dictionary are mutable but list are not mutable
- keys can be int,another dictionary,list,etc or even an object
- dictionary can also be passed to json format

In [10]:

```python
# defining dictionary:

d={"mango":120,"grapes":70,"orange":35,"c324":"kalu"}
print("d:",type(d))

e={}
print("e:",type(e))
```

```
d: <class 'dict'>
e: <class 'dict'>
```

In [13]:

```python
#accessing key of the dictionary:

print(d["c324"])
print(type(d["c324"]))
```

```
kalu
<class 'str'>
```

In [14]:

```python
#adding new keys:

d["mohandas"]="bapu"
print(d)
```

```
{'mango': 120, 'grapes': 70, 'orange': 35, 'c324': 'kalu', 'mohandas': 'bapu'}
```

In [19]:

```python
# adding keys with multiple values / list of values:

d={"mango":120,"grapes":70}
d["apple"]=[70,80]
print(d)

e={"ams":"EWFn","efn":"dkme","kl":"kl"}
e["xy"]=["n","hfrc"]
print(e)
```

```
{'mango': 120, 'grapes': 70, 'apple': [70, 80]}
{'ams': 'EWFn', 'efn': 'dkme', 'kl': 'kl', 'xy': ['n', 'hfrc']}
```

In [20]:

```python
# dictionary inside a dictionary (nesting of dictionary):

d={'mango': 120, 'grapes': 70, 'apple': [70, 80]}
d["bike"]={"ninja":"kawasaki","bobber":"hardley davidson"}
print(d)
```

```
{'mango': 120, 'grapes': 70, 'apple': [70, 80], 'bike': {'ninja': 'kawasaki', 'bobber': 'hardley davidson'}}
```

```
#accessing element of the nested dictionary:

print(d)
print(d["bike"]["ninja"])
print(d["bike"])
print(type(d["bike"]["ninja"]))
```

```
{'mango': 120, 'grapes': 70, 'apple': [70, 80], 'bike': {'ninja': 'kawasaki', 'bobber': 'hardley d
avidson'}}
kawasaki
{'ninja': 'kawasaki', 'bobber': 'hardley davidson'}
<class 'str'>
```

```
#displaying values:

print(d.values())
```

```
dict_values([120, 70, [70, 80], {'ninja': 'kawasaki', 'bobber': 'hardley davidson'}])
```

functions in dictionary:

```
# display values inside a key:  d.get()

print(d)
print(d["apple"])                           #return error if key not exsists
print(d.get("apple"))                       #return none if key not exsists

if "mango" in d:
    print(d["mango"])
else:
    print("not found")

if "peach" in d:
    print(d["peach"])
else:
    print("not found")
```

```
{'mango': 120, 'grapes': 70, 'apple': [70, 80], 'bike': {'ninja': 'kawasaki', 'bobber': 'hardley d
avidson'}}
[70, 80]
[70, 80]
120
not found
```

```
# displaying keys:  d.keys()              -----list of keys

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

```
dict_keys(['mango', 'grapes', 'apple', 'bike'])
<class 'dict_keys'>
```

```
#displaying values:  d.values()        ----------list of values

print(d.values())
type(d.values())
```

```
dict_values([120, 70, [70, 80], {'ninja': 'kawasaki', 'bobber': 'hardley davidson'}])
```

```
dict_values
```

```
# display items: d.items()          ---------list of touples

print(d.items())
```

```
dict_items([('mango', 120), ('grapes', 70), ('apple', [70, 80]), ('bike', {'ninja': 'kawasaki', 'bobber': 'hardley davidson'})])
```

```
# deleting a key:

a={"mouse":"logitech","keyboard":"wipro","phone":"apple","watch":"rolex","car":"buggati"}
del a["mouse"]
print(a)
```

```
{'keyboard': 'wipro', 'phone': 'apple', 'watch': 'rolex', 'car': 'buggati'}
```

```
#updating a dictionary:

print(a)
print(d)
d.update(a)
print()
print(d)
```

```
{'keyboard': 'wipro', 'phone': 'apple', 'watch': 'rolex', 'car': 'buggati'}
{'mango': 120, 'grapes': 70, 'apple': [70, 80], 'bike': {'ninja': 'kawasaki', 'bobber': 'hardley davidson'}, 'keyboard': 'wipro', 'phone': 'apple', 'watch': 'rolex', 'car': 'buggati'}

{'mango': 120, 'grapes': 70, 'apple': [70, 80], 'bike': {'ninja': 'kawasaki', 'bobber': 'hardley davidson'}, 'keyboard': 'wipro', 'phone': 'apple', 'watch': 'rolex', 'car': 'buggati'}
```

```
# length of dictionary

print(len(d))
```

```
8
```

```
#clearing a dictionary:

d.clear()
print(d)
```

```
{}
```

```
# creating a dictionary from lists of key and values:

l_key=["abc","def","ghi","jkl","mno"]
l_value=[1,2,3,4,5]

a=dict(zip(l_key,l_value))
print(a)
```

```
{'abc': 1, 'def': 2, 'ghi': 3, 'jkl': 4, 'mno': 5}
```

In [70]:

```python
#iterating over the keys:

for k in a:
    print(k)

# OR
print()
for k in a.keys():
    print(k)
```

```
abc
def
ghi
jkl
mno

abc
def
ghi
jkl
mno
```

In [72]:

```python
#iterating over the values:

for v in a.values():
    print(v)
```

```
1
2
3
4
5
```

{'abc': 1, 'def': 2, 'ghi': 3, 'jkl': 4, 'mno': 5}

In [70]:

```python
#iterating over the keys:

for k in a:
    print(k)
```