dictonary: these are collection of items which are unordered and stored in key-value pairs
.keys are immutable and should be unique, but values are mutable .

In [10]:
```
#how to use a dictonary
ict={'name':'ashish','age':24,'gender_male':True}
print(ict)

# how to axcess the list
print(ict['name'])

# how to axcess it using get
print(ict.get('gender_male'))

#what is some one wants to axcess but its in the list
print(ict.get('gender_female'))

#what is some one wants to axcess but its in the list but we want to give default v
print(ict.get('gender_female','not_avail'))
```

```
{'name': 'ashish', 'age': 24, 'gender_male': True}
ashish
True
None
not_avail
```

In [ ]:
```
# why keys should be unique
student={'name':'ash','age':24,'name':24}
print(student)
# when you see the result it takes the key which is most resent and the previous on
```

```
{'name': 24, 'age': 24}
```

In [ ]:
```
# how to do the addition , modification , deletion in dictonary
student1={'name':'ash','age':24,'grade':'A'}
student1['age']=23 #modification
student1['address']='third cross ghevarchand nagar' #addition
print(student1)
del student1['age'] #use del key-word to delete
print(student1)
```

```
{'name': 'ash', 'age': 23, 'grade': 'A', 'address': 'third cross ghevarchand nagar'}
{'name': 'ash', 'grade': 'A', 'address': 'third cross ghevarchand nagar'}
```

In [ ]:
```
student1={'name':'ash','age':24,'grade':'A'}
keys=student1.keys()# keys values items functions
values=student1.values()
pairs=student1.items()
print(keys)
print(values)
print(pairs)
```

```
dict_keys(['name', 'age', 'grade'])
dict_values(['ash', 24, 'A'])
dict_items([('name', 'ash'), ('age', 24), ('grade', 'A')])
```

In [12]:
```
# when transfer values of one data_structures to another it
student2=student1
print(student2)
print(student1)

student1['name']='hsa'
print(student2)
print(student1)
# even if we make changes individually both of the dict will get affected
# so to avoid that we can use shallow copy by using copy fuction

student3=student2.copy()
print(student2)
print(student3)

student2['age']=21
print(student2)
print(student3)
```

```
{'name': 'hsa', 'age': 24, 'grade': 'A'}
{'name': 'hsa', 'age': 24, 'grade': 'A'}
{'name': 'hsa', 'age': 24, 'grade': 'A'}
{'name': 'hsa', 'age': 24, 'grade': 'A'}
{'name': 'hsa', 'age': 24, 'grade': 'A'}
{'name': 'hsa', 'age': 24, 'grade': 'A'}
{'name': 'hsa', 'age': 21, 'grade': 'A'}
{'name': 'hsa', 'age': 24, 'grade': 'A'}
```

In [35]:
```
# how to iterate over keys values and items
print(student1)
for keys in student1.keys():
    print(keys)

# print(student1.values())
for values in student1.values():
    print(values)

for keys,values in student1.items( ):
    print(keys,values)

# nested dictonary
students={
    'student1':{'name':'ash','age':24,'grade':'A'},
    'student2':{'name':'kas','age':24,'grade':'B'},
    'student3':{'name':'sam','age':24,'grade':'c'}
}
print(students)

#how to print different parts of this dictonery
students['student1']['name']
```

```
{'name': 'hsa', 'age': 21, 'grade': 'A'}
name
age
grade
hsa
21
A
name hsa
age 21
grade A
{'student1': {'name': 'ash', 'age': 24, 'grade': 'A'}, 'student2': {'name': 'kas',
'age': 24, 'grade': 'B'}, 'student3': {'name': 'sam', 'age': 24, 'grade': 'c'}}
```

Out[35]: 'ash'

In [41]:
```
students={
    'student1':{'name':'ash','age':24,'grade':'A'},
    'student2':{'name':'kas','age':24,'grade':'B'},
    'student3':{'name':'sam','age':24,'grade':'c'}
}


#how to iterate over these dictonary
for students_id,students_info in students.items():
    print(f"{students_id},{students_info}")
    for key,values in students_info.items():
        print(f"{key},{values}")
```

```
student1,{'name': 'ash', 'age': 24, 'grade': 'A'}
name,ash
age,24
grade,A
student2,{'name': 'kas', 'age': 24, 'grade': 'B'}
name,kas
age,24
grade,B
student3,{'name': 'sam', 'age': 24, 'grade': 'c'}
name,sam
age,24
grade,c
```

In [45]:
```
num={x:x**2 for x in range(5) }
print(num)

num={x:x**2 for x in range(5) if x%2==0 }
print(num)


#use a dictonary to count the frequency of elements in the list
lst=[1,2,3,1,2,3,4,5,6,4,5,6]
dict={x:lst.count(x) for x in lst}
print(dict)
# dict will always have unique value as keys so they are not repeated
```

```
{0: 0, 1: 1, 2: 4, 3: 9, 4: 16}
{0: 0, 2: 4, 4: 16}
{1: 2, 2: 2, 3: 2, 4: 2, 5: 2, 6: 2}
```

In [50]:
```
#how to merge 2 dictonary
dict1={'a':1,'b':2}
dict2={'b':2,'c':3}
merge_dict={**dict1,**dict2}
print(merge_dict)
```

```
{'a': 1, 'b': 2, 'c': 3}
```