In [1]:
```
# A dictionary holds key-value pairs.
# Declare it in curly braces, with pairs separated by commas.
# Separate keys and values by a colon(:).
```

In [2]:
```
# empty dictionary
d={}
print(type(d))
print(d)
```

```
<class 'dict'>
{}
```

In [3]:
```
details={"name":"Rutuja","City":"Pune","Education":"Post-graduate"}
print(details)
```

```
{'name': 'Rutuja', 'City': 'Pune', 'Education': 'Post-graduate'}
```

In [4]:
```
# length of dictionary
len(details)
```

Out[4]: 3

In [5]:
```
# Using the dict() method to make a dictionary:

dic = dict(name = "John", age = 36, country = "Norway")
print(dic)
```

```
{'name': 'John', 'age': 36, 'country': 'Norway'}
```

In [6]:
```
Dict = dict({1: 'name', 2: 'age', 3: 'number'})
print(Dict)
```

```
{1: 'name', 2: 'age', 3: 'number'}
```

In [7]:
```
Dict = dict([(1, 'name'), (2, 'age')])
print(Dict)
```

```
{1: 'name', 2: 'age'}
```

In [8]:
```
# Accessing value
details['name']
```

Out[8]: 'Rutuja'

In [11]:
```
details['Education']
```

Out[11]: 'Post-graduate'

In [14]:
```
# list od keys
details.keys()
```

Out[14]: dict_keys(['name', 'City', 'Education'])

In [15]:
```
# list of values
details.values()
```

Out[15]:
```
dict_values(['Rutuja', 'Pune', 'Post-graduate'])
```

In [17]:
```
# list of key-value pair
# The items() method will return each item in a dictionary, as tuples in a list.
details.items()
```

Out[17]:
```
dict_items([('name', 'Rutuja'), ('City', 'Pune'), ('Education', 'Post-graduate')])
```

In [19]:
```
# Get the value of the key
print(details.get("City"))
```

```
Pune
```

In [20]:
```
# Add a new item to the original dictionary,
details["Age"]=23
print(details)
```

```
{'name': 'Rutuja', 'City': 'Pune', 'Education': 'Post-graduate', 'Age': 23}
```

In [21]:
```
# update / change the values in dictionary
details["name"]="Siya"
```

In [22]:
```
print(details)
```

```
{'name': 'Siya', 'City': 'Pune', 'Education': 'Post-graduate', 'Age': 23}
```

In [23]:
```
# To determine if a specified key is present in a dictionary
if 'City' in details:
    print("city is present")
```

```
city is present
```

In [24]:
```
# update dictionary
details.update({'Age':25})
```

In [25]:
```
print(details)
```

```
{'name': 'Siya', 'City': 'Pune', 'Education': 'Post-graduate', 'Age': 25}
```

In [27]:
```
car={"Brand":"Ford","Year":2020,"color":["Maroon","Blue"],"purchase":{"pur_name":"Nikhi
```

In [28]:
```
print(car)
```

```
{'Brand': 'Ford', 'Year': 2020, 'color': ['Maroon', 'Blue'], 'purchase': {'pur_name':
'Nikhil', 'pur_year': 2021}}
```

In [29]:
```
car.update({"liked":"yes"})
```

In [30]:
```
print(car)
```

```
{'Brand': 'Ford', 'Year': 2020, 'color': ['Maroon', 'Blue'], 'purchase': {'pur_name':
'Nikhil', 'pur_year': 2021}, 'liked': 'yes'}
```

In [32]:
```
# remove items
# The pop() method removes the item with the specified key name:
car.pop("liked")
```

Out[32]:
```
'yes'
```

In [33]:
```
print(car)
```

```
{'Brand': 'Ford', 'Year': 2020, 'color': ['Maroon', 'Blue'], 'purchase': {'pur_name':
'Nikhil', 'pur_year': 2021}}
```

In [34]:
```
# The popitem() method removes the last inserted item
car.popitem()
```

Out[34]:
```
('purchase', {'pur_name': 'Nikhil', 'pur_year': 2021})
```

In [35]:
```
car
```

Out[35]:
```
{'Brand': 'Ford', 'Year': 2020, 'color': ['Maroon', 'Blue']}
```

In [36]:
```
# The del keyword removes the item with the specified key name
del car["Year"]
```

In [37]:
```
print(car)
```

```
{'Brand': 'Ford', 'color': ['Maroon', 'Blue']}
```

In [38]:
```
# The del keyword can also delete the dictionary completely
del car
```

In [40]:
```
print(car)
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
Cell In[40], line 1
----> 1 print(car)

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

In [41]:
```
# The clear() method empties the dictionary
details.clear()
```

In [42]:
```
print(details)
```

```
{}
```

In [43]:
```
dic={"name":"Riya","age":24,"city":"Pune","education":"MSC","grade":8.9}
print(dic)
```

```
{'name': 'Riya', 'age': 24, 'city': 'Pune', 'education': 'MSC', 'grade': 8.9}
```

In [44]:
```
# looping dictionary
```

In [45]:
```
# get keys
for x in dic:
    print(x)
```

```
name
age
city
education
grade
```

In [60]:
```
for i in dic.keys():
    print(i)
```

```
name
age
city
education
grade
```

In [46]:
```
# for print values
for x in dic:
    print(dic[x])
```

```
Riya
24
Pune
MSC
8.9
```

In [59]:
```
for i in dic.values():
    print(i)
```

```
Riya
24
Pune
MSC
8.9
```

In [49]:
```
# for pring key value
for keys, values in dic.items():
    print(keys," : ", values)
```

```
name  :  Riya
age  :  24
city  :  Pune
education  :  MSC
grade  :  8.9
```

In [ ]:
```

```

In [53]:
```
# nested dictionary
details={"stud1":{"name":"Riya","age":24,"city":"Pune","education":"MSC","grade":8.9},
         "stud2":{"name":"Siya","age":20,"city":"nashik","education":"post-graduate", "
        "stud3":{"name":"Vaibhav","age":18,"city":"nagar","education":"graduation","gra
        "stud4":{"name":"saarika","age":12,"city":"nagpur","education":"SSC","grade":8}
```

In [54]:
```
print(details)
```

```
{'stud1': {'name': 'Riya', 'age': 24, 'city': 'Pune', 'education': 'MSC', 'grade': 8.
9}, 'stud2': {'name': 'Siya', 'age': 20, 'city': 'nashik', 'education': 'post-graduat
e', 'grade': 8.5}, 'stud3': {'name': 'Vaibhav', 'age': 18, 'city': 'nagar', 'educatio
n': 'graduation', 'grade': 7.8}, 'stud4': {'name': 'saarika', 'age': 12, 'city': 'nagp
ur', 'education': 'SSC', 'grade': 8}}
```

In [55]:
```
# Create three dictionaries, then create one dictionary that will contain the other thre
stud1={"name":"Riya","age":24,"city":"Pune","education":"MSC","grade":8.9}
stud2={"name":"Siya","age":20,"city":"nashik","education":"post-graduate", "grade":8.5}
stud3={"name":"Vaibhav","age":18,"city":"nagar","education":"graduation","grade":7.8}
```

In [56]:
```
students={"s1":stud1,"s2":stud2,"s3":stud3}
students
```

Out[56]:
```
{'s1': {'name': 'Riya',
  'age': 24,
  'city': 'Pune',
  'education': 'MSC',
  'grade': 8.9},
 's2': {'name': 'Siya',
  'age': 20,
  'city': 'nashik',
  'education': 'post-graduate',
  'grade': 8.5},
 's3': {'name': 'Vaibhav',
  'age': 18,
  'city': 'nagar',
  'education': 'graduation',
  'grade': 7.8}}
```

In [ ]:
```
# copy dictionary
```

In [57]:
```
students1=students.copy()
print(students1)
```

```
{'s1': {'name': 'Riya', 'age': 24, 'city': 'Pune', 'education': 'MSC', 'grade': 8.9},
's2': {'name': 'Siya', 'age': 20, 'city': 'nashik', 'education': 'post-graduate', 'gra
de': 8.5}, 's3': {'name': 'Vaibhav', 'age': 18, 'city': 'nagar', 'education': 'graduat
ion', 'grade': 7.8}}
```

In [58]:
```
students2=dict(students)
print(students2)
```

```
{'s1': {'name': 'Riya', 'age': 24, 'city': 'Pune', 'education': 'MSC', 'grade': 8.9},
's2': {'name': 'Siya', 'age': 20, 'city': 'nashik', 'education': 'post-graduate', 'gra
de': 8.5}, 's3': {'name': 'Vaibhav', 'age': 18, 'city': 'nagar', 'education': 'graduat
ion', 'grade': 7.8}}
```

In [62]:
```
# accesing an Element of a Nested Dictionary
details["stud1"]["age"]
```

Out[62]:
```
24
```

In [63]:
```
details["stud1"]["name"]
```

Out[63]:
```
'Riya'
```

In [64]:
```
details["stud2"]["name"]
```

Out[64]:
```
'Siya'
```

In [70]:
```
stud1={"name":"Riya","age":24,"city":"Pune","education":"MSC","grade":8.9}
stud2={"name":"Siya","age":20,"city":"nashik","education":"post-graduate", "grade":8.5}
```

In [71]:
```
new_dict={}
```

In [72]:
```
new_dict.update({"stud1":stud1,"stud2":stud2})
print(new_dict)
```

```
{'stud1': {'name': 'Riya', 'age': 24, 'city': 'Pune', 'education': 'MSC', 'grade': 8.
9}, 'stud2': {'name': 'Siya', 'age': 20, 'city': 'nashik', 'education': 'post-graduat
e', 'grade': 8.5}}
```

In [76]:
```
new_dict["stud1"].update({"name":"sanskar"})
```

In [77]:
```
new_dict
```

Out[77]:
```
{'stud1': {'name': 'sanskar',
  'age': 24,
  'city': 'Pune',
  'education': 'MSC',
  'grade': 8.9},
 'stud2': {'name': 'Siya',
  'age': 20,
  'city': 'nashik',
  'education': 'post-graduate',
  'grade': 8.5}}
```

In [ ]:
```

```