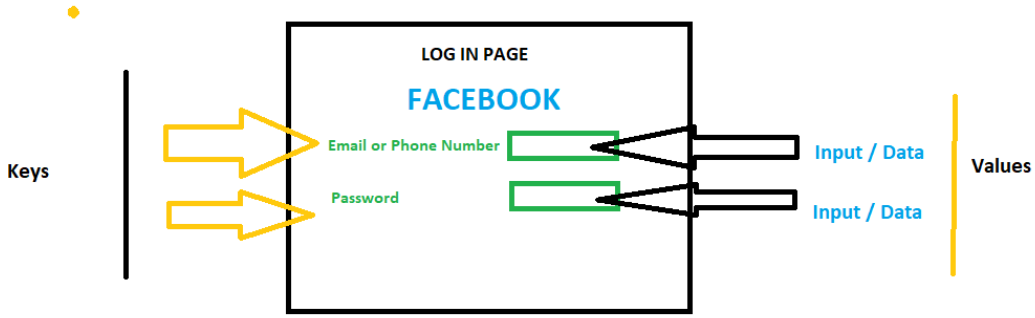
In [ ]:
```
'''
      Dictionary ==> Data <--- Stored

      => Data : key And Value Pair

      => Key And Value Seperated By Colon

      => Key --> Mutable

         --> We Can Change The Value of Any Key.

      => It Is Used To Store Multiple Data Into Key And Value Pair.
'''
""
```



In [ ]:
```
```

Dictionary

In [4]:
```
'''
  ## Dictionary :

        ==> It Is Used To Store Multiple Data Elements In Key And Value Pair.

        ==> Data Will be Stored In Key And Value Pair.

        ==> Key And Value Seperated By Colon.

          --->  Key : Value

        ==> Ordered

        ==> It Can Change The Value of Key.
'''
""
```

Out[4]:
```
''
```

How To Make Dictionary

In [5]:
```
## Use : {}
```

Syntax : {key:value,key:value,.....}

In [1]:
```
d1 = {}
print("Empty Dictionary Is :",d1,"\nType Is :",type(d1))
```

```
Empty Dictionary Is : {}
Type Is : <class 'dict'>
```

In [2]:
```
name = "Mike"
```

In [3]:
```
name
```

Out[3]:
```
'Mike'
```

In [4]:
```
name = "Luke"
```

In [5]:
```
name
```

Out[5]:
```
'Luke'
```

In [7]:
```
value = {'Key1' : 2512,'Key2':5600}
value
```

Out[7]:
```
{'Key1': 2512, 'Key2': 5600}
```

In [8]:
```
type(value)
```

Out[8]:
```
dict
```

In [9]:
```
emp = {"Name":"Mike","Age":20,"City":"Jaipur","Salary":56000}
```

In [10]:
```
emp
```

Out[10]:
```
{'Name': 'Mike', 'Age': 20, 'City': 'Jaipur', 'Salary': 56000}
```

Type

In [13]:
```
type(emp)
```

Out[13]:
```
dict
```

Ordered

In [11]:
```
emp = {"Name":"Mike","Age":20,"City":"Jaipur","Salary":56000}
```

In [12]:
```
emp
```

Out[12]:
```
{'Name': 'Mike', 'Age': 20, 'City': 'Jaipur', 'Salary': 56000}
```

How To Get The Value of Any Key

Syntax : dict_name[key_name]

In [13]:
```
emp
```

Out[13]:
```
{'Name': 'Mike', 'Age': 20, 'City': 'Jaipur', 'Salary': 56000}
```

In [14]:
```
emp["Name"]
```

Out[14]:
```
'Mike'
```

In [17]:
```
emp.Name
```

```
---------------------------------------------------------------------------
AttributeError                            Traceback (most recent call last)
Input In [17], in <cell line: 1>()
----> 1 emp.Name

AttributeError: 'dict' object has no attribute 'Name'
```

In [19]:
```
emp["Salary"]
```

Out[19]:
```
56000
```

How To Change The Value of Any Key

In [18]:
```
emp
```

Out[18]:
```
{'Name': 'Mike', 'Age': 20, 'City': 'Jaipur', 'Salary': 56000}
```

In [19]:
```
emp["Name"]
```

Out[19]:
```
'Mike'
```

In [21]:
```
emp["Name"] = "Jenny"
emp
```

Out[21]:
```
{'Name': 'Jenny', 'Age': 20, 'City': 'Jaipur', 'Salary': 56000}
```

In [22]:
```
emp["Name"] = input("Enter The New Value :")
print("\nUpdated Data Is :",emp)
```

```
Enter The New Value :Finn Allen

Updated Data Is : {'Name': 'Finn Allen', 'Age': 20, 'City': 'Jaipur', 'Salary': 560
00}
```

Index ?

In [23]:
```
emp
```

Out[23]:
```
{'Name': 'Finn Allen', 'Age': 20, 'City': 'Jaipur', 'Salary': 56000}
```

In [25]:
```
emp[0]  ## Here , 0 Check => Key
```

```
---------------------------------------------------------------------------
KeyError                                  Traceback (most recent call last)
Input In [25], in <cell line: 1>()
----> 1 emp[0]

KeyError: 0
```

Support : Key

How To Make A Dictionary Using Input Function

In [33]:
```
emp = {input("Enter Key Name :"):input("\nEnter The Value :"),
      input("\nEnter 2nd Key Name :"):input("\nEnter The Value :")}
print("\nThe Emp Data Is :")
print()
print(emp)
```

```
Enter Key Name :Name

Enter The Value :Luke

Enter 2nd Key Name :Project

Enter The Value :NLP

The Emp Data Is :

{'Name': 'Luke', 'Project': 'NLP'}
```

In [34]:
```
emp
```

Out[34]:
```
{'Name': 'Luke', 'Project': 'NLP'}
```

In [35]:
```
emp["Birth_Year"] = 2002
```

In [36]:
```
emp
```

Out[36]:
```
{'Name': 'Luke', 'Project': 'NLP', 'Birth_Year': 2002}
```

In [37]:
```
emp["Age"] = 2022 - emp["Birth_Year"]
emp
```

Out[37]:
```
{'Name': 'Luke', 'Project': 'NLP', 'Birth_Year': 2002, 'Age': 20}
```

Add New Key And Its Value Using Input Function

In [38]:
```
emp[input("Enter Key :")] = input("\nEnter The Value :")
print("\nThe Updated Data Is :","\n")
print(emp)
```

```
Enter The Value :100k
Enter Key :Salary

The Updated Data Is :

{'Name': 'Luke', 'Project': 'NLP', 'Birth_Year': 2002, 'Age': 20, 'Salary': '100k'}
```

How To Remove Key

In [39]:
```
emp
```

Out[39]:
```
{'Name': 'Luke',
 'Project': 'NLP',
 'Birth_Year': 2002,
 'Age': 20,
 'Salary': '100k'}
```

Use : del()

In [40]:
```
del(emp['Salary'])
```

In [41]:
```
emp
```

Out[41]:
```
{'Name': 'Luke', 'Project': 'NLP', 'Birth_Year': 2002, 'Age': 20}
```

Change The value of Key , but First Check The Key Is Exist or Not

In [42]:
```
emp
```

Out[42]:
```
{'Name': 'Luke', 'Project': 'NLP', 'Birth_Year': 2002, 'Age': 20}
```

In [43]:
```
key = input("Enter The Key :")
if key in emp:
    print("\nNow You Can Change The Value ..")
    emp[key] = input("\nEnter The New Value :")
    print("\nThe Updated Data Is :","\n")
    print(emp)
else:
    print()
    print(key,"Key Is Not Exist..")
```

```
Enter The Key :City

City Key Is Not Exist..
```

In [44]:
```
key = input("Enter The Key :")
if key in emp:
    print("\nNow You Can Change The Value ..")
    emp[key] = input("\nEnter The New Value :")
    print("\nThe Updated Data Is :","\n")
    print(emp)
else:
    print()
    print(key,"Key Is Not Exist..")
```

```
Enter The Key :Name

Now You Can Change The Value ..

Enter The New Value :Jenny

The Updated Data Is :

{'Name': 'Jenny', 'Project': 'NLP', 'Birth_Year': 2002, 'Age': 20}
```

Support Duplicate Key ?

In [12]:
```
## It can Allow To Store Duplicate Keys , It Can Only Stored Last Inserted Key And
```

In [45]:
```
data = {"Name":"Mike","Age":20,"Name":"Jenny"}
```

In [46]:
```
data
```

Out[46]:
```
{'Name': 'Jenny', 'Age': 20}
```

In [47]:
```
data = {"Name":"Mike","Age":20,"Name":["Sean","Luke"]}
```

In [48]:
```
data
```

Out[48]:
```
{'Name': ['Sean', 'Luke'], 'Age': 20}
```

It Allow To Duplicate Values For Different Keys.

In [49]:
```
data1 = {"Name":"Mike","A":"Mike"}
```

In [50]:
```
data1
```

Out[50]:
```
{'Name': 'Mike', 'A': 'Mike'}
```

In [51]:
```
data1 = {"A":100,"B":100}
```

In [52]:
```
data1
```

Out[52]:
```
{'A': 100, 'B': 100}
```

In [53]:
```
data1["A"]
```

Out[53]:
```
100
```

In [54]:
```
data1["B"]
```

Out[54]:
```
100
```

Methods of Dictionary

In [23]:
```
dir(dict)
```

Out[23]:
```
['__class__',
 '__class_getitem__',
 '__contains__',
 '__delattr__',
 '__delitem__',
 '__dir__',
 '__doc__',
 '__eq__',
 '__format__',
 '__ge__',
 '__getattribute__',
 '__getitem__',
 '__gt__',
 '__hash__',
 '__init__',
 '__init_subclass__',
 '__ior__',
 '__iter__',
 '__le__',
 '__len__',
 '__lt__',
 '__ne__',
 '__new__',
 '__or__',
 '__reduce__',
 '__reduce_ex__',
 '__repr__',
 '__reversed__',
 '__ror__',
 '__setattr__',
 '__setitem__',
 '__sizeof__',
 '__str__',
 '__subclasshook__',
 'clear',
 'copy',
 'fromkeys',
 'get',
 'items',
 'keys',
 'pop',
 'popitem',
 'setdefault',
 'update',
 'values']
```

In [24]:
```
'''

 'clear',
 'copy',
 'fromkeys',
 'get',
 'items',
 'keys',
 'pop',
 'popitem',
 'setdefault',
 'update',
 'values'

'''
""
```

Out[24]:
```
''
```

clear()

In [55]:
```
## clear() :

  ## It Is Used Clear The Data.

  ## It Is Used To Clear The Key and Its Value From Dictionary

  ## And Make A Empty Dictionary.

    ## Syntax :   dict_name.clear
```

In [56]:
```
data1
```

Out[56]:
```
{'A': 100, 'B': 100}
```

In [57]:
```
inp = input("Do You Want To Make Empty Dictionary :")
if inp=="Yes":
    data1.clear()
    print("\nEmpty Dictionary Is :",data1)
else:
    print("\nOkay !!")
```

```
Do You Want To Make Empty Dictionary :Nope

Okay !!
```

In [58]:
```
data1
```

Out[58]:
```
{'A': 100, 'B': 100}
```

In [59]:
```
inp = input("Do You Want To Make Empty Dictionary :")
if inp=="Yes":
    data1.clear()
    print("\nEmpty Dictionary Is :",data1)
else:
    print("\nOkay !!")
```

```
Do You Want To Make Empty Dictionary :Yes

Empty Dictionary Is : {}
```

In [60]:
```
data1
```

Out[60]:
```
{}
```

copy()

In [31]:
```
## Copy() :

  ## It Is Used To copy All Data of Dictionary To Another Dictionary.

    ## Syntax :

        ##    new_dict_name = pld_dict_name.copy()
```

In [61]:
```
emp
```

Out[61]:
```
{'Name': 'Jenny', 'Project': 'NLP', 'Birth_Year': 2002, 'Age': 20}
```

In [62]:
```
back_up = emp.copy()
```

In [63]:
```
print("BackUp Data Is :",back_up)
```

```
BackUp Data Is : {'Name': 'Jenny', 'Project': 'NLP', 'Birth_Year': 2002, 'Age': 20}
```

In [64]:
```
back_up is emp
```

Out[64]:
```
False
```

In [65]:
```
emp["City"] = "Jaipur"
```

In [66]:
```
emp
```

Out[66]:
```
{'Name': 'Jenny',
 'Project': 'NLP',
 'Birth_Year': 2002,
 'Age': 20,
 'City': 'Jaipur'}
```

In [67]:
```
back_up
```

Out[67]:
```
{'Name': 'Jenny', 'Project': 'NLP', 'Birth_Year': 2002, 'Age': 20}
```

In [40]:
```
d1 = emp
```

In [41]:
```
d1
```

Out[41]:
```
{'Project': 'AI TOOL', 'Price': '15K', 'Time': '20-12-2025', 'City': 'Jaipur'}
```

In [42]:
```
d1 is emp
```

Out[42]:
```
True
```

In [43]:
```
d1["Key"] = "25Luke"
```

In [45]:
```
print(d1)
```

```
{'Project': 'AI TOOL', 'Price': '15K', 'Time': '20-12-2025', 'City': 'Jaipur', 'Key
': '25Luke'}
```

In [46]:
```
print(emp)
```

```
{'Project': 'AI TOOL', 'Price': '15K', 'Time': '20-12-2025', 'City': 'Jaipur', 'Key
': '25Luke'}
```

How To Add A New Key In The Dictionary

In [47]:
```
## Syntax :  dict_name[new_key_name] = input/value
```

In [48]:
```
data1
```

Out[48]:
```
{}
```

In [49]:
```
data1["Emp"] = "Jenny"
```

In [50]:
```
data1
```

Out[50]:
```
{'Emp': 'Jenny'}
```

keys()

In [68]:
```
## keys() :

  ## It Is USed To Get The All Keys Of Dict.

    ## Syntax :  dict_name.keys()
```

In [69]:
```
emp
```

Out[69]:
```
{'Name': 'Jenny',
 'Project': 'NLP',
 'Birth_Year': 2002,
 'Age': 20,
 'City': 'Jaipur'}
```

In [70]:
```
print("The Keys Are :",emp.keys())
```

```
The Keys Are : dict_keys(['Name', 'Project', 'Birth_Year', 'Age', 'City'])
```

Values()

In [71]:
```
## values() :

  ## It Is USed To Get The All Values Of Dict.

    ## Syntax :  dict_name.values()
```

In [72]:
```
print("All The Values Are :",emp.values())
```

```
All The Values Are : dict_values(['Jenny', 'NLP', 2002, 20, 'Jaipur'])
```

pop()

In [73]:
```
## pop() :

 ## It Is Used To Delete The Element Using Key

    ## Syntax :

                  ##   dict_name.pop(key_name)
```

In [75]:
```
emp
```

Out[75]:
```
{'Name': 'Jenny',
 'Project': 'NLP',
 'Birth_Year': 2002,
 'Age': 20,
 'City': 'Jaipur'}
```

In [77]:
```
emp.pop("Age")
```

Out[77]:
```
20
```

In [78]:
```
emp
```

Out[78]:
```
{'Name': 'Jenny', 'Project': 'NLP', 'Birth_Year': 2002, 'City': 'Jaipur'}
```

In [79]:
```
key = input("Enter The Key To Remove :")
if key in emp:
    print("\nNow You CAn Remove The Key.")
    emp.pop(key)
    print("\nThe Updated Data Is :",emp)
else:
    print("\nKey :",key,"Is Not Exist Here.")
```

```
Enter The Key To Remove :Name

Now You CAn Remove The Key.

The Updated Data Is : {'Project': 'NLP', 'Birth_Year': 2002, 'City': 'Jaipur'}
```

In [80]:
```
key = input("Enter The Key To Remove :")
if key in emp:
    print("\nNow You Can Remove The Key.")
    emp.pop(key)
    print("\nThe Updated Data Is :",emp)
else:
    print("\nKey :",key,"Is Not Exist Here.")
```

```
Enter The Key To Remove :Marks

Key : Marks Is Not Exist Here.
```

In [64]:
```
key = input("Enter The Key To Remove :")
if key in d1:
    print("\nNow You CAn Remove The Key.")
    d1.pop(key)
    print("\nThe Updated Data Is :",d1)
else:
    print("\nKey :",key,"Is Not Exist Here.")
```

```
Enter The Key To Remove :City

Now You CAn Remove The Key.

The Updated Data Is : {'Project': 'AI TOOL', 'Price': '15K'}
```

popitem()

In [81]:
```
## popitem() :

 ## It Is Used To Remove Last Inserted Key And Its Value.

    ## If Dict Is Empty , It Will raise the Error.

    ## Syntax :

         ##   dict_name.popitem()
```

In [82]:
```
stud = {'Stud_Name': 'Jenny', 'Address': 'Jaipur', 'Marks': 595}
```

In [83]:
```
stud
```

Out[83]:
```
{'Stud_Name': 'Jenny', 'Address': 'Jaipur', 'Marks': 595}
```

In [84]:
```
stud.popitem()
```

Out[84]:
```
('Marks', 595)
```

In [85]:
```
stud
```

Out[85]:
```
{'Stud_Name': 'Jenny', 'Address': 'Jaipur'}
```

In [86]:
```
stud.popitem()
```

Out[86]:
```
('Address', 'Jaipur')
```

In [71]:
```
stud
```

Out[71]:
```
{'Stud_Name': 'Jenny'}
```

items()

In [87]:
```
## items() :

  ## It Is Used To Get The Key And Value .

    ## Syntax :

        ##  dict_name.items()
```

In [89]:
```
stud = {'Stud_Name': 'Jenny', 'Address': 'Jaipur', 'Marks': 595}
```

In [90]:
```
stud
```

Out[90]:
```
{'Stud_Name': 'Jenny', 'Address': 'Jaipur', 'Marks': 595}
```

In [92]:
```
stud.items()
```

Out[92]:
```
dict_items([('Stud_Name', 'Jenny'), ('Address', 'Jaipur'), ('Marks', 595)])
```

Update()

In [93]:
```
## update() :

   ##  It Is Used To Add The Data of Dict To Other.

    ## Syntax :

         ##    data.update(dict/data)
```

In [94]:
```
emp
```

Out[94]:
```
{'Project': 'NLP', 'Birth_Year': 2002, 'City': 'Jaipur'}
```

In [95]:
```
d1 = {"Salary":"55K"}
d2 = {"Duration":"25 Days"}
```

In [96]:
```
emp.update(d1)
```

In [97]:
```
emp
```

Out[97]:
```
{'Project': 'NLP', 'Birth_Year': 2002, 'City': 'Jaipur', 'Salary': '55K'}
```

In [98]:
```
emp.update(d2)
```

In [99]:
```
emp
```

Out[99]:
```
{'Project': 'NLP',
 'Birth_Year': 2002,
 'City': 'Jaipur',
 'Salary': '55K',
 'Duration': '25 Days'}
```

In [84]:
```
City = "Jaipur"
```

In [85]:
```
City
```

Out[85]:
```
'Jaipur'
```

In [86]:
```
emp.update(City)
```

```
---------------------------------------------------------------------------
ValueError                                Traceback (most recent call last)
Input In [86], in <cell line: 1>()
----> 1 emp.update(City)

ValueError: dictionary update sequence element #0 has length 1; 2 is required
```

In [101…
```
emp.update(Country = "India")
emp
```

Out[101]:
```
{'Project': 'NLP',
 'Birth_Year': 2002,
 'City': 'Jaipur',
 'Salary': '55K',
 'Duration': '25 Days',
 'Country': 'India'}
```

In [102…
```
emp.update(City = "Jaipur")
```

In [103…
```
emp
```

Out[103]:
```
{'Project': 'NLP',
 'Birth_Year': 2002,
 'City': 'Jaipur',
 'Salary': '55K',
 'Duration': '25 Days',
 'Country': 'India'}
```

Give The Multiple Data Into A Single Key

In [89]:
```
d1
```

Out[89]:
```
{'Salary': '55K'}
```

In [104…
```
stud = {"Name":["Sean","Jenny","Peter","Luke","Finn"],
        "Age":[16,15,20,21,22]}
```

In [105…
```
stud
```

Out[105]:
```
{'Name': ['Sean', 'Jenny', 'Peter', 'Luke', 'Finn'],
 'Age': [16, 15, 20, 21, 22]}
```

In [107…
```
type(stud)
```

Out[107]:
```
dict
```

In [108…
```
stud["Name"]
```

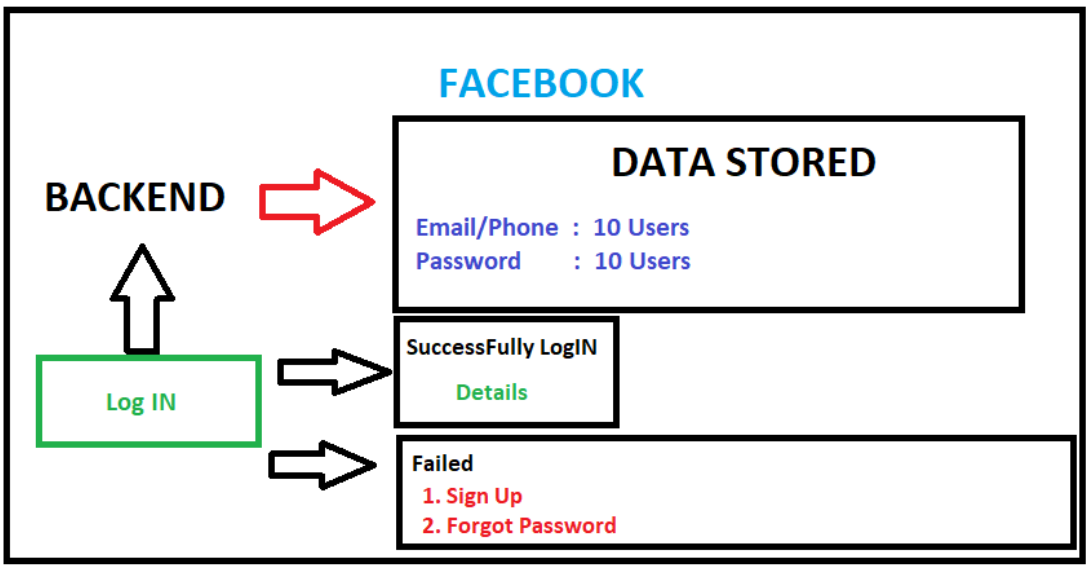
Out[108]:
```
['Sean', 'Jenny', 'Peter', 'Luke', 'Finn']
```

In [109…
```
type(stud["Name"])
```

Out[109]:
```
list
```

In [110…
```
stud["Name"][0]
```

Out[110]:
```
'Sean'
```



In [ ]: