**Python Dictionary**

Dictionary is an unordered set of key and value pair.

It is an container that contains data, enclosed within curly braces.

The pair i.e., key and value is known as item.

The key passed in the item must be unique.

The key and the value is separated by a colon(:). This pair is known as item. Items are separated from each other by a comma(,). Different items are enclosed within a curly brace and this forms Dictionary.

**eg:**

1. data={100:'Ravi' ,101:'Vijay' ,102:'Rahul'}
2. print data

Output:

1. >>>
2. {100: 'Ravi', 101: 'Vijay', 102: 'Rahul'}
3. >>>

Dictionary is mutable i.e., value can be updated.

Key must be unique and immutable. Value is accessed by key. Value can be updated while key cannot be changed.

Dictionary is known as Associative array since the Key works as Index and they are decided by the user.

**eg:**

1. plant={}
2. plant[1]='Ravi'
3. plant[2]='Manoj'
4. plant['name']='Hari'
5. plant[4]='Om'
6. print plant[2]
7. print plant['name']
8. print plant[1]
9. print plant

**Output:**

>>>

Manoj

Hari

Ravi

{1: 'Ravi', 2: 'Manoj', 4: 'Om', 'name': 'Hari'}

>>>

**Accessing Values**

Since Index is not defined, a Dictionaries value can be accessed by their keys.

**Syntax:**

[key]

**Eg:**

data1={'Id':100, 'Name':'Suresh', 'Profession':'Developer'}

data2={'Id':101, 'Name':'Ramesh', 'Profession':'Trainer'}

print "Id of 1st employer is",data1['Id']

print "Id of 2nd employer is",data2['Id']

print "Name of 1st employer:",data1['Name']

print "Profession of 2nd employer:",data2['Profession']

**Output:**

>>>

Id of 1st employer is 100

Id of 2nd employer is 101

Name of 1st employer is Suresh

Profession of 2nd employer is Trainer

>>>

**Updation**

The item i.e., key-value pair can be updated. Updating means new item can be added. The values can be modified.

**Eg:**

data1={'Id':100, 'Name':'Suresh', 'Profession':'Developer'}

data2={'Id':101, 'Name':'Ramesh', 'Profession':'Trainer'}

data1['Profession']='Manager'

data2['Salary']=20000

data1['Salary']=15000

print data1

print data2

**Output:**

>>>

{'Salary': 15000, 'Profession': 'Manager','Id': 100, 'Name': 'Suresh'}

{'Salary': 20000, 'Profession': 'Trainer', 'Id': 101, 'Name': 'Ramesh'}

>>>

**Deletion**

del statement is used for performing deletion operation.

An item can be deleted from a dictionary using the key.

**Syntax:**

del [key]

Whole of the dictionary can also be deleted using the del statement.

**Eg:**

data={100:'Ram', 101:'Suraj', 102:'Alok'}

del data[102]

print data

del data

print data #will show an error since dictionary is deleted.

**Output:**

>>>

{100: 'Ram', 101: 'Suraj'}

Traceback (most recent call last):

File "C:/Python27/dict.py", line 5, in

print data

NameError: name 'data' is not defined

>>>

**Functions and Methods**

Python Dictionary supports the following Functions:

**Dictionary Functions:**

|  |  |
| --- | --- |
| **Functions** | **Description** |
| len(dictionary) | Gives number of items in a dictionary. |
| cmp(dictionary1,dictionary2) | Compares the two dictionaries. |
| str(dictionary) | Gives the string representation of a string. |

**Dictionary Methods:**

|  |  |
| --- | --- |
| **Methods** | **Description** |
| keys() | Return all the keys element of a dictionary. |
| values() | Return all the values element of a dictionary. |
| items() | Return all the items(key-value pair) of a dictionary. |
| update(dictionary2) | It is used to add items of dictionary2 to first dictionary. |
| clear() | It is used to remove all items of a dictionary. It returns an empty dictionary. |
| fromkeys(sequence,value1)/ fromkeys(sequence) | It is used to create a new dictionary from the sequence where sequence elements forms the key and all keys share the values ?value1?. In case value1 is not give, it set the values of keys to be none. |
| copy() | It returns an ordered copy of the data. |
| has\_key(key) | It returns a boolean value. True in case if key is present in the dictionary ,else false. |
| get(key) | Returns the value of the given key. If key is not present it returns none. |

**Functions:**

**1) len(dictionary):**

**Eg:**

data={100:'Ram', 101:'Suraj', 102:'Alok'}

print data

print len(data)

**Output:**

>>>

{100: 'Ram', 101: 'Suraj', 102: 'Alok'}

3

>>>

**2) cmp(dictionary1,dictionary2):**

**Explanation:**

The comparison is done on the basis of key and value.

If, dictionary1 == dictionary2, returns 0.

dictionary1 < dictionary2, returns -1.

dictionary1 > dictionary2, returns 1.

**Eg:**

data1={100:'Ram', 101:'Suraj', 102:'Alok'}

data2={103:'abc', 104:'xyz', 105:'mno'}

data3={'Id':10, 'First':'Aman','Second':'Sharma'}

data4={100:'Ram', 101:'Suraj', 102:'Alok'}

print cmp(data1,data2)

print cmp(data1,data4)

print cmp(data3,data2)

**Output:**

>>>

-1

0

1

>>>

**3) str(dictionary):**

**Eg:**

data1={100:'Ram', 101:'Suraj', 102:'Alok'}

print str(data1)

**Output:**

>>>

{100: 'Ram', 101: 'Suraj', 102: 'Alok'}

>>>

**Methods:**

**1) keys():**

**Eg:**

data1={100:'Ram', 101:'Suraj', 102:'Alok'}

print data1.keys()

**Output:**

>>>

[100, 101, 102]

>>>

**2) values():**

**Eg:**

data1={100:'Ram', 101:'Suraj', 102:'Alok'}

print data1.values()

**Output:**

>>>

['Ram', 'Suraj', 'Alok']

>>>

**3) items():**

**Eg:**

data1={100:'Ram', 101:'Suraj', 102:'Alok'}

print data1.items()

**Output:**

>>>

[(100, 'Ram'), (101, 'Suraj'), (102, 'Alok')]

>>>

**4) update(dictionary2):**

**Eg:**

data1={100:'Ram', 101:'Suraj', 102:'Alok'}

data2={103:'Sanjay'}

data1.update(data2)

print data1

print data2

**Output:**

>>>

{100: 'Ram', 101: 'Suraj', 102: 'Alok', 103: 'Sanjay'}

{103: 'Sanjay'}

>>>

**5) clear():**

**Eg:**

data1={100:'Ram', 101:'Suraj', 102:'Alok'}

print data1

data1.clear()

print data1

**Output:**

>>>

{100: 'Ram', 101: 'Suraj', 102: 'Alok'}

{}

>>>

**6) fromkeys(sequence)/ fromkeys(seq,value):**

**Eg:**

sequence=('Id' , 'Number' , 'Email')

data={}

data1={}

data=data.fromkeys(sequence)

print data

data1=data1.fromkeys(sequence,100)

print data1

**Output:**

>>>

{'Email': None, 'Id': None, 'Number': None}

{'Email': 100, 'Id': 100, 'Number': 100}

>>>

**7) copy():**

**Eg:**

data={'Id':100 , 'Name':'Aakash' , 'Age':23}

data1=data.copy()

print data1

**Output:**

>>>

{'Age': 23, 'Id': 100, 'Name': 'Aakash'}

>>>

**8) has\_key(key):**

**Eg:**

data={'Id':100 , 'Name':'Aakash' , 'Age':23}

print data.has\_key('Age')

print data.has\_key('Email')

**Output:**

>>>

True

False

>>>

**9) get(key):**

**Eg:**

data={'Id':100 , 'Name':'Aakash' , 'Age':23}

print data.get('Age')

print data.get('Email')

**Output:**

>>>

23

None

>>>