

Dictionary In Python

Dictionary in Python is a collection of keys values, used to store data values like a map, which, unlike other data types which hold only a single value as an element.

In some languages it is known as map or associative arrays.

```
dict = { 'name' : 'xyz' , 'age' : 24 , 'gender' : 'male' }
```

Characterstics:

- Mutable
- Indexing has no meaning
- keys can't be duplicated
- keys can't be mutable items

Create Dictionary

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

#1D
d1 = {'name':'xyz', 'Age':23, 'gender':'male'}
print(d1)

# with mixed keys
d2 = {(2,2,3):1, 'hello':'world'}
print(d2)

# 2D dictionary
s = {
    'name':'ramesh',
    'college':'bit',
    'sem':4,
    'subjects':{
        'dsa':50,
        'maths':67,
        'english':34
    }
}
print(s)

# using sequence and dict function
d4 = dict([('name', 'xyz'), ('age', 23), (3, 3)])
print(d4)

#mutable items keys
d6 = {'name':'xyz', (1,2,3):2}
print(d6)
```

```
{}
```

```
{'name': 'xyz', 'Age': 23, 'gender': 'male'}
```

```
{(2, 2, 3): 1, 'hello': 'world'}
```

```
{'name': 'ramesh', 'college': 'bit', 'sem': 4, 'subjects': {'dsa': 50, 'maths': 67, 'english': 34}}
```

```
{'name': 'xyz', 'age': 23, 3: 3}
```

```
{'name': 'xyz', (1, 2, 3): 2}
```

Accessing Items

```
In [ ]: my_dict = {'name': 'Jack', 'age': 26}
my_dict['name'] # you have to write keys
```

```
Out[ ]: 'Jack'
```

Adding key pair

```
In [ ]: print(d4)

{'name': 'xyz', 'age': 23, 3: 3}
```

```
In [ ]: d4['gender'] = 'male'
print(d4)

d4['weight'] = 70
print(d4)

{'name': 'xyz', 'age': 23, 3: 3, 'gender': 'male'}
```

```
{'name': 'xyz', 'age': 23, 3: 3, 'gender': 'male', 'weight': 70}
```

Remove key-value pair

```
In [ ]: d = {'name': 'xyz', 'age': 24, 3: 3, 'gender': 'male', 'weight': 72}

# pop
d.pop(3) # it remove three
print(d)

#popitems
d.popitem() # it remove Last item in the dictionary
print(d)

# del
del d['name']
print(d)

#clear
d.clear() # it clear dictionary
print(d)

{'name': 'xyz', 'age': 24, 'gender': 'male', 'weight': 72}
{'name': 'xyz', 'age': 24, 'gender': 'male'}
```

```
{'age': 24, 'gender': 'male'}
```

```
{}
```

Editing key-value pair

```
In [ ]: print(s)
```

```
{'name': 'ramesh', 'college': 'bit', 'sem': 4, 'subjects': {'dsa': 50, 'maths': 67, 'english': 34}}
```

```
In [ ]: s['subjects']['dsa'] = 80
s
```

```
Out[ ]: {'name': 'ramesh',
         'college': 'bit',
         'sem': 4,
         'subjects': {'dsa': 80, 'maths': 67, 'english': 34}}
```

Dictionary Operations

- Membership
- Iteration

```
In [ ]: print(s)
```

```
{'name': 'ramesh', 'college': 'bit', 'sem': 4, 'subjects': {'dsa': 80, 'maths': 67, 'english': 34}}
```

```
In [ ]: # membership
        'name' in s
```

```
Out[ ]: True
```

```
In [ ]: 'ramesh' in s # it use on it keys not on values
```

```
Out[ ]: False
```

```
In [ ]: # ITERATION
        for i in s:
            print(i,s[i])
```

```
name ramesh
college bit
sem 4
subjects {'dsa': 80, 'maths': 67, 'english': 34}
```

Dictionary Functions

```
In [ ]: print(s)
```

```
{'name': 'ramesh', 'college': 'bit', 'sem': 4, 'subjects': {'dsa': 80, 'maths': 67, 'english': 34}}
```

```
In [ ]: # len/sorted
        print(len(s))

        sorted(s)
```

```
4
Out[ ]: ['college', 'name', 'sem', 'subjects']
```

```
In [ ]: # items/keys/values

        print(s.items())

        print(s.keys())
```

```
print(s.values())
```

```
dict_items([('name', 'ramesh'), ('college', 'bit'), ('sem', 4), ('subjects', {'dsa': 80, 'maths': 67, 'english': 34})])
dict_keys(['name', 'college', 'sem', 'subjects'])
dict_values(['ramesh', 'bit', 4, {'dsa': 80, 'maths': 67, 'english': 34}])
```

```
In [ ]: # update
d1 = {1:2,3:4,4:5}
d2 = {4:7,6:8}

d1.update(d2)
print(d1)
```

```
{1: 2, 3: 4, 4: 7, 6: 8}
```

Dictionary Comprehension

```
In [ ]: # print 1st 10 numbers and their squares
{i:i**2 for i in range(1,11)}
```

```
Out[ ]: {1: 1, 2: 4, 3: 9, 4: 16, 5: 25, 6: 36, 7: 49, 8: 64, 9: 81, 10: 100}
```

```
In [ ]: distances = {'delhi':1000,'mumbai':2000,'bangalore':3000}
print(distances.items())
```

```
dict_items([('delhi', 1000), ('mumbai', 2000), ('bangalore', 3000)])
```

```
In [ ]: # using zip
days = ["Sunday", "Monday", "Tuesday", "Wednesday", "Thursday", "Friday", "Saturday"]
temp_C = [30.5, 32.6, 31.8, 33.4, 29.8, 30.2, 29.9]

{i:j for (i,j) in zip(days,temp_C)}
```

```
Out[ ]: {'Sunday': 30.5,
'Monday': 32.6,
'Tuesday': 31.8,
'Wednesday': 33.4,
'Thursday': 29.8,
'Friday': 30.2,
'Saturday': 29.9}
```

```
In [ ]: # using if condition
products = {'phone':10,'laptop':0,'charger':32,'tablet':0}

{key:value for (key,value) in products.items() if value>0}
```

```
Out[ ]: {'phone': 10, 'charger': 32}
```

```
In [ ]: # Nested Comprehension
# print tables of number from 2 to 4
{i:{j:i*j for j in range(1,11)} for i in range(2,5)}
```

```
Out[ ]: {2: {1: 2, 2: 4, 3: 6, 4: 8, 5: 10, 6: 12, 7: 14, 8: 16, 9: 18, 10: 20},
3: {1: 3, 2: 6, 3: 9, 4: 12, 5: 15, 6: 18, 7: 21, 8: 24, 9: 27, 10: 30},
4: {1: 4, 2: 8, 3: 12, 4: 16, 5: 20, 6: 24, 7: 28, 8: 32, 9: 36, 10: 40}}
```