[Dictionary Manipulation in Python](http://www.pythonforbeginners.com/dictionary-data-structure-in-python/dictionary-manipulation-in-python/)

16 Apr 2013   | [Dictionary](http://www.pythonforbeginners.com/category/dictionary-data-structure-in-python/)

Tags: [Dictionary](http://www.pythonforbeginners.com/tag/dictionary-data-structure-in-python/)

Overview

A dictionary is a collection of key-value pairs.

A dictionary is a set of key:value pairs.

All keys in a dictionary must be unique.

In a dictionary, a key and its value are separated by a colon.

The key, value pairs are separated with commas.

The key & value pairs are listed between curly brackets " { } "

We query the dictionary using square brackets " [ ] "

Dictionary Manipulation

Dictionaries are useful whenever you have to items that you wish to link together,

and for example storing results for quick lookup.

Create an empty dictionary

|  |  |
| --- | --- |
| 1 | months = {} |

Create a dictionary with some pairs

# Note: Each key must be unique

|  |  |
| --- | --- |
| 1  2  3  4  5  6  7  8  9  10  11  12 | months = { 1 : "January",          2 : "February",          3 : "March",          4 : "April",          5 : "May",          6 : "June",          7 : "July",          8 : "August",          9 : "September",          10 : "October",          11 : "November",          12 : "December" } |

months[1-12] are keys and "January-December" are the values

Print all keys

|  |  |
| --- | --- |
| 1 | print "The dictionary contains the following keys: ", months.keys() |

Output:

The dictionary contains the following keys: [1, 2, 3, 4, 5, 6, 7, 8, 9, 10,

11, 12]

**Accessing**

To get a value out of a dictionary, you must supply its key, you cannot provide

the value and get the key

|  |  |
| --- | --- |
| 1  2 | whichMonth = months[1]  print whichMonth |

Output: January

To delete an element from a dictionary, use del

|  |  |
| --- | --- |
| 1  2 | del(months[5])  print months.keys() |

Output:

[1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12]

To add a new element to a dictionary, assign a value to a new key

|  |  |
| --- | --- |
| 1  2 | months[5] = "May"  print months.keys() |

Output:

[1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12]

To update an element of a dictionary, assign a new value to its key

|  |  |
| --- | --- |
| 1  2 | months[1] = "Jan"  print months |

Output:

{1: 'Jan', 2: 'February', 3: 'March', 4: 'April', 5... }

Sorting

|  |  |
| --- | --- |
| 1  2 | sortedkeys = months.keys()  print sortedkeys |

Output:

[1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12]

Dictionaries and Loops

Iterating over keys

|  |  |
| --- | --- |
| 1  2 | for key in months:      print key, months[key] |

Output:

1 January

2 February

3 March

4 April

5 May

6 June

7 July

8 August

9 September

10 October

11 November

12 December

Iterating over (key, value) pairs

|  |  |
| --- | --- |
| 1  2  3  4  5  6 | for key, value in months.iteritems():      print key, value    print "The entries in the dictionary are:"  for item in months.keys():      print "months[ ", item, " ] = ", months[ item ] |

Combining List and Dictionary

Example of a list of dictionaries

|  |  |
| --- | --- |
| 1  2  3  4  5 | customers = [{"uid":1,"name":"John"},      {"uid":2,"name":"Smith"},             {"uid":3,"name":"Andersson"},              ]  print customers |

Output:

[{'uid': 1, 'name': 'John'}, {'uid': 2, 'name': 'Smith'}, {'uid': 3, 'name':

'Andersson'}]

Print the uid and name of each customer

|  |  |
| --- | --- |
| 1  2 | for x in customer:      print x["uid"], x["name"] |

Output:

1 John

2 Smith

3 Andersson

Modify an entry

This will change the name of customer 2 from Smith to Charlie

|  |  |
| --- | --- |
| 1  2 | customers[2]["name"]="charlie"  print customers |

Output:

[{'uid': 1, 'name': 'John'}, {'uid': 2, 'name': 'Smith'}, {'uid': 3, 'name':

'charlie'}]

Add a new field to each entry

|  |  |
| --- | --- |
| 1  2  3  4 | for x in customers:      x["password"]="123456" # any initial value    print customers |

Output:

[{'password': '123456', 'uid': 1, 'name': 'John'}, {'password': '123456', 'uid':

2, 'name': 'Smith'}, {'password': '123456', 'uid': 3, 'name': 'Andersson'}]

Delete a field

|  |  |
| --- | --- |
| 1  2 | del customers[1]  print customers |

Output:

[{'uid': 1, 'name': 'John'}, {'uid': 3, 'name': 'Andersson'}]

Delete all fields

|  |  |
| --- | --- |
| 1  2  3 | # This will delete id field of each entry.  for x in customers:      del x["id"] |

Output:

[{'name': 'John'}, {'name': 'Smith'}, {'name': 'Andersson'}]

For more information about Dictionary, please see [this](http://www.pythonforbeginners.com/dictionary/) article.