

Python Programming

Dict 1

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From list to Dict

```
3  lst = [10, 22, 55]
4  # idx 0->10 1->22 2->55
5  print(lst[1])  # 22 [1] is called index
6  # indices are from 0 to N-1
7
8  dict = {0:10, 1:22, 2:55, 12345:37}
9  print(dict[1])  # 22 [1] is called key
10 print(dict[12345])  # 37
11 # Keys are provided: {0, 1, 2, 12345}
12 # Format {key1:value1, key2:value2, etc}
13 # Dictionary data structure "associates" key with value
14
```

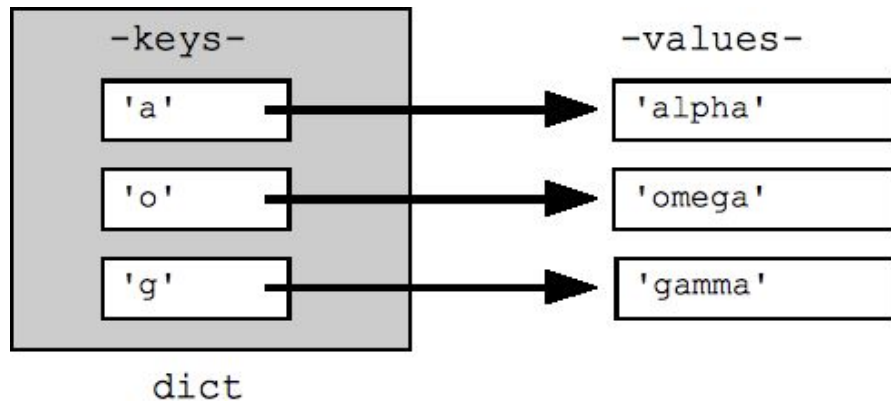
Flexible keys

```
# The key can be from ANY IMMUTABLE value
# This what make dict very useful

dict = {'a': 'alpha', # key:value
       'o': 'omega',
       'g': 'gamma'
       }

print(dict)
# {'a': 'alpha', 'o': 'omega', 'g': 'gamma'}
print(dict.keys())
# dict_keys(['a', 'o', 'g'])
print(dict.values())
# dict_values(['alpha', 'omega', 'gamma'])

💡
print(dict['a']) # alpha
```



Only immutables

- Keys are restricted
 - Immutables
- Values not

```
3  # immutables: int, float, tuple, string
4  # be careful from float as it is an approximate - don't
5
6  class Employee:
7      pass
8
9  dict = {
10     -1200001 : 'mostafa',
11     'ziad' : 25.5,
12     (4, 6) : [5, 8, 9],
13     'Hey' : Employee(),
14     16 : {6:90} # value is another dict
15     # [1, 2] : 10 # TypeError: unhashable type: 'list'
16     # ([1, 2]) : 10 # TypeError: unhashable type: 'list'
17 }
18 print(dict[(4, 6)]) # [5, 8, 9]
```

Update and delete

```
2  #Dict is mutable. We can update its content
3  dict = {} # No initial value
4  dict[12] = [405, (1, 'mostafa')] # Add a new key-value
5  dict['mostafa'] = 20
6
7  print(dict[12]) # [405, (1, 'mostafa')]
8  dict[12] = 'hello'
9  print(dict[12]) # hello
10 print(dict.keys()) # dict_keys([12, 'mostafa'])
11
12 del dict[12]
13 print(dict.keys()) # dict_keys(['mostafa'])
14 #print(dict[12]) # KeyError: 12
15
16 dict[12] = 10
17 dict[12] += 5
18 print(dict[12]) # 15
19 print(dict.pop(12)) # 15 : get and remove
20 print(dict.pop('hey', 37)) # 37 default value
```

Note

- `print(dict)` \Rightarrow `<class 'dict'>`
- `dict` is a class name
- In most of the codes, I used the word `dict`
 - This means we lost the class. We anyway rarely need it
 - But you shouldn't.

“Acquire knowledge and impart it to the people.”

“Seek knowledge from the Cradle to the Grave.”