Dictionaries

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1 Dictionaries in Python

- Mapping –> Map one type to another
- key: value
- word: definition
- author: best seller (str: str)
- batsmen: centuries (str: int)
- (int: int)
- student: age (str: int)
- student: [age, roll, mobile, mail, gender] (str: list)
- Dictionaries will not hold duplicate keys

[1]:
```
cric_info = {'sachin': 100,
             'ponting': 72,
             'kohli': 73}
print(cric_info)
print(type(cric_info))
```

```
{'sachin': 100, 'ponting': 72, 'kohli': 73}
<class 'dict'>
```

[5]:
```
cric_info = {'sachin': 100,
             'ponting': 72,
             'kohli': 73}
# dict[key] --> corresopding value
print(cric_info['sachin'])
print(cric_info['ponting'])
```

```
100
72
```

[8]:
```
cric_info = {'sachin': 100,
             'ponting': 72,
             'kohli': 73,
            'sachin': 200}
print(cric_info)
```

```
{'sachin': 200, 'ponting': 72, 'kohli': 73}
```

[7]:
```
cric_info = {} # empty dictionary
# print(cric_info)
cric_info['sachin'] = 100
cric_info['ponting'] = 72
print(cric_info)
```

```
{'sachin': 100, 'ponting': 72}
```

[9]:
```
cric_info = {} # empty dictionary
# print(cric_info)
cric_info['sachin'] = 100
cric_info['ponting'] = 72
cric_info['sachin'] = 200
print(cric_info)
```

```
{'sachin': 200, 'ponting': 72}
```

[10]:
```
# Populating a dictionary while getting the values from the user
d = {}
pairs = 3
for _ in range(pairs):
    key = input()
    value = int(input())
    d[key] = value
print(d)
```

```
sachin
100
ponting
72
kohli
73
{'sachin': 100, 'ponting': 72, 'kohli': 73}
```

[14]:
```
cricketers = ['sachin', 'ponting', 'kohli'] # list
#index          0          1          2
centuries = [100, 72, 73]
#index        0   1   2
# dict
d = {}
for i in range(len(cricketers)):
    d[cricketers[i]] = centuries[i]
print(d)
```

```
{'sachin': 100, 'ponting': 72, 'kohli': 73}
```

1.1 Dictionary comprehension

[15]:
```
cricketers = ['sachin', 'ponting', 'kohli'] # list
#index          0          1          2
centuries = [100, 72, 73]
#index        0   1   2
# cri[0] : cen[0], cri[1]: cen[1], cri[2]: cen[2], cri[i]: cen[i]

d={cricketers[i]: centuries[i] for i in range(len(centuries))}
print(d)
```

```
{'sachin': 100, 'ponting': 72, 'kohli': 73}
```

1.2 dict() and zip()

1.2.1 zip()

- zip(*iterables)
- return a zip object containing n sized tuples, where n is number of iterables passed. It will form the tuple with ith element from each iterable.

[17]:
```
z = zip(range(3), range(4), 'hello')
print(list(z))
```

```
[(0, 0, 'h'), (1, 1, 'e'), (2, 2, 'l')]
```

[18]:
```
string = 'hello'
list(string)
```

[18]:
```
['h', 'e', 'l', 'l', 'o']
```

[19]:
```
list_of_lists = [['sachin', 100],
                 ['ponting', 72],
                 ['kohli', 73]]
d = dict(list_of_lists)
print(d)
```

```
{'sachin': 100, 'ponting': 72, 'kohli': 73}
```

[20]:
```
list_of_lists = [['sachin', 100, 'x'],
                 ['ponting', 72, 'y'],
                 ['kohli', 73, 'z']]
d = dict(list_of_lists)
print(d)
```

```
---------------------------------------------------------------------------
ValueError                                Traceback (most recent call last)
~\AppData\Local\Temp\ipykernel_11256\2885791412.py in <cell line: 4>()
      2                 ['ponting', 72, 'y'],
      3                 ['kohli', 73, 'z']]
```

```
----> 4 d = dict(list_of_lists)
      5 print(d)

ValueError: dictionary update sequence element #0 has length 3; 2 is required
```

[21]:
```
lst = ['a1', 'b2', 'c3', 'd4', 'e5']
d = dict(lst)
print(d)
```

```
{'a': '1', 'b': '2', 'c': '3', 'd': '4', 'e': '5'}
```

[26]:
```
cricketers = ['sachin', 'ponting', 'kohli'] # list
centuries = [100, 72, 73]
# dict() and zip()
d = dict(zip(cricketers, centuries)) #
print(d)
print(type(d))
```

```
{'sachin': 100, 'ponting': 72, 'kohli': 73}
<class 'dict'>
```

2 Traversing through a dictionary

[32]:
```
d = {'sachin': 100, 'ponting': 72, 'kohli': 73}
for i in d:
    print(i)
```

```
sachin
ponting
kohli
```

[30]:
```
lst = [10, 20, 30]
for i in lst:
    print(i)
```

```
10
20
30
```

[33]:
```
d = {'sachin': 100, 'ponting': 72, 'kohli': 73}
for i in d:
    print(i, '-->', d[i])
```

```
sachin --> 100
ponting --> 72
kohli --> 73
```

[39]:
```
d = {'sachin': 100, 'ponting': 72, 'kohli': 73}
print(d.keys())
```

```
dict_keys(['sachin', 'ponting', 'kohli'])
```

[42]:
```
d = {'sachin': 100, 'ponting': 72, 'kohli': 73}
print(d.values())
```

```
dict_values([100, 72, 73])
```

[43]:
```
# dict.items()
d = {'sachin': 100, 'ponting': 72, 'kohli': 73}
print(d.items())
```

```
dict_items([('sachin', 100), ('ponting', 72), ('kohli', 73)])
```

[40]:
```
# by using dict.keys()
d = {'sachin': 100, 'ponting': 72, 'kohli': 73}
for each_key in d.keys():
    print(each_key, d[each_key])
```

```
sachin 100
ponting 72
kohli 73
```

[45]:
```
lst = [('a', 10, True),
       ('b', 20, False),
       ('c', 30, True),
       ('d', 40, False)]
for i in lst:
    print(i[0], i[1], i[2])
```

```
a 10 True
b 20 False
c 30 True
d 40 False
```

[46]:
```
lst = [('a', 10, True),
       ('b', 20, False),
       ('c', 30, True),
       ('d', 40, False)]
for a, b, c in lst:
    print(a, b, c)
```

```
a 10 True
b 20 False
c 30 True
d 40 False
```

[48]:
```
d = {'sachin': 100, 'ponting': 72, 'kohli': 73}
for k, v in d.items():
    print(k, v)
```

```
sachin 100
ponting 72
kohli 73
```

[58]:
```
lst = [2, 2, 2, 1, 4, 4, 4]
d = {}
for i in lst:
    if i in d.keys():
        d[i] += 1
    else:
        d[i] = 1
print(d)
mx = max(d.values())
x = list(d.values())
if x.count(mx) > 1:
    print('NO')
else:
    print('YES')
```

```
{2: 3, 1: 1, 4: 3}
2
```

[65]:
```
lst = [2, 2, 2, 1, 4, 4, 4]
vis = []
f = []
for i in lst:
    if i not in vis:
        f.append(lst.count(i))
    vis.append(i)
print(f)
mx = max(f)
if f.count(mx) > 1:
    print("NO")
else:
    print("YES")
```

```
[3, 1, 3]
NO
```

[67]:
```
d = {'x': {'sachin': 100, 'ponting': 72, 'kohli': 73}}
print(d)
```

```
{'x': {'sachin': 100, 'ponting': 72, 'kohli': 73}}
```