Dictionary

February 13, 2020

[2]:
```
adict = {"Joe":175, "Tom":190, "Dick":150}
print(adict)
```

```
{'Joe': 175, 'Tom': 190, 'Dick': 150}
```

[4]:
```
adict["harry"] = 180
print(adict)
```

```
{'Joe': 175, 'Tom': 190, 'Dick': 150, 'harry': 180}
```

[7]:
```
del adict["Joe"]
print(adict)
```

```
{'Tom': 190, 'Dick': 150, 'harry': 180}
```

[11]:
```
print(adict["Dick"])
```

```
150
```

[17]:
```
sum = 0
for key in adict:
    sum = adict[key] + sum
print(sum)
```

```
520
```

[25]:
```
rti = adict.items()
print(rti)
type(rti)
```

```
dict_items([('Tom', 190), ('Dick', 150), ('harry', 180)])
```

[25]:
```
dict_items
```

[27]:
```
for i in rti:
    print(i)
    print(type(i))
```

```
('Tom', 190)
<class 'tuple'>
('Dick', 150)
<class 'tuple'>
('harry', 180)
<class 'tuple'>
```

[28]:
```
print(rti[1])
That will fail
```

```
␣
↪---------------------------------------------------------------------------

TypeError                                 Traceback (most recent call␣
↪last)

<ipython-input-28-87b08d61f6a7> in <module>
----> 1 rti[1]


TypeError: 'dict_items' object does not support indexing
```

[30]:
```
#Convert to a list
rti_l = list(rti)
print(rti_l)
```

```
[('Tom', 190), ('Dick', 150), ('harry', 180)]
```

[31]:
```
type(rti_l)
```

[31]: list

[32]:
```
print(rti_l[0])
```

```
('Tom', 190)
```

[34]:
```
#start here extract, type?, iterate? Can you convert t a list?
my_vals = adict.values()
print(my_vals)
```

```
dict_values([190, 150, 180])
```

[35]:
```
type(my_vals)
```

[35]: dict_values

[37]:
```
for k in my_vals:
    print(k, type(k))
#print(my_vals[0]) This fails
```

```
190 <class 'int'>
150 <class 'int'>
180 <class 'int'>
```

[39]:
```
my_vals_l = list(my_vals)
type(my_vals_l)
```

[39]: list

[40]:
```
#start here extract val, type, iterate? Can you convert t a list?
my_keys = adict.keys()
print(my_keys)
```

```
dict_keys(['Tom', 'Dick', 'harry'])
```

[41]:
```
type(my_keys)
```

[41]: dict_keys

[42]:
```
for k in my_keys:
    print(k, type(k))
```

```
Tom <class 'str'>
Dick <class 'str'>
harry <class 'str'>
```

[44]:
```
my_keys_l = list(my_keys)
type(my_keys_l)
```

[44]: list

[45]:
```

```

[46]:
```
s = 'Mississipi'
count_dict = {}
for c in s:
    count_dict[c] = count_dict.get(c,0) +1
#let's count at the results
for k in count_dict.keys():
    print(k,count_dict[k])
```

```
M 1
i 4
```

```
s 4
p 1
```

[48]:
```
#get() method
m = '27271302520531425145101719 43'
count_dict = {}
for c in m:
    count_dict[c] = count_dict.get(c,0) + 1

for k in count_dict.keys():
    print(k,count_dict[k])
```

```
2 5
7 3
1 6
3 3
0 3
5 4
4 3
9 1
```

[50]:
```
m = '27271302520531425145101719 43'
count_dict = {}
for c in m:
    count_dict[c] = count_dict.get(c,0) + 1

for k in count_dict.keys():
    print(k,count_dict[k],count_dict[k]/len(m))
```

```
2 5 0.17857142857142858
7 3 0.10714285714285714
1 6 0.21428571428571427
3 3 0.10714285714285714
0 3 0.10714285714285714
5 4 0.14285714285714285
4 3 0.10714285714285714
9 1 0.03571428571428571
```

[51]:
```
s = 'This is just a proof of generosity'
l = list(s)
count_dict = {}
for c in l:
    count_dict[c] = count_dict.get(c,0) + 1

for k in count_dict.keys():
    print(k,count_dict[k],count_dict[k]/len(l))
```

```
T 1 0.029411764705882353
```

```
h 1 0.029411764705882353
i 3 0.08823529411764706
s 4 0.11764705882352941
  6 0.17647058823529413
j 1 0.029411764705882353
u 1 0.029411764705882353
t 2 0.058823529411764705
a 1 0.029411764705882353
p 1 0.029411764705882353
r 2 0.058823529411764705
o 4 0.11764705882352941
f 2 0.058823529411764705
g 1 0.029411764705882353
e 2 0.058823529411764705
n 1 0.029411764705882353
y 1 0.029411764705882353
```

[52]:
```
s = 'Mississipi'
count_dict = {}
for c in s:
    if c in 1:
        count_dict[c] = count_dict[c] + 1
    else:
        count_dict[c] = 1
#let's look at the result
for k in count_dict.keys():
    print(k,count_dict[k])

#What is the maximum count?
maxcount = max(count_dict.values())
print(' ')
print('Maximum Count')
print(maxcount)

win_list = []
for i in count_dict.keys():
    if count_dict[i] >= maxcount:
        Win_list.append(i)
print(' ')
print("Most Frequent Items")
print(Win_list)
```

```
␣
↪---------------------------------------------------------------------------

       TypeError                                 Traceback (most recent call␣
↪last)
```

```
<ipython-input-52-588807bd429d> in <module>
  2 count_dict = {}
  3 for c in s:
----> 4     if c in 1:
  5         count_dict[c] = count_dict[c] + 1
  6     else:


TypeError: argument of type 'int' is not iterable
```

[59]:
```
numlist = []
for i in range(1,101):
    s = str(i)
    numlist.append(s)
print(numlist)
```

```
['1', '2', '3', '4', '5', '6', '7', '8', '9', '10', '11', '12', '13', '14',
'15', '16', '17', '18', '19', '20', '21', '22', '23', '24', '25', '26', '27',
'28', '29', '30', '31', '32', '33', '34', '35', '36', '37', '38', '39', '40',
'41', '42', '43', '44', '45', '46', '47', '48', '49', '50', '51', '52', '53',
'54', '55', '56', '57', '58', '59', '60', '61', '62', '63', '64', '65', '66',
'67', '68', '69', '70', '71', '72', '73', '74', '75', '76', '77', '78', '79',
'80', '81', '82', '83', '84', '85', '86', '87', '88', '89', '90', '91', '92',
'93', '94', '95', '96', '97', '98', '99', '100']
```

[68]:
```
numlist = []
fdlist = []
for i in range(1,101):
    s = str(i)
    numlist.append(s)
    fdlist.append(s[0])
print(fdlist)
```

```
['1', '2', '3', '4', '5', '6', '7', '8', '9', '1', '1', '1', '1', '1', '1', '1',
'1', '1', '1', '2', '2', '2', '2', '2', '2', '2', '2', '2', '2', '3', '3', '3',
'3', '3', '3', '3', '3', '3', '3', '4', '4', '4', '4', '4', '4', '4', '4', '4',
'4', '5', '5', '5', '5', '5', '5', '5', '5', '5', '5', '6', '6', '6', '6', '6',
'6', '6', '6', '6', '6', '7', '7', '7', '7', '7', '7', '7', '7', '7', '7', '8',
'8', '8', '8', '8', '8', '8', '8', '8', '9', '9', '9', '9', '9', '9', '9', '9',
'9', '9', '9', '1']
```

[69]:
```
#Drop the print from the previous exercise. Extend the code to get counts and␣
 ↪relatives frequencies of the idems in fdlist(use the same i)
count_dict = {}
for c in fdlist:
    count_dict[c] = count_dict.get(c,0) + 1
```

```
for k in count_dict.keys():
    print(k,count_dict[k],count_dict[k]/len(l))
```

```
1 12 0.35294117647058826
2 11 0.3235294117647059
3 11 0.3235294117647059
4 11 0.3235294117647059
5 11 0.3235294117647059
6 11 0.3235294117647059
7 11 0.3235294117647059
8 11 0.3235294117647059
9 11 0.3235294117647059
```

[40]:
```
s = 'Mississippi'
count_dict = {}
for c in s:
    if c in count_dict:
        count_dict[c] = count_dict[c] + 1
    else: count_dict[c] = 1

for k in count_dict.keys():
    print(k, count_dict[k])
```

```
M 1
i 4
s 4
p 2
```

[47]:
```
s = 'Mississippi'
count_dict = {}
for c in s:
    count_dict[c] = count_dict.get(c,0)+1
for k in count_dict.keys():
    print(k, count_dict[k])
```

```
M 1
i 4
s 4
p 2
```

[61]:
```
s = str(272713025205314251451017194 3)
dict_c = {}
for c in s:
    dict_c[c] = dict_c.get(c,0)+1
for k in dict_c.keys():
    print(k, dict_c[k],dict_c[k]/len(s))
```

```
2 5 0.17857142857142858
7 3 0.10714285714285714
1 6 0.21428571428571427
3 3 0.10714285714285714
0 3 0.10714285714285714
5 4 0.14285714285714285
4 3 0.10714285714285714
9 1 0.03571428571428571
```

[72]:
```
s = 'This is a proof of generality'
l = list(s)
count_dict = {}
for c in l:
    count_dict[c] = count_dict.get(c,0) + 1
for k in count_dict.keys():
    print(k, count_dict[k],count_dict[k]/len(l))
```

```
T 1 0.034482758620689655
h 1 0.034482758620689655
i 3 0.10344827586206896
s 2 0.06896551724137931
  5 0.1724137931034483
a 2 0.06896551724137931
p 1 0.034482758620689655
r 2 0.06896551724137931
o 3 0.10344827586206896
f 2 0.06896551724137931
g 1 0.034482758620689655
e 2 0.06896551724137931
n 1 0.034482758620689655
l 1 0.034482758620689655
t 1 0.034482758620689655
y 1 0.034482758620689655
```

[75]:
```
numlist = []
for i in range(1,101):
    s = str(i)
    numlist.append(s)
print(numlist)
```

```
['1', '2', '3', '4', '5', '6', '7', '8', '9', '10', '11', '12', '13', '14',
'15', '16', '17', '18', '19', '20', '21', '22', '23', '24', '25', '26', '27',
'28', '29', '30', '31', '32', '33', '34', '35', '36', '37', '38', '39', '40',
'41', '42', '43', '44', '45', '46', '47', '48', '49', '50', '51', '52', '53',
'54', '55', '56', '57', '58', '59', '60', '61', '62', '63', '64', '65', '66',
'67', '68', '69', '70', '71', '72', '73', '74', '75', '76', '77', '78', '79',
'80', '81', '82', '83', '84', '85', '86', '87', '88', '89', '90', '91', '92',
'93', '94', '95', '96', '97', '98', '99', '100']
```

[80]:
```
numlist=[]
fdlist = []
for i in range(1,100):
    s = str(i)
    numlist.append(s)
    fdlist.append(s[0])
print(fdlist)
```

[81]:
```
dict_count = {}
fdlist=[]
for c in range(1,1001):
    dict_count[c]= dict_count.get(c,0)+1
for k in dict_count.keys():
    print(k,dict_count[k],dict_count[k]/len(fdlist))
```

[32]:

[32]:
```
list
```

[33]:

```
('Tom', 190)
```

[35]:

```
dict_keys(['Tom', 'Dick', 'Harry'])
```

[36]:

```
Tom <class 'str'>
Dick <class 'str'>
Harry <class 'str'>
```

[0]: