Dictionaries

Week 8

Course: Programming in Python

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Dictionaries

Dictionary is a built-in Python Data Structure and are used to store data values in key:value pairs. Each key is separated from its value by a colon (:).

Dictionaries are not indexed by a sequence of numbers but indexed based on keys

Creating a Dictionary

- The syntax for defining a dictionary is:
- **dictionary_name = {key_1: value_1, key_2: value2, key_3: value_3}**

- Or it can also be written as :
- **dictionary_name = { key_1: value_1,**
  key_2: value_2,
  key_3: value_3,
  }

Points to remember

- The keys in the dictionary must be unique and of immutable data type i.e. strings, numbers or tuples.
- The value doesn't have any such restrictions.
- Dictionary are case-sensitive i.e. two keys with similar name but different case will be treated differently.
- The elements within the dictionary are accessed with the help of the keys rather than its relative position.

"""Write a program to create a dictionary to convert values from meters to centimeters
"""

```
mtocm={m:m*100 for m in range(1,11) }
print("Meters:Centimeters",mtocm)
```

"""

Write a program that creates a dictionary of cubes of odd numbers in the range (1-10)

"""

```
cubes={c:c**3 for c in range(10) if c%2==1}
print(cubes)
```

"""

To count the number of occurrences of each character of a message entered by the user.

"""

```
def cnt(msg):
    lc={} #empty dictionary
    for l in msg:
        lc[l]=lc.get(l,0)+1
    print(lc)

msg=input("Enter a message ")
cnt(msg)
```

"""

Create a dictionary with names of studenst and marks in two papers. Create a dictionary final which has names and total marks and also find the topper.

"""

```
result={'Rahul':[78,89],
        'Pranamika':[89,87],
         'Ashish':[79,88],
         'Anshul':[90,67]}
total=0
final=result.copy()
for key,val in result.items():
    total=sum(val)
    final[key]=total
print(final)
hig=0
Topper=''
for key,val in final.items():
    if val>hig:
        hig=val
        Topper=key
print("Topper is :" , Topper, "securing ", hig, "marks")
```

```
"""
To get the minimum and maximum value from a dictionary
"""
dict = {
    'Physics': 90,
    'Chemistry': 75,
    'Maths': 85,
    'English':87,
    'Computer Sc.':96
}

print('Minimum marks in:', min(dict, key=dict.get))
print('Maximum marks in:', max(dict, key=dict.get))
```

"""

Change value of a key in a nested dictionary

"""

```
dict = {
    'emp1': {'name': 'Akash', 'salary': 15500},
    'emp2': {'name': 'Ajay',  'salary': 18000},
    'emp3': {'name': 'Vijay', 'salary': 16500}
        }

dict['emp2']['salary'] = 15500
print(dict)
```

Program to print sum of key-value # pairs in dictionary

```
dict = {1: 34, 2: 29, 3: 49}
sumval = []

# Traverse the dictionary
for keys in dict:
    sumval.append(keys + dict[keys])

# Print the list
print("Key-value sum =",sumval)
```

Program for handling missing keys in the dictionary using get() method in Python

```
# Crating the dictionary
names = {'Sharma' : 'CEO' , 'Saikia' : 'Manager' , 'Ali' : 'Executive'}

# Getting user input for the key
search_key = input("Enter the key to be searched:=> ")

# Logic to handle missing keys in dictionary
print(names.get(search_key, "Search key not present"))
```

```
# Python program to compare two dictionaries using == operator

emp1 = {'eid': 101, 'ename': 'Rajib', 'eAge': 24}
emp2 = {'eid': 101, 'ename': 'Rajib', 'eAge': 24}
emp3 = {'eid': 102, 'ename': 'Kumar', 'eAge': 25}

if emp1 == emp2:
    print("emp1 and emp2 are same dictionaries")
else:
    print("emp1 and emp2 are not same dictionaries")

if emp2 == emp3:
    print("emp2 and emp3 are same dictionaries")
else:
    print("emp2 and emp3 are not same dictionaries")
```

Program to remove a key from dictionary using del in Python

```
empage = {"Ravi" : 24, "Ashok" : 22, "Vijay" : 25 }
print("The dictionary is :", empage)

del_k = input("Enter the key to be deleted: ")

# Removing the key from dictionary
del empage[del_k]

# Printing the dictionary
print("The dictionary after deletion is : ")
print(empage)
```

Python program to sort dictionary key and values list

```
# Creating a list with list as values
result = {'Raju' : [88, 45, 75], 'ram' : [98, 79, 68]}
print("Initially the dictionary is " + str(result))

# Sorting dictionary
sort_res = dict()

for key in sorted(result):
    sort_res[key] = sorted(result[key])

# Printing sorted dictionary
print("Dictionary after sort of key and list value : ")
print(str(sort_res))
```

Thank You