**Experiment No. 3**

**Title:Implementation of Dictionary Data structure**

**Batch: B1 Roll No: 1914078 Experiment No.:4**

### Aim: To implement a program for Dictionary methods and functions.

**Resources needed:** Python IDE

### Theory:

### ****Dictionary****in Python is an unordered collection of data values, used to store data values like a map, which unlike other Data Types that hold only single value as an element, Dictionary holds key:value pair. Key value is provided in the dictionary to make it more optimized. Search operations happen to be faster in a dictionary as they use keys for lookups.

### Each key-value pair in a Dictionary is separated by a colon ****:****, whereas each key is separated by a ‘comma’.

# Creating an empty Dictionary

Dict = {}

# Creating a Dictionary with Integer Keys

Dict = {key1: value1, key2: value2, key3:value3}

|  |  |
| --- | --- |
| **METHODS** | **DESCRIPTION** |
| [copy()](https://www.geeksforgeeks.org/python-dictionary-copy/) | They copy() method returns a shallow copy of the dictionary. |
| [clear()](https://www.geeksforgeeks.org/python-dictionary-clear/) | The clear() method removes all items from the dictionary. |
| [pop()](https://www.geeksforgeeks.org/python-dictionary-pop-method/) | Removes and returns an element from a dictionary having the given key. |
| [popitem()](https://www.geeksforgeeks.org/python-dictionary-popitem-method/) | Removes the arbitrary key-value pair from the dictionary and returns it as tuple. |
| [get()](https://www.geeksforgeeks.org/get-method-dictionaries-python/) | It is a conventional method to access a value for a key. |
| [dictionary\_name.values()](https://www.geeksforgeeks.org/python-dictionary-values/) | returns a list of all the values available in a given dictionary. |
| str() | Produces a printable string representation of a dictionary. |
| [update()](https://www.geeksforgeeks.org/python-dictionary-update-method/) | Adds dictionary dict2’s key-values pairs to dict |
| [setdefault()](https://www.geeksforgeeks.org/python-dictionary-setdefault-method/) | Set dict[key]=default if key is not already in dict |
| [keys()](https://www.geeksforgeeks.org/python-dictionary-keys-method/) | Returns list of dictionary dict’s keys |
| [items()](https://www.geeksforgeeks.org/python-dictionary-items-method/) | Returns a list of dict’s (key, value) tuple pairs |
| [has\_key()](https://www.geeksforgeeks.org/python-dictionary-has_key/) | Returns true if key in dictionary dict, false otherwise |
| [fromkeys()](https://www.geeksforgeeks.org/python-dictionary-fromkeys-method/) | Create a new dictionary with keys from seq and values set to value. |
| [type()](https://www.geeksforgeeks.org/python-type-function/) | Returns the type of the passed variable. |
| [cmp()](https://www.geeksforgeeks.org/dictionary-methods-in-python-set-1-cmp-len-items/) | Compares elements of both dict. |

### Activities:

1. WAP to count the number of characters in the string and store them in a dictionary data structure.
2. WAP to sort a dictionary by key and return max and min value in a dictionary.
3. WAP to implement dictionary functions:Search

### Result: (script and output)

### 1)

line = input()

res = {}

for keys in line:

    res[keys] = res.get(keys, 0) + 1

print(res)

### 

### 2)

scoreCard = {"Rohan": 50,"Aayush": 70,"Carol": 65,"Troy": 85,"Orlando": 55}

print(sorted(scoreCard.items()))

print("Max = ",max(scoreCard.values()))

print("Min = ",min(scoreCard.values()))

### 

### 3)

scoreCard = {"Rohan": 50,"Aayush": 70,"Carol": 65,"Troy": 85,"Orlando": 55}

search = input("Enter a key to be searched: ")

flag=0

for key,val in scoreCard.items():

  if(key==search):

    print(key,":",val)

    flag=1

    break

if(flag==0):

  print("Not found")

### 

### Outcomes: Use of Basic Data Structures in Python

### Questions:

### Explain Reverse Lookup?

### Reverse lookup in a dictionary in python is finding a key by it’s value compared with input instead of a key. For example, if I want to find how many characters occurred only once in the first program, I would search through the values in key,value pairs and return the specific keys for the same.

### What are nested dictionary? Give one example explaining the use of nested dictionary?

### a nested dictionary is a dictionary inside a dictionary. It's a collection of dictionaries into one single dictionary.

### Eg)

people = {1: {'name': 'John', 'age': '27', 'sex': 'Male'},

2: {'name': 'Marie', 'age': '22', 'sex': 'Female'}}

Here we get more info about people based on their index/key to differentiate them rather than having a same dictionary and piling up values

**Conclusion:** We implemented programs for Dictionary methods and functions.

**References:**

* 1. **Reema Thareja , “Python Programming: Using Problem Solving Approach”, Oxford University Press, First Edition 2017, India**
  2. **Sheetal Taneja and Naveen Kumar,” Python Programing: A Modular Approach”, Pearson India, Second Edition 2018, India**