**Student Name:**

**Roll No:**

**Section:**

Lab Series No. 8

*Lab 8 –Dictionaries in Python.*

**Lab Objectives:**

1. Introduction to Dictionary

**1. Introduction to Dictionary**

A dictionary is a collection which is unordered, changeable and indexed. In Python dictionaries are written with curly brackets, and they have keys and values.

Following are some basic information about dictionary data structures. i. A dictionary in Python is an unordered set of key: value pairs.

ii. Unlike lists, dictionaries are inherently order less. The key: value pairs appear to be in a certain

order but it is irrelevant.

iii. Each KEY must be unique, but the VALUES may be the same for two or more keys.

iv. If you assign a value to a key then later in the same dictionary have the same key assigned to a new value, the previous value will be overwritten.

v. Instead of using a number to index the items (as you would in a list), you must use the specific key, e.g., callingUITDict['Python'].

**2. Dictionary Methods to Extract the Data**

There are three dictionary methods for extracting certain data.

<dictionary>.keys() returns the keys in the dictionary as a list (sort of), and

<dictionary>.values() returns the dictionary values as a list (sort of).

Why "sort of"? Because the returned objects are not a list -- they are their own list-like types, called dict\_keys and dict\_values.

**Student Name:**

**Roll No:**

**Section:**

**Program 1:** Write a Python program to store the information of a student in a dictionary data

structure.

**Code:**

dict = {**'Name'** : **'Jibran'**, **'Age'**: 12, **'Class'**:**'Sixth'**, **'DOB'**:**'16 April**

**2006'**}

**print**(**"dict['Name']: "**, dict[**'Name'**])

**print**(**"dict['Age']: "**, dict[**'Age'**]) **print**(**"dict['DOB']: "**, dict[**'DOB'**]) **print**(**"dict['Class']:"**, dict[**'Class'**]) **Output:**

**Program 2:** Using for loop to access the values stored inside the dictionary.

**Code:**

dict = {**'Name'** : **'Jibran'**, **'Age'**: 12, **'Class'**:**'Sixth'**, **'DOB'**:**'16 April**

**2006'**}

**for** x **in** dict:

**print**(dict[x])

**Output:**

**Compare output of Program 1 and Program 2:**

**Student Name:**

**Roll No:**

**Section:**

**Program 3:** Using for loop to access the values inside the dictionary by using values() function.

**Code:**

dict = {**'Name'** : **'Jibran'**, **'Age'**: 12, **'Class'**:**'Sixth'**, **'DOB'**:**'16 April**

**2006'**}

**for** x **in** dict.values():

**print**(x)

**Output:**

**Program 4:** Write a program which will extract both the keys and their corresponding values by using item() from a given dictionary. Keep in mind this time you need two variables to get the function return item() which is key : value.

**Code:**

dict = {**'Name'** : **'Jibran'**, **'Age'**: 12, **'Class'**:**'Sixth'**, **'DOB'**:**'16 April**

**2006'**}

**for** x, y **in** dict.items():

**print**(x, y)

**Output:**

**Program 5:** Write a program which will search the key from a dictionary and print a message that it has found a key from the given dictionary. **[HINT: Use if condition to find the key from the dictionary.]**

**Code:**

dict = {**'Name'** : **'Jibran'**, **'Age'**: 12, **'Class'**:**'Sixth'**, **'DOB'**:**'16 April**

**2006'**}

**if "DOB" in** dict:

**print**(**"Yes, 'DOB' is one of the keys in the dict dictionary"**)

**Student Name:**

**Output:**

**Roll No:**

**Section:**

**3. Adding New Items Inside Existing Dictionary**

Adding an item to the dictionary is done by using a new index key and assigning a value to it. We can even change the value of exiting keys by reassign a new value.

**Program 6:** Write a program which will add some new information inside the exiting dictionary. Use a concept to update the previous keys with their values and add new information as well.

**Code:**

dict = {**'Name'** : **'Jibran'**, **'Age'**: 12, **'Class'**:**'Sixth'**, **'DOB'**:**'16 April**

**2006'**}

dict[**'Age'**] = 12.5

dict[**'School'**] = **'The Seeds School'**

**print**(**"dict['Age']: "**, dict[**'Age'**])

**print**(**"dict['School']: "**, dict[**'School'**])

dict[**'Friend1'**] = **'Mohib'** dict[**'Friend2'**] = **'Akbar'** dict[**'Friend3'**] = **'Jazil'**

**print**(**"dict['Friend1']"** , dict[**'Friend1'**]) **print**(**"dict['Friend2']"** , dict[**'Friend2'**]) **print**(**"dict['Friend3']"** , dict[**'Friend3'**])

**Output:**

**Student Name:**

**Roll No:**

**Section:**

**4. Removing Items from the Dictionary**

There are several methods to remove items from a dictionary, Such as pop(), del , etc.

**1. Removing Items from the Dictionary using POP()**

The pop() method removes the item with the specified key name. **Note:** In versions before 3.7, a random item is removed instead

**Program 7:** Use pop() to remove the key and its item from the exiting dictionary.

**Code:**

dict = {**'Name'** : **'Jibran'**, **'Age'**: 12, **'Class'**:**'Sixth'**, **'DOB'**:**'16 April**

**2006', 'School' : 'The Seeds School', 'Friend1':'Mohib',**

**'Friend2':'Akbar', 'Friend3':'Jazil'**}

**for** x, y **in** dict.items():

**print**(x, y)

dict.pop("Friend1")

print(dict)

**Output:**

**2. Removing Items from the Dictionary using DEL()**

The del keyword removes the item with the specified key name.

**Program 8:** Write a program which will add some new information inside the exiting dictionary. Use a concept to update the previous keys with their values and add new information as well.

**Code:**

dict = {**'Name'** : **'Jibran'**, **'Age'**: 12, **'Class'**:**'Sixth'**, **'DOB'**:**'16 April**

**2006'**}

dict[**'Age'**] = 12.5

dict[**'School'**] = **'The Seeds School'**

**print**(**"dict['Age']: "**, dict[**'Age'**])

**print**(**"dict['School']: "**, dict[**'School'**])

**Student Name:** dict[**'Friend1'**] = **'Mohib'** dict[**'Friend2'**] = **'Akbar'** dict[**'Friend3'**] = **'Jazil'**

**Roll No:**

**Section:**

**print**(**"dict['Friend1']"** , dict[**'Friend1'**]) **print**(**"dict['Friend2']"** , dict[**'Friend2'**]) **print**(**"dict['Friend3']"** , dict[**'Friend3'**]) **del dict ['Friend1']**

**Output:**

**3. Removing Items from the Dictionary using POP()**

The popitem() method removes the last inserted item (in versions before 3.7, a random item is removed instead).

**Program 9:** Write a program which will delete the last key with value from the exiting dictionary. Print the remaining dictionary. **[Hint: Use pop() to delete from the last based on FILO.]**

dict = {**'Name'** : **'Jibran'**, **'Age'**: 12, **'Class'**:**'Sixth'**, **'DOB'**:**'16 April**

**2006'**, **'School'** : **'The Seeds School'**, **'Friend1'**:**'Mohib'**,

**'Friend2'**:**'Akbar'**, **'Friend3'**:**'Jazil'**}

print(dict)

**for** x, y **in** dict.items():

print(x, y)

dict.popitem()

print(**"After poping from the dictionary the remaining elements are:**

**"**,dict)

**Output:**

**Student Name:**

**Roll No:**

**Section:**

**5. Nested Dictionary**

We can use a dictionary inside a dictionary. This can be helpful when creating telephone directories or records etc.

**Program 10:** Write a record set for the faculty members of Software Engineering Department, NED University. Using the concept of nested dictionary or nested dictionary.

**Code:**

faculty = {1: {**'name'**: **‘Asma Khan’**, **'experience'**: **'21'**, **'gender'**: **' Female '**},

2: {**'name'**: **'Dr. Raheela'**, **'experience'**: **'22'**, **'gender'**: **' Female '**},

3: {**'name'**: **'Dr. Kashif'** **'experience'**: **'22'**, **'gender'**: **'Male'**},

4: {**'name'**: **‘Dr.Wahab'**, **'experience'**: **'3'**, **'gender'**: **'Male'**},

5: {**'name'**: **Miss Simrah'**, **'experience'**: **'19'**, **'gender'**: **' Female '**},

6: {**'name'**: **Miss Shumaila**, **'experience'**: **'15'**, **'gender'**: **' Female '**}}

print(faculty)

**Output:**

**Student Name:**

**Roll No:**

**Section:**

**Programming Exercise**

1. Design a dictionary of your family. Once you get the printout update family dictionary with your grandparents (maternal and paternal) including uncles and aunts (maternal and paternal).

2. Write a function to design a personal phone directory of your parents and friends. You must add 12 members. Then make a function to delete a member from a telephone directory. Print total number of members in your personal phone directory.

3. Write a function hexASCII() that prints the correspondence between the lowercase characters in the alphabet and the hexadecimal representation of their ASCII code. **Note: *[A format string and the format string method can be used to represent a number value in hex notation.]***

4. Create double dictionaries one of which is your choice of dishes. Other one is dishes cooked

in a week. Compare them and find how many dishes you will get of your choice to be cooked in next week. Print the name of those dishes as well.

5. Design a list of guests with family members on your sister wedding. Each family members

must be counted. Your parents have made a list of guests and you have made another list. At the end compare both the list and find the common guests which both of you have invited and count them once. The program will return the number of guest with members and total number of guest. Use functions to perform the required actions.