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AIM: Write a Python program to demonstrate use of dictionary in python:

1. A Python program to create a dictionary from keyboard and display the elements.

2. A Python program to convert the elements of two lists into key-value pairs of a dictionary.

3. A Python program to convert a string into key-value pairs and store them into a dictionary

TOOLS USED: Python 3.4.3, Terminal

THEORY:

1. What is dictionary in Python?

Python dictionary is an unordered collection of items. While other compound data types have only value as an element, a dictionary has a key: value pair.

Dictionaries are optimized to retrieve values when the key is known.

How to create a dictionary?

Creating a dictionary is as simple as placing items inside curly braces {} separated by comma.

An item has a key and the corresponding value expressed as a pair, key: value.

While values can be of any data type and can repeat, keys must be of immutable type (string, number or tuple with immutable elements) and must be unique.

```
# empty dictionary
my_dict = {}

# dictionary with integer keys
my_dict = {1: 'apple', 2: 'ball'}

# dictionary with mixed keys
my_dict = {'name': 'John', 1: [2, 4, 3]}

# using dict()
my_dict = dict({1:'apple', 2:'ball'})

# from sequence having each item as a pair
my_dict = dict([(1,'apple'), (2,'ball')])
```

2. Explain and describe different methods in dictionary with example.

Methods that are available with dictionary are tabulated below. Some of them have already been used in the above examples.

Method	Example	Description
clear()	d.clear()	Remove all items form the dictionary.

copy()	d1 = d.copy()	Return a shallow copy of the dictionary.
fromkeys()	d.fromkeys(seq [,v])	Return a new dictionary with keys from `seq` and value equal to `v` (defaults to `None`).
get()	d.get(key[,d])	Return the value of `key`. If `key` doesnot exit, return `d` (defaults to `None`).
items()	d.items()	Return a new view of the dictionary's items (key, value).
keys()	d.keys()	Return a new view of the dictionary's keys.
values()	d.values()	Return a new view of the dictionary's values.
update()	d.update(x)	Adds all elements from dictionary ‘x’ to ‘d’.
pop()	d.pop(key[,d])	Remove the item with `key` and return its value or `d` if `key` is not found. If `d` is not provided and `key` is not found, raises `KeyError`.
setdefault()	d. setdefault(key[,d])	If `key` is in the dictionary, return its value. If not, insert `key` with a value of `d` and return `d` (defaults to `None`).

3. How to display elements in dictionary using for loop.

You can loop through a dictionary by using a `for` loop.

When looping through a dictionary, the return value are the *keys* of the dictionary, but there are methods to return the *values* as well.

Example

Print all key names in the dictionary, one by one:

```
for x in thisdict:
  print(x)
```

Example

Print all *values* in the dictionary, one by one:

```
for x in thisdict:
  print(thisdict[x])
```

Full example:-

Code:-

```
def main():
    stocks = {
        'Apple': 146.48,
        'Mango':44.11,
        'Grapes':25.54
    }

    #print out all the keys
    for c in stocks:
        print(c)
```

```
    #print key n values
    for k, v in stocks.items():
        print("Key : {0}, Value : {1}".format(k, v))

if __name__ == '__main__':
    main()
```

PROGRAM1:

```
x={}
print("Enter how many elements u need in Dictionary: ")
n=int(input()) #n indicates no. of key-value pairs
for i in range(n):
    print('Enter key: ',end='')
    k=input() #key is string
    print('Enter its value: ',end='')
    v=int(input()) #value is integer
    x.update({k:v}) #store the key-value pair in dictionary x
#display the dictionary
print(x)
```

Output-

```
Enter how many elements u need in Dictionary: 2
Enter key: Tausif
Enter its value: 12
Enter key: Parth
Enter its value: 06
Final Dictionary: {'Tausif': 12, 'Parth': 6}
```

PROGRAM2:

```
countries=['India','USA']
cities=['New Delhi','Washigthon']
z=zip(countries,cities)
d=dict(z)
#print(d)
print('{:10s} -- {:10s}'.format('COUNTRY','CAPITAL'))
for k in d:
    print('{:10s} -- {:10s}'.format(k,d[k]))
```

Output-

```
COUNTRY -- CAPITAL
India -- New Delhi
USA -- Washigthon
```

PROGRAM3:

```
#converting string into dictionary
str="Apple=12,Banana=13,Mango=14,Grapes=15"
#break the string at ',' and then at '='
#store the pieces into a list lst
lst=[]
for x in str.split(','):
   y=x.split('=')
   lst.append(y)
#convert the list into dictionary 'd'
#but this 'd' will have both name and Rollno as strings
d=dict(lst)
#print(d)
#create a new dictionary 'd1' with name as string
```

```
#and age as integer
d1={}
for k,v in d.items():
   d1[k]=int(v)
#print dictionary
print(d1)
```

Output-

```
{'Apple': 12, 'Banana': 13, 'Mango': 14, 'Grapes': 15}
```

CONCLUSION:

Thus we have studied and implement Dictionary and Dictionary methods.