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Assignment on dictionary

Program 1
Qs-Write the following programs:
Answer-The following programs have been written
Program 2
QS- Write a program to check whether an item is present or not.

```python
n=int(input("Enter number of key value pairs "))
dict={}
for i in range(n):
    x=input("Enter key ")
    y=(input("Enter value "))
    dict[x]=y
y=input("Enter item to be found ")
fl=0
for x in dict:
    if x==y:
        fl=1
        print(f"{y} is found")
        break
if fl==0:
    print(f"{y} not found ")
```

Output of Program 2
Enter number of key value pairs 3
Enter key hello
Enter value world
Enter key hi
Enter value universe
Enter key eden
Enter value garden
Enter item to be found eden
eden is found
Program 3
QS- Write a program to print all the items of the dictionary using loop.

```python
n=int(input("Enter number of key value pairs "))
```

```
dict={}
for i in range(n):
    x=input("Enter key ")
    y=(input("Enter value "))
    dict[x]=y

for x in dict:
    print(f"key is {x}, value is {dict[x]}")
```

Output of Program 3

Enter number of key value pairs 3
Enter key akash
Enter value pandey
Enter key rahul
Enter value seth
Enter key fbi
Enter value hack
key is akash, value is pandey
key is rahul , value is seth
key is fbi, value is hack

Program 4
QS- Write a program to map two lists (one containing color names and the other containing color codes) into dictionary.

```
print("Enter colour names in a single line")
a=list(map(str,input().split()))
print("Enter color codes in a single line")
b=list(map(str,input().split()))
if(len(a)!=len(b)):
    print("Invalid ")
else:
    dict={}
    for i in range(len(a)):
        dict[a[i]]=b[i]
    print(dict)
```

Output of Program 4

Enter colour names in a single line

orange red brown
Enter color codes in a single line
225 568 789
{'orange': '225', 'red': '568', 'brown': '789'}

Program 5
QS- Write a program to get the maximum and minimum value in a dictionary.

```python
try:
    n=int(input("Enter number of key value pairs "))
    dict={}
    for i in range(n):
        x=input("Enter key ")
        y=int(input("Enter value as integer "))
        dict[x]=y
    val=dict.values()
    maxi=max(val)
    mini=min(val)
    print(f"Max value is {maxi}")
    print(f"Min value is {mini}")
except:
    print("Wrong input")
```

Output of Program 5

Enter number of key value pairs 3
Enter key value1
Enter value as integer 8
Enter key value2
Enter value as integer 9
Enter key value3
Enter value as integer -2
Max value is 9
Min value is -2

Program 6
QS- Write a program to store student data in dictionary (name, class, subjects). Remove duplicate
entries.

```python
student_dict = {'roll 1':
                {'name': 'akash',
                 'class': '10',
                 'subjects': ['history', 'geography', "science"]
                },
                'roll 2':
```

```
                {'name': 'raghav',
                 'class': '12',
                 'subjects': ['bengali', 'hindi', "english"]
                 },
                'roll 3':
                {'name': 'samay',
                    'class': '12',
                    'subjects': ['maths', 'physics', 'chemistry']
                 },
                'roll 4':
                {'name': 'gourav',
                    'class': '12',
                    'subjects': ['biology', 'computer', 'drawing']
                 },
                'roll 5':
                {'name': 'gourav',
                    'class': '12',
                    'subjects': ['biology', 'computer', 'drawing']
                 },
                }
# roll 4 and roll 5 have same values so roll 5 is removed
keys = []
values = []
for k, v in student_dict.items():
    if v not in values:
        keys.append(k)
        values.append(v)

newdict = dict(zip(keys, values))

print(f"\tBefore removing duplicates,dictionary is {student_dict}\t")
print()
print(f"\tAfter removing duplicates,dictionary is {newdict}\t")
```

Output of Program 6

Before removing duplicates,dictionary is {'roll 1': {'name': 'akash', 'class': '10', 'subjects': ['history', 'geography', 'science']}, 'roll 2': {'name': 'raghav', 'class': '12', 'subjects': ['bengali', 'hindi', 'english']}, 'roll 3': {'name': 'samay', 'class': '12', 'subjects': ['maths', 'physics', 'chemistry']}, 'roll 4': {'name': 'gourav', 'class': '12', 'subjects': ['biology', 'computer', 'drawing']}, 'roll 5': {'name': 'gourav', 'class': '12', 'subjects': ['biology', 'computer', 'drawing']}}

After removing duplicates,dictionary is {'roll 1': {'name': 'akash', 'class': '10', 'subjects': ['history', 'geography', 'science']}, 'roll 2': {'name': 'raghav', 'class': '12', 'subjects': ['bengali', 'hindi', 'english']}, 'roll 3': {'name': 'samay', 'class': '12', 'subjects': ['maths', 'physics', 'chemistry']}, 'roll 4': {'name': 'gourav', 'class': '12', 'subjects': ['biology', 'computer', 'drawing']}}

Program 7
QS- Write a Python program to multiply all the items in a dictionary.

```python
try:
    n=int(input("Enter number of key value pairs "))
    dict={}
    for i in range(n):
        x=input("Enter key as string ")
        y=int(input("Enter value as integer "))
        dict[x]=y
    ans=1
    for x in dict:
        ans=ans*dict[x]
    print(f"Product of values is {ans}")
except:
    print("Wrong input")
```

Output of Program 7

Enter number of key value pairs 3
Enter key as string value1
Enter value as integer 5
Enter key as string value2
Enter value as integer 6
Enter key as string value3
Enter value as integer 2
Product of values is 60

Program 8
QS- Write a Python program to sort a dictionary by key.

```python
# Creates a sorted dictionary (sorted by key)
from collections import OrderedDict
dict={}
```

```
try:
    n=int(input("Enter number of key value pairs "))
    for i in range(n):
        x=input("Enter key as string ")
        y=int(input("Enter value as integer "))
        dict[x]=y

    dict1 = OrderedDict(sorted(dict.items()))
    print(f"Dictionary in items sorted way is {dict1}")
except:
    print("Wrong Input")
```

Output of Program 8
Enter number of key value pairs 2
Enter key as string basu
Enter value as integer 77
Enter key as string akash
Enter value as integer 74

Program 9
QS- Write a Python program which creates two dictionaries. One that stores conversion values from meters to centimeters and the other that stores the reverse.

```
dict={}
newdict={}
n=int(input("Enter number of key value pairs "))
for i in range(n):
    x=float(input("Enter metres value "))
    y=int(x)*100
    dict[x]=y
for x in dict:
    newdict[dict[x]]=x
print(f"Input-ed dict is {dict}")
print(f"New dict dict is {newdict}")
```

Output of Program 9
Enter number of key value pairs 3
Enter metres value 1
Enter metres value 2
Enter metres value 3
Input-ed dict is {1: 100, 2: 200, 3: 300}
New dict dict is {100: 1, 200: 2, 300: 3}

Program 10

QS- Write a Python program that creates a dictionary of cubes of odd numbers in the range 1-10 (in a single statement).

```python
dict={i:i**3 for i in range(1,11,1)}
print(dict)
```

Output of Program 10
{1: 1, 2: 8, 3: 27, 4: 64, 5: 125, 6: 216, 7: 343, 8: 512, 9: 729, 10: 1000}

Program 11
QS- Write a Python program that inverts a dictionary, i.e., it makes key of one dictionary value of
another and vice versa.

```python
dict={}
n=int(input("Enter number of key value pairs "))
for i in range(n):
    x=input("Enter key ")
    y=input("Enter value ")
    dict[x]=y

newdict={}

for x in dict:
    newdict[dict[x]]=x
print(f"Input-ed dict is {dict}")
print(f"New dict dict is {newdict}")
```

Output of Program 11
Enter number of key value pairs 2
Enter key hello
Enter value world
Enter key hi universe
Enter value galaxy
Input-ed dict is {'hello': 'world', 'hi universe': 'galaxy '}
New dict dict is {'world': 'hello', 'galaxy ': 'hi universe'}

Program 12
QS- Write a Python program that has dictionary of names of students and a list of their marks in 4
subjects. Create another dictionary from this dictionary that has name of the students and their
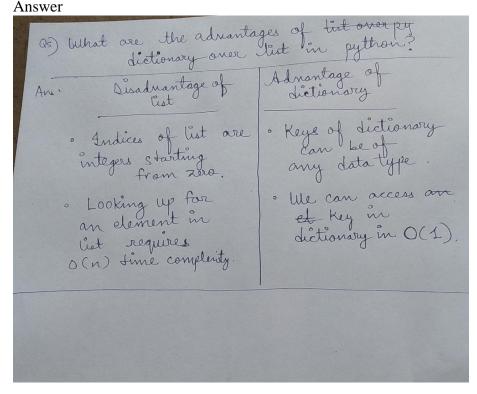total marks. Find out the topper and his/ her score.

```python
import sys
n=int(input("Enter number of students "))
```

```python
dict={}
newdict={}
Sum=0
maxi= -2147483648
name=""
for i in range(n):
    x=input("Enter student name ")
    print(f"Enter marks of {x}")
    l=list(map(int,input().split()))
    Sum=sum(l)
    if(Sum>maxi):
        maxi=Sum
        name=x
    dict[x]=l
    newdict[x]=Sum
print(f"New Dictionary is {newdict}")
print(f"Topper is {name} ,highest total marks is {maxi}")
```

Output of Program 12

Enter marks of akash
80 90 40 100
Enter student name abhirup
Enter marks of abhirup
90 99 95 97
Enter student name abhishek
Enter marks of abhishek
70 60 54 99
New Dictionary is {'akash': 310, 'abhirup': 381, 'abhishek': 283}
Topper is abhirup ,highest total marks is 381

Questionnaires:
1. What are the advantages of dictionary over list?
   Answer

   Q5) What are the advantages of list over py dictionary over list in python?

Ans: Disadvantage of list	Advantage of dictionary
○ Indices of list are integers starting from zero.	○ Keys of dictionary can be of any data type.
○ Looking up for an element in list requires O(n) time complexity.	○ We can access an et key in dictionary in O(1).

2.