Dictionary Data Type in Python

Dictionary in Python is an unordered collection of data, used to store data values pair of keys and value.

In Python, a Dictionary can be created by placing sequence of elements within curly **{}** braces, separated by 'comma'.
Dictionary can also be created by the built-in function dict(). An empty dictionary can be created by just placing to curly braces {}.

Note – Dictionary keys are case sensitive, same name but different cases of Key will be treated distinctly.

Method	Description
clear()	Remove all items form the dictionary.
copy()	Return a shallow copy of the dictionary.
fromkeys(seq[, v])	Return a new dictionary with keys from seq and value equal to v(defaults to None).
get(key[,d])	Return the value of key. If key doesnot exit, return d (defaults to None).
items()	Return a new view of the dictionary's items (key, value).
keys()	Return a new view of the dictionary's keys.
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.
popitem()	Remove and return an arbitary item (key, value). Raises KeyError if the dictionary is empty.
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).
update([other])	Update the dictionary with the key/value pairs from other, overwriting existing keys.
values()	Return a new view of the dictionary's values

Let’s Begin With Dictionaries In Python.

Q-1. What Will Be The Output Of The Following Code Snippet?

```
a = {(1,2):1,(2,3):2}

print(a[1,2])
```

A. Key Error
B. 1
C. {(2,3):2}
D. {(1,2):1}

Q-2. What Will Be The Output Of The Following Code Snippet?

```
a = {'a':1,'b':2,'c':3}

print (a['a','b'])

print(a.get(‘a’,’b’))
```

A. Key Error
B. [1,2]
C. {‘a’:1,’b’:2}
D. (1,2)

Q-3. What Will Be The Output Of The Following Code Snippet?

```
fruit = {}


def addone(index):

    if index in fruit:
```

```
        fruit[index] += 1
    else:
        fruit[index] = 1


addone('Apple')
addone('Banana')
addone('apple')
print (len(fruit))
```

A. 1
B. 2
C. 3
D. 4

Q-4. What Will Be The Output Of The Following Code Snippet?

```
arr = {}
arr[1] = 1
arr['1'] = 2
arr[1] += 1


sum = 0
for k in arr:
    sum += arr[k]


print (sum)
```

A. 1
B. 2
C. 3
D. 4

Q-5. What Will Be The Output Of The Following Code Snippet?

```
my_dict = {}

my_dict[1] = 1

my_dict['1'] = 2

my_dict[1.0] = 4


sum = 0

for k in my_dict:

    sum += my_dict[k]


print (sum)
```

A. 7
B. Syntax error
C. 3
D. 6

Q-6. What Will Be The Output Of The Following Code Snippet?

```
my_dict = {}

my_dict[(1,2,4)] = 8

my_dict[(4,2,1)] = 10
```

```
my_dict[(1,2)] = 12


sum = 0

for k in my_dict:

    sum += my_dict[k]


print (sum)

print(my_dict)
```

A. Syntax error
B. 30
{(1, 2): 12, (4, 2, 1): 10, (1, 2, 4): 8}
C. 47
{(1, 2): 12, (4, 2, 1): 10, (1, 2, 4): 8}
D. 30
{[1, 2]: 12, [4, 2, 1]: 10, [1, 2, 4]: 8}

.

Q-7. What Will Be The Output Of The Following Code Snippet?

```
box = {}

jars = {}

crates = {}

box['biscuit'] = 1

box['cake'] = 3

jars['jam'] = 4

crates['box'] = box

crates['jars'] = jars
```

```
print (len(crates[box]))
```

A. 1
B. 3
C. 4
D. Type Error

Q-8. What Will Be The Output Of The Following Code Snippet?

```
dict = {'c': 97, 'a': 96, 'b': 98}


for _ in sorted(dict):

    print (dict[_])
```

A. 96 98 97
B. 96 97 98
C. 98 97 96
D. NameError

Q-9. What Will Be The Output Of The Following Code Snippet?

```
rec = {"Name" : "Python", "Age":"20"}

r = rec.copy()

print(id(r) == id(rec))
```

A. True
B. False
C. 0
D. 1

Q-10. What Will Be The Output Of The Following Code Snippet?

```
rec = {"Name" : "Python", "Age":"20", "Addr" : "NJ", "Country" : "USA"}

id1 = id(rec)
```

```
del rec

rec = {"Name" : "Python", "Age":"20", "Addr" : "NJ", "Country" : "USA"}

id2 = id(rec)

print(id1 == id2)
```

- **A.** True
- **B.** False
- **C.** 1
- **D.** Exception

Python Dictionary [38 exercises]

1. Write a Python script to sort (ascending and descending) a dictionary by value.

2. Write a Python script to add a key to a dictionary

Sample Dictionary : {0: 10, 1: 20}
Expected Result : {0: 10, 1: 20, 2: 30}

3. Write a Python script to concatenate following dictionaries to create a new one.

Sample Dictionary :
dic1={1:10, 2:20}
dic2={3:30, 4:40}
dic3={5:50,6:60}
Expected Result : {1: 10, 2: 20, 3: 30, 4: 40, 5: 50, 6: 60}

4. Write a Python script to check if a given key already exists in a dictionary.

5. Write a Python program to iterate over dictionaries using for loops.

6. Write a Python script to generate and print a dictionary that contains a number (between 1 and n) in the form (x, x*x)

Sample Dictionary (n = 5) :
Expected Output : {1: 1, 2: 4, 3: 9, 4: 16, 5: 25}

7. Write a Python script to print a dictionary where the keys are numbers between 1 and 15 (both included) and the values are square of keys.
Sample Dictionary
{1: 1, 2: 4, 3: 9, 4: 16, 5: 25, 6: 36, 7: 49, 8: 64, 9: 81, 10: 100, 11: 121, 12: 144, 13: 169, 14: 196, 15: 225}

8. Write a Python script to merge two Python dictionaries.

9. Write a Python program to iterate over dictionaries using for loops.

10. Write a Python program to sum all the items in a dictionary.

11. Write a Python program to multiply all the items in a dictionary.

12. Write a Python program to remove a key from a dictionary.

13. Write a Python program to map two lists into a dictionary.

14. Write a Python program to sort a dictionary by key.

15. Write a Python program to get the maximum and minimum value in a dictionary.

16. Write a Python program to get a dictionary from an object's fields.

17. Write a Python program to remove duplicates from Dictionary.

18. Write a Python program to check a dictionary is empty or not.

19. Write a Python program to combine two dictionary adding values for common keys.
d1 = {'a': 100, 'b': 200, 'c':300}
d2 = {'a': 300, 'b': 200, 'd':400}
Sample output: Counter({'a': 400, 'b': 400, 'd': 400, 'c': 300})

20. Write a Python program to print all unique values in a dictionary. Sample Data :
[{"V":"S001"}, {"V": "S002"}, {"VI": "S001"}, {"VI": "S005"}, {"VII":"S005"}, {"V":"S009"},{"VIII":"S007"}]
Expected Output : Unique Values: {'S005', 'S002', 'S007', 'S001', 'S009'}

21. Write a Python program to create and display all combinations of letters, selecting each letter from a different key in a dictionary.
Sample data : {'1':['a','b'], '2':['c','d']}
Expected Output:
ac
ad
bc
bd

22. Write a Python program to find the highest 3 values in a dictionary.

23. Write a Python program to combine values in python list of dictionaries.
Sample data: [{'item': 'item1', 'amount': 400}, {'item': 'item2', 'amount': 300}, {'item': 'item1', 'amount': 750}]
Expected Output: Counter({'item1': 1150, 'item2': 300})

24. Write a Python program to create a dictionary from a string.
Note: Track the count of the letters from the string.
Sample string : 'w3resource'
Expected output: {'3': 1, 's': 1, 'r': 2, 'u': 1, 'w': 1, 'c': 1, 'e': 2, 'o': 1}

25. Write a Python program to print a dictionary in table format.

26. Write a Python program to count the values associated with key in a dictionary.
Sample data: = [{'id': 1, 'success': True, 'name': 'Lary'}, {'id': 2, 'success': False, 'name': 'Rabi'}, {'id': 3, 'success': True, 'name': 'Alex'}]
Expected result: Count of how many dictionaries have success as True

27. Write a Python program to convert a list into a nested dictionary of keys.

28. Write a Python program to sort a list alphabetically in a dictionary.

29. Write a Python program to remove spaces from dictionary keys.

30. Write a Python program to get the top three items in a shop.
Sample data: {'item1': 45.50, 'item2':35, 'item3': 41.30, 'item4':55, 'item5': 24}
Expected Output:
item4 55
item1 45.5
item3 41.3

31. Write a Python program to get the key, value and item in a dictionary.

32. Write a Python program to print a dictionary line by line.

33. Write a Python program to check multiple keys exists in a dictionary.

34. Write a Python program to count number of items in a dictionary value that is a list.

35. Write a Python program to sort Counter by value.
Sample data : {'Math':81, 'Physics':83, 'Chemistry':87}
Expected data: [('Chemistry', 87), ('Physics', 83), ('Math', 81)]

36. Write a Python program to create a dictionary from two lists without losing duplicate values.
Sample lists: ['Class-V', 'Class-VI', 'Class-VII', 'Class-VIII'], [1, 2, 2, 3]
Expected Output: defaultdict(<class 'set'>, {'Class-VII': {2}, 'Class-VI': {2}, 'Class-VIII': {3}, 'Class-V': {1}})

37. Write a Python program to replace dictionary values with their sum.

38. Write a Python program to match key values in two dictionaries.
Sample dictionary: {'key1': 1, 'key2': 3, 'key3': 2}, {'key1': 1, 'key2': 2}
Expected output: key1: 1 is present in both x and y