Python Dictionary Exercises

Python dictionary is a container of the unordered set of objects like lists. The objects are surrounded by curly braces { }. The items in a dictionary are a comma-separated list of key:value pairs where keys and values are Python data type.

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 the 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 whether 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 the square of the 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 given dictionary by key.

15. Write a Python program to get the maximum and minimum values of 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 the dictionary.

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

19. Write a Python program to combine two dictionary by 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 distinct 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 of corresponding keys in a dictionary.

23. Write a Python program to combine values in a 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: {'w': 1, '3': 1, 'r': 2, 'e': 2, 's': 1, 'o': 1, 'u': 1, 'c': 1}

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

26. Write a Python program to count the values associated with a key in a dictionary.

Expected Output:

6

2

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 if multiple keys exist in a dictionary.

34. Write a Python program to count the 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-V': {1}, 'Class-VI': {2}, 'Class- VII': {2}, 'Class-VIII': {3}})

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

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

39. Write a Python program to store dictionary data in a JSON file.

Original dictionary:

{'students': [{'firstName': 'Nikki', 'lastName': 'Roysden'}, {'firstName': 'Mervin', 'lastName': 'Friedland'}, {'firstName': 'Aron ', 'lastName': 'Wilkins'}], 'teachers': [{'firstName': 'Amberly', 'lastName': 'Calico'}, {'firstName': 'Regine', 'lastName': 'Agtarap'}]}

<class 'dict'>

Json file to dictionary:

{'students': [{'firstName': 'Nikki', 'lastName': 'Roysden'}, {'firstName': 'Mervin', 'lastName': 'Friedland'}, {'firstName': 'Aron ', 'lastName': 'Wilkins'}], 'teachers': [{'firstName': 'Amberly', 'lastName': 'Calico'}, {'firstName': 'Regine', 'lastName': 'Agtarap'}]}

40. Write a Python program to create a dictionary of keys x, y, and z where each key has as value a list from 11-20, 21-30, and 31-40 respectively. Access the fifth value of each key from the dictionary.

```
{'x': [11, 12, 13, 14, 15, 16, 17, 18, 19],

'y': [21, 22, 23, 24, 25, 26, 27, 28, 29],

'z': [31, 32, 33, 34, 35, 36, 37, 38, 39]}

        15

        25

        35

x has value [11, 12, 13, 14, 15, 16, 17, 18, 19]

y has value [21, 22, 23, 24, 25, 26, 27, 28, 29]

z has value [31, 32, 33, 34, 35, 36, 37, 38, 39]
```

41. Write a Python program to drop empty items from a given dictionary.

```
Original Dictionary:
{'c1': 'Red', 'c2': 'Green', 'c3': None}
New Dictionary after dropping empty items:
{'c1': 'Red', 'c2': 'Green'}
```

42. Write a Python program to filter a dictionary based on values.

```
Original Dictionary:
    {'Cierra Vega': 175, 'Alden Cantrell': 180, 'Kierra Gentry': 165, 'Pierre Cox': 190}
Marks greater than 170:
    {'Cierra Vega': 175, 'Alden Cantrell': 180, 'Pierre Cox': 190}
```

43. Write a Python program to convert more than one list to a nested dictionary.

```
Original strings:
    ['S001', 'S002', 'S003', 'S004']
    ['Adina Park', 'Leyton Marsh', 'Duncan Boyle', 'Saim Richards']
    [85, 98, 89, 92]
Nested dictionary:
    [{'S001': {'Adina Park': 85}}, {'S002': {'Leyton Marsh': 98}}, {'S003': {'Duncan Boyle': 89}}, {'S004': {'Saim Richards': 92}}]
```

44. Write a Python program to filter the height and width of students, which are stored in a dictionary.

```
Original Dictionary:
    {'Cierra Vega': (6.2, 70), 'Alden Cantrell': (5.9, 65), 'Kierra Gentry': (6.0, 68), 'Pierre Cox': (5.8, 66)}
    Height > 6ft and Weight> 70kg:
    {'Cierra Vega': (6.2, 70)}
```

45. Write a Python program to verify that all values in a dictionary are the same.

```
Original Dictionary:
    {'Cierra Vega': 12, 'Alden Cantrell': 12, 'Kierra Gentry': 12, 'Pierre Cox': 12}
```

Check all are 12 in the dictionary.

True

Check all are 10 in the dictionary.

False

46. Write a Python program to create a dictionary grouping a sequence of key-value pairs into a dictionary of lists.

```
Original list:
          [('yellow', 1), ('blue', 2), ('yellow', 3), ('blue', 4), ('red', 1)]
          Grouping a sequence of key-value pairs into a dictionary of lists:
          {'yellow': [1, 3], 'blue': [2, 4], 'red': [1]}
```

47. Write a Python program to split a given dictionary of lists into lists of dictionaries.

Original dictionary of lists:

```
{'Science': [88, 89, 62, 95], 'Language': [77, 78, 84, 80]}
Split said dictionary of lists into list of dictionaries:
[{'Science': 88, 'Language': 77}, {'Science': 89, 'Language': 78}, {'Science': 62, 'Language': 84}, {'Science': 95, 'Language': 80}]
```

48. Write a Python program to remove a specified dictionary from a given list.

```
Original list of dictionary:
[{'id': '#FF0000', 'color': 'Red'}, {'id': '#800000', 'color': 'Maroon'}, {'id': '#FFFF00', 'color': 'Yellow'}, {'id': '#808000', 'color': 'Olive'}]
Remove id #FF0000 from the said list of dictionary:
[{'id': '#800000', 'color': 'Maroon'}, {'id': '#FFFF00', 'color': 'Yellow'}, {'id': '#808000', 'color': 'Olive'}]
```

49. Write a Python program to convert string values of a given dictionary into integer/float datatypes.

Original list:

```
[{'x': '10', 'y': '20', 'z': '30'}, {'p': '40', 'q': '50', 'r': '60'}]
String values of a given dictionary, into integer types:
[{'x': 10, 'y': 20, 'z': 30}, {'p': 40, 'q': 50, 'r': 60}]
Original list:
[{'x': '10.12', 'y': '20.23', 'z': '30'}, {'p': '40.00', 'q': '50.19', 'r': '60.99'}]
String values of a given dictionary, into float types:
[{'x': 10.12, 'y': 20.23, 'z': 30.0}, {'p': 40.0, 'q': 50.19, 'r': 60.99}]
```

50. A Python dictionary contains List as a value. Write a Python program to clear the list values in the said dictionary.

```
Original Dictionary:
{'C1': [10, 20, 30], 'C2': [20, 30, 40], 'C3': [12, 34]}
Clear the list values in the said dictionary:
{'C1': [], 'C2': [], 'C3': []}
```

51. A Python Dictionary contains List as a value. Write a Python program to update the list values in the said dictionary.

```
Original Dictionary:
{'Math': [88, 89, 90], 'Physics': [92, 94, 89], 'Chemistry': [90, 87, 93]}
Update the list values of the said dictionary:
{'Math': [89, 90, 91], 'Physics': [90, 92, 87], 'Chemistry': [90, 87, 93]
```

52. Write a Python program to extract a list of values from a given list of dictionaries.

```
Original Dictionary:
[{'Math': 90, 'Science': 92}, {'Math': 89, 'Science': 94}, {'Math': 92, 'Science': 88}]
Extract a list of values from said list of dictionaries where subject = Science
[92, 94, 88]
Original Dictionary:
[{'Math': 90, 'Science': 92}, {'Math': 89, 'Science': 94}, {'Math': 92, 'Science': 88}]
Extract a list of values from said list of dictionaries where subject = Math
[90, 89, 92]
```

53. Write a Python program to find the length of a dictionary of values.

54. Write a Python program to get the depth of a dictionary.

55. Write a Python program to access dictionary key's element by index.

```
Expected Output:
physics
math
chemistry
```

56. Write a Python program to convert a dictionary into a list of lists.

```
Original Dictionary:
{1: 'red', 2: 'green', 3: 'black', 4: 'white', 5: 'black'}
Convert the said dictionary into a list of lists:
[[1, 'red'], [2, 'green'], [3, 'black'], [4, 'white'], [5, 'black']]
Original Dictionary:
{'1': 'Austin Little', '2': 'Natasha Howard', '3': 'Alfred Mullins', '4': 'Jamie Rowe'}
Convert the said dictionary into a list of lists:
[['1', 'Austin Little'], ['2', 'Natasha Howard'], ['3', 'Alfred Mullins'], ['4', 'Jamie Rowe']]
```

57. Write a Python program to filter even numbers from a dictionary of values.

```
Original Dictionary:
{'V': [1, 4, 6, 10], 'VI': [1, 4, 12], 'VII': [1, 3, 8]}
Filter even numbers from said dictionary values:
{'V': [4, 6, 10], 'VI': [4, 12], 'VII': [8]}
Original Dictionary:
{'V': [1, 3, 5], 'VI': [1, 5], 'VII': [2, 7, 9]}
Filter even numbers from said dictionary values:
{'V': [], 'VI': [], 'VII': [2]}
```

58. Write a Python program to get all combinations of key-value pairs in a given dictionary.

```
Original Dictionary:
{'V': [1, 4, 6, 10], 'VI': [1, 4, 12], 'VII': [1, 3, 8]}
Combinations of key-value pairs of the said dictionary:
[{'V': [1, 4, 6, 10], 'VI': [1, 4, 12]}, {'V': [1, 4, 6, 10], 'VII': [1, 3, 8]}, {'VI': [1, 4,
12], 'VII': [1, 3, 8]}]
Original Dictionary:
{'V': [1, 3, 5], 'VI': [1, 5]}
Combinations of key-value pairs of the said dictionary:
[{'V': [1, 3, 5], 'VI': [1, 5]}]
```

59. Write a Python program to find the specified number of maximum values in a given dictionary.

```
Original Dictionary:
{'a': 5, 'b': 14, 'c': 32, 'd': 35, 'e': 24, 'f': 100, 'g': 57, 'h': 8, 'i': 100}
1 maximum value(s) in the said dictionary:
['f']
2 maximum value(s) in the said dictionary:
['f', 'i']
```

```
5 maximum value(s) in the said dictionary:
['f', 'i', 'g', 'd', 'c']
```

60. Write a Python program to find the shortest list of values for the keys in a given dictionary.

```
Original Dictionary: {'V': [10, 12], 'VI': [10], 'VII': [10, 20, 30, 40], 'VIII': [20], 'IX':
[10, 30, 50, 70], 'X': [80]} Shortest list of values with the keys of the said dictionary:
['VI', 'VIII', 'X']
```

61. Write a Python program to count the frequency of a dictionary.

```
Original Dictionary:
{'V': 10, 'VI': 10, 'VII': 40, 'VIII': 20, 'IX': 70, 'X': 80, 'XI': 40, 'XII': 20}
Count the frequency of the said dictionary:
Counter({10: 2, 40: 2, 20: 2, 70: 1, 80: 1})
```

62. Write a Python program to extract values from a given dictionary and create a list of lists from those values.

```
Original Dictionary:
[{'student_id': 1, 'name': 'Jean Castro', 'class': 'V'}, {'student_id': 2, 'name': 'Lula
Powell', 'class': 'V'}, {'student_id': 3, 'name': 'Brian Howell', 'class': 'VI'}, {'student_id':
4, 'name': 'Lynne Foster', 'class': 'VI'}, {'student_id': 5, 'name': 'Zachary Simon', 'class':
'VII'}]
Extract values from the said dictionarie and create a list of lists using those values:
[[1, 'Jean Castro', 'V'], [2, 'Lula Powell', 'V'], [3, 'Brian Howell', 'VI'], [4, 'Lynne
Foster', 'VI'], [5, 'Zachary Simon', 'VII']]
[[1, 'Jean Castro'], [2, 'Lula Powell'], [3, 'Brian Howell'], [4, 'Lynne Foster'], [5,
'Zachary Simon']]
[['Jean Castro', 'V'], ['Lula Powell', 'V'], ['Brian Howell', 'VI'], ['Lynne Foster', 'VI'],
['Zachary Simon', 'VII']]
```

63. Write a Python program to convert a given list of lists to a dictionary.

```
Original list of lists:
[[1, 'Jean Castro', 'V'], [2, 'Lula Powell', 'V'], [3, 'Brian Howell', 'VI'], [4, 'Lynne
Foster', 'VI'], [5, 'Zachary Simon', 'VII']]
Convert the said list of lists to a dictionary:
{1: ['Jean Castro', 'V'], 2: ['Lula Powell', 'V'], 3: ['Brian Howell', 'VI'], 4: ['Lynne
Foster', 'VI'], 5: ['Zachary Simon', 'VII']}
```

64. Write a Python program that creates key-value list pairings within a dictionary.

```
Original dictionary:
{1: ['Jean Castro'], 2: ['Lula Powell'], 3: ['Brian Howell'], 4: ['Lynne Foster'], 5: ['Zachary Simon']}
A key-value list pairings of the said dictionary:
[{1: 'Jean Castro', 2: 'Lula Powell', 3: 'Brian Howell', 4: 'Lynne Foster', 5: 'Zachary Simon'}]
```

65. Write a Python program to get the total length of all values in a given dictionary with string values.

```
Original dictionary:
{'#FF0000': 'Red', '#800000': 'Maroon', '#FFFF00': 'Yellow', '#808000': 'Olive'}
Total length of all values of the said dictionary with string values:
20
```

66. Write a Python program to check if a specific key and a value exist in a dictionary.

```
Original dictionary:
[{'student_id': 1, 'name': 'Jean Castro', 'class': 'V'}, {'student_id': 2, 'name': 'Lula Powell', 'class': 'V'}, {'student_id': 3, 'name': 'Brian Howell', 'class': 'VI'}, {'student_id': 4, 'name': 'Lynne Foster', 'class': 'VI'}, {'student_id': 5, 'name': 'Zachary Simon', 'class': 'VII'}]
Check if a specific Key and a value exist in the said dictionary:
True
True
True
False
False
False
```

67. Write a Python program to invert a given dictionary with non-unique hashable values.

```
Sample Output:
{8: ['Ora Mckinney', 'Mathew Gilbert'], 7: ['Theodore Hollandl', 'Mae Fleming', 'Ivan Little']}
```

68. Write a Python program to combine two or more dictionaries, creating a list of values for each key.

```
Sample Output:
```

```
Original dictionaries:
{'w': 50, 'x': 100, 'y': 'Green', 'z': 400}
{'x': 300, 'y': 'Red', 'z': 600}
Combined dictionaries, creating a list of values for each key:
{'w': [50], 'x': [100, 300], 'y': ['Green', 'Red'], 'z': [400, 600]}
```

69. Write a Python program to group the elements of a given list based on the given function.

Sample Output:

```
Original list & function:
[7, 23, 3.2, 3.3, 8.4] Function name: floor:
Group the elements of the said list based on the given function:
{7: [7], 23: [23], 3: [3.2, 3.3], 8: [8.4]}
Original list & function:
['Red', 'Green', 'Black', 'White', 'Pink'] Function name: len:
Group the elements of the said list based on the given function:
{3: ['Red'], 5: ['Green', 'Black', 'White'], 4: ['Pink']}
```

70. Write a Python program to map the values of a given list to a dictionary using a function, where the key-value pairs consist of the original value as the key and the result of the function as the value.

Sample Output:

```
{1: 1, 2: 4, 3: 9, 4: 16}
```

71. Write a Python program to retrieve the value of the nested key indicated by the given selector list from a dictionary or list.

Sample Output:

```
Russell
2
```

72. Write a Python program to invert a dictionary with unique hashable values.

Sample Output:

```
{10: 'Theodore', 11: 'Mathew', 9: 'Roxanne'}
```

73. Write a Python program to convert a list of dictionaries into a list of values corresponding to the specified key.

Sample Output:

```
Original list of dictionaries:
```

```
[{'name': 'Theodore', 'age': 18}, {'name': 'Mathew', 'age': 22}, {'name': 'Roxanne', 'age': 20}, {'name': 'David', 'age': 18}]
Convert a list of dictionaries into a list of values corresponding to the specified key:
[18, 22, 20, 18]
```

74. Write a Python program to create a dictionary with the same keys as the given dictionary and values generated by running the given function for each value.

```
Sample Output:
Original dictionary elements:
{'Theodore': {'user': 'Theodore', 'age': 45}, 'Roxanne': {'user': 'Roxanne', 'age': 15}, 'Mathew': {'user': 'Mathew', 'age': 21}}
Dictionary with the same keys:
{'Theodore': 45, 'Roxanne': 15, 'Mathew': 21}
```

75. Write a Python program to find all keys in a dictionary that have the given value.

```
Sample Output:
Original dictionary elements:
{'Theodore': 19, 'Roxanne': 20, 'Mathew': 21, 'Betty': 20}
Find all keys in the said dictionary that have the specified value:
['Roxanne', 'Betty']
```

76. Write a Python program to combine two lists into a dictionary. The elements of the first one serve as keys and the elements of the second one serve as values. Each item in the first list must be unique and hashable.

```
Sample Output:
Original lists:
['a', 'b', 'c', 'd', 'e', 'f']
[1, 2, 3, 4, 5]
Combine the values of the said two lists into a dictionary:
{'a': 1, 'b': 2, 'c': 3, 'd': 4, 'e': 5}
```

77. Write a Python program to transform a dictionary into a list of tuples.

```
Sample Output:
Original Dictionary:
{'Red': 1, 'Green': 3, 'White': 5, 'Black': 2, 'Pink': 4}
Convert the said dictionary to a list of tuples:
[('Red', 1), ('Green', 3), ('White', 5), ('Black', 2), ('Pink', 4)]
```

78. Write a Python program to create a flat list of all the keys in a flat dictionary.

Sample Output:

```
Original dictionary elements:
{'Theodore': 19, 'Roxanne': 20, 'Mathew': 21, 'Betty': 20}
Create a flat list of all the keys of the said flat dictionary:
['Theodore', 'Roxanne', 'Mathew', 'Betty']
```

79. Write a Python program to create a flat list of all the values in a flat dictionary.

Sample Output:

```
Original dictionary elements:
{'Theodore': 19, 'Roxanne': 20, 'Mathew': 21, 'Betty': 20}
Create a flat list of all the values of the said flat dictionary:
[19, 20, 21, 20]
```

80. Write a Python program to find the key of the maximum value in a dictionary.

Sample Output:

```
Original dictionary elements:
{'Theodore': 19, 'Roxanne': 22, 'Mathew': 21, 'Betty': 20}
Finds the key of the maximum and minimum value of the said dictionary:
('Roxanne', 'Theodore')
```