**Solve these problems and push it  on to github**

**Python Problems**

**Exercise 1: Create a list by picking an odd-index items from the first list and even index items from the second**

Given two lists, l1 and l2, write a program to create a third list l3 by picking an odd-index element from the list l1 and even index elements from the list l2.

**Given**:

l1 = [3, 6, 9, 12, 15, 18, 21]

l2 = [4, 8, 12, 16, 20, 24, 28]

**Expected Output**:

Element at odd-index positions from list one

[6, 12, 18]

Element at even-index positions from list two

[4, 12, 20, 28]

Printing Final third list

[6, 12, 18, 4, 12, 20, 28]

list1 = [3, 6, 9, 12, 15, 18, 21]  
list2 = [4, 8, 12, 16, 20, 24, 28]  
res = list()  
  
odd\_elements = list1[1::2]  
print("Element at odd-index positions from list one")  
print(odd\_elements)  
  
even\_elements = list2[0::2]  
print("Element at even-index positions from list two")  
print(even\_elements)  
  
print("Printing Final third list")  
res.extend(odd\_elements)  
res.extend(even\_elements)  
print(res)

**Exercise 2: Remove and add item in a list**

Write a program to remove the item present at index 4 and add it to the 2nd position and at the end of the list.

**Given**:

list1 = [54, 44, 27, 79, 91, 41]

**Expected Output**:

List After removing element at index 4  [34, 54, 67, 89, 43, 94]

List after Adding element at index 2  [34, 54, 11, 67, 89, 43, 94]

List after Adding element at last  [34, 54, 11, 67, 89, 43, 94, 11]

sample\_list = [34, 54, 67, 89, 11, 43, 94]  
  
print("Original list ", sample\_list)  
element = sample\_list.pop(4)  
print("List After removing element at index 4 ", sample\_list)  
  
sample\_list.insert(2, element)  
print("List after Adding element at index 2 ", sample\_list)  
  
sample\_list.append(element)  
print("List after Adding element at last ", sample\_list)

**Exercise 3: Slice list into 3 equal chunks and reverse each chunk**

**Given**:

sample\_list = [11, 45, 8, 23, 14, 12, 78, 45, 89]

**Expected Outcome**:

Chunk  1 [11, 45, 8]

After reversing it  [8, 45, 11]

Chunk  2 [23, 14, 12]

After reversing it  [12, 14, 23]

Chunk  3 [78, 45, 89]

After reversing it  [89, 45, 78]

sample\_list = [11, 45, 8, 23, 14, 12, 78, 45, 89]  
print("Original list ", sample\_list)  
  
length = len(sample\_list)  
chunk\_size = int(length / 3)  
start = 0  
end = chunk\_size  
  
# run loop 3 times  
for i in range(3):  
 # get indexes  
 indexes = slice(start, end)  
  
 # get chunk  
 list\_chunk = sample\_list[indexes]  
 print("Chunk ", i, list\_chunk)  
  
 # reverse chunk  
 print("After reversing it ", list(reversed(list\_chunk)))  
  
 start = end  
 end += chunk\_size

**Exercise 4: Count the occurrence of each element from a list**

Write a program to iterate a given list and count the occurrence of each element and create a dictionary to show the count of each element.

**Given**:

sample\_list = [11, 45, 8, 11, 23, 45, 23, 45, 89]

**Expected Output**:

Printing count of each item   {11: 2, 45: 3, 8: 1, 23: 2, 89: 1}

sample\_list = [11, 45, 8, 11, 23, 45, 23, 45, 89]  
print("Original list ", sample\_list)  
  
count\_dict = dict()  
for item in sample\_list:  
 if item in count\_dict:  
 count\_dict[item] += 1  
 else:  
 count\_dict[item] = 1  
  
print("Printing count of each item ", count\_dict)

**Exercise 5: Create a Python set such that it shows the element from both lists in a pair**

**Given**:

first\_list = [2, 3, 4, 5, 6, 7, 8]

second\_list = [4, 9, 16, 25, 36, 49, 64]

**Expected Output**:

Result is  {(6, 36), (8, 64), (4, 16), (5, 25), (3, 9), (7, 49), (2, 4)}

first\_list = [2, 3, 4, 5, 6, 7, 8]  
print("First List ", first\_list)  
  
second\_list = [4, 9, 16, 25, 36, 49, 64]  
print("Second List ", second\_list)  
  
result = zip(first\_list, second\_list)  
result\_set = set(result)  
print(result\_set)

**Exercise 6: Find the intersection (common) of two sets and remove those elements from the first set**

**Given**:

first\_set = {23, 42, 65, 57, 78, 83, 29}

second\_set = {57, 83, 29, 67, 73, 43, 48}

**Expected Output**:

Intersection is  {57, 83, 29}

First Set after removing common element  {65, 42, 78, 23}

first\_set = {23, 42, 65, 57, 78, 83, 29}  
second\_set = {57, 83, 29, 67, 73, 43, 48}  
  
print("First Set ", first\_set)  
print("Second Set ", second\_set)  
  
intersection = first\_set.intersection(second\_set)  
print("Intersection is ", intersection)  
for item in intersection:  
 first\_set.remove(item)  
  
print("First Set after removing common element ", first\_set)

**Exercise 7: Checks if one set is a subset or superset of another set. If found, delete all elements from that set**

**Given**:

first\_set = {27, 43, 34}

second\_set = {34, 93, 22, 27, 43, 53, 48}

**Expected Output**:

First set is subset of second set - True

Second set is subset of First set -  False

First set is Super set of second set -  False

Second set is Super set of First set -  True

First Set  set()

Second Set  {67, 73, 43, 48, 83, 57, 29}

first\_set = {57, 83, 29}  
second\_set = {57, 83, 29, 67, 73, 43, 48}  
  
print("First Set ", first\_set)  
print("Second Set ", second\_set)  
  
print("First set is subset of second set -", first\_set.issubset(second\_set))  
print("Second set is subset of First set - ", second\_set.issubset(first\_set))  
  
print("First set is Super set of second set - ", first\_set.issuperset(second\_set))  
print("Second set is Super set of First set - ", second\_set.issuperset(first\_set))  
  
if first\_set.issubset(second\_set):  
 first\_set.clear()  
  
if second\_set.issubset(first\_set):  
 second\_set.clear()  
  
print("First Set ", first\_set)  
print("Second Set ", second\_set)

**Exercise 8: Iterate a given list and check if a given element exists as a key’s value in a dictionary. If not, delete it from the list**

**Given**:

roll\_number = [47, 64, 69, 37, 76, 83, 95, 97]

sample\_dict = {'Jhon':47, 'Emma':69, 'Kelly':76, 'Jason':97}

**Expected Outcome**:

After removing unwanted elements from list [47, 69, 76, 97]

roll\_number = [47, 64, 69, 37, 76, 83, 95, 97]  
sample\_dict = {'Jhon': 47, 'Emma': 69, 'Kelly': 76, 'Jason': 97}  
  
print("List:", roll\_number)  
print("Dictionary:", sample\_dict)  
  
# create new list  
roll\_number[:] = [item for item in roll\_number if item in sample\_dict.values()]  
print("after removing unwanted elements from list:", roll\_number)

**Exercise 9: Get all values from the dictionary and add them to a list but don’t add duplicates**

**Given**:

speed = {'jan': 47, 'feb': 52, 'march': 47, 'April': 44, 'May': 52, 'June': 53, 'july': 54, 'Aug': 44, 'Sept': 54}

**Expected Outcome**:

[47, 52, 44, 53, 54]

speed = {'jan': 47, 'feb': 52, 'march': 47, 'April': 44, 'May': 52, 'June': 53,  
 'july': 54, 'Aug': 44, 'Sept': 54}  
  
print("Dictionary's values - ", speed.values())  
  
speed\_list = list()  
  
# iterate dict values  
for val in speed.values():  
 # check if value not present in a list  
 if val not in speed\_list:  
 speed\_list.append(val)  
print("unique list", speed\_list)

**Exercise 10: Remove duplicates from a list and create a tuple and find the minimum and maximum number**

**Given**:

sample\_list = [87, 45, 41, 65, 94, 41, 99, 94]

**Expected Outcome**:

unique items [87, 45, 41, 65, 99]

tuple (87, 45, 41, 65, 99)

min: 41

max: 99

sample\_list = [87, 52, 44, 53, 54, 87, 52, 53]  
  
print("Original list", sample\_list)  
  
sample\_list = list(set(sample\_list))  
print("unique list", sample\_list)  
  
t = tuple(sample\_list)  
print("tuple ", t)  
  
print("Minimum number is: ", min(t))  
print("Maximum number is: ", max(t))

**Problems on Dictionary**

**Exercise 1: Convert two lists into a dictionary**

Below are the two lists. Write a Python program to convert them into a dictionary in a way that item from list1 is the key and item from list2 is the value

keys = ['Ten', 'Twenty', 'Thirty']

values = [10, 20, 30]

**Expected output:**

{'Ten': 10, 'Twenty': 20, 'Thirty': 30}

keys = ['Ten', 'Twenty', 'Thirty']  
values = [10, 20, 30]  
  
res\_dict = dict(zip(keys, values))  
print(res\_dict)

**Exercise 2: Merge two Python dictionaries into one**

dict1 = {'Ten': 10, 'Twenty': 20, 'Thirty': 30}

dict2 = {'Thirty': 30, 'Fourty': 40, 'Fifty': 50}

**Expected output:**

{'Ten': 10, 'Twenty': 20, 'Thirty': 30, 'Fourty': 40, 'Fifty': 50}

dict1 = {'Ten': 10, 'Twenty': 20, 'Thirty': 30}  
dict2 = {'Thirty': 30, 'Fourty': 40, 'Fifty': 50}  
  
dict3 = {\*\*dict1, \*\*dict2}  
print(dict3)

**Exercise 3: Print the value of key ‘history’ from the below dict**

sampleDict = {

    "class": {

        "student": {

            "name": "Mike",

            "marks": {

                "physics": 70,

                "history": 80

            }

        }

    }

}

**Expected output:**

80

sampleDict = {  
 "class": {  
 "student": {  
 "name": "Mike",  
 "marks": {  
 "physics": 70,  
 "history": 80  
 }  
 }  
 }  
}  
  
  
print(sampleDict['class']['student']['marks']['history'])

**Exercise 4: Initialize dictionary with default values**

In Python, we can initialize the keys with the same values.

**Given**:

employees = ['Kelly', 'Emma']

defaults = {"designation": 'Developer', "salary": 8000}

**Expected output:**

{'Kelly': {'designation': 'Developer', 'salary': 8000}, 'Emma': {'designation': 'Developer', 'salary': 8000}}

employees = ['Kelly', 'Emma']  
defaults = {"designation": 'Developer', "salary": 8000}  
  
res = dict.fromkeys(employees, defaults)  
print(res)  
  
# Individual data  
print(res["Kelly"])

**Exercise 5: Create a dictionary by extracting the keys from a given dictionary**

Write a Python program to create a new dictionary by extracting the mentioned keys from the below dictionary.

**Given dictionary**:

sample\_dict = {

    "name": "Kelly",

    "age": 25,

    "salary": 8000,

    "city": "New york"}

# Keys to extract

keys = ["name", "salary"]

**Expected output:**

{'name': 'Kelly', 'salary': 8000}

sampleDict = {  
 "name": "Kelly",  
 "age":25,  
 "salary": 8000,  
 "city": "New york" }  
  
keys = ["name", "salary"]  
  
newDict = {k: sampleDict[k] for k in keys}  
print(newDict)

**Exercise 6: Delete a list of keys from a dictionary**

**Given**:

sample\_dict = {

    "name": "Kelly",

    "age": 25,

    "salary": 8000,

    "city": "New york"

}

# Keys to remove

keys = ["name", "salary"]

**Expected output:**

{'city': 'New york', 'age': 25}

sample\_dict = {  
 "name": "Kelly",  
 "age": 25,  
 "salary": 8000,  
 "city": "New york"  
}  
# Keys to remove  
keys = ["name", "salary"]  
  
sample\_dict = {k: sample\_dict[k] for k in sample\_dict.keys() - keys}  
print(sample\_dict)

**Exercise 7: Check if a value exists in a dictionary**

We know how to check if the key exists in a dictionary. Sometimes it is required to check if the given value is present.

Write a Python program to check if value 200 exists in the following dictionary.

**Given**:

sample\_dict = {'a': 100, 'b': 200, 'c': 300}

**Expected output:**

200 present in a dict

sample\_dict = {'a': 100, 'b': 200, 'c': 300}  
if 200 in sample\_dict.values():  
 print('200 present in a dict')

**Exercise 8: Rename key of a dictionary**

Write a program to rename a key city to a location in the following dictionary.

**Given**:

sample\_dict = {

  "name": "Kelly",

  "age":25,

  "salary": 8000,

  "city": "New york"

}

**Expected output:**

{'name': 'Kelly', 'age': 25, 'salary': 8000, 'location': 'New york'}

sample\_dict = {  
 "name": "Kelly",  
 "age": 25,  
 "salary": 8000,  
 "city": "New york"  
}  
  
sample\_dict['location'] = sample\_dict.pop('city')  
print(sample\_dict)

**Exercise 9: Get the key of a minimum value from the following dictionary**

sample\_dict = {

  'Physics': 82,

  'Math': 65,

  'history': 75

}

**Expected output:**

Math

sample\_dict = {  
 'Physics': 82,  
 'Math': 65,  
 'history': 75  
}  
print(min(sample\_dict, key=sample\_dict.get))

**Exercise 10: Change value of a key in a nested dictionary**

Write a Python program to change Brad’s salary to 8500 in the following dictionary.

**Given**:

sample\_dict = {

    'emp1': {'name': 'Jhon', 'salary': 7500},

    'emp2': {'name': 'Emma', 'salary': 8000},

    'emp3': {'name': 'Brad', 'salary': 500}

}

**Expected output:**

{

   'emp1': {'name': 'Jhon', 'salary': 7500},

   'emp2': {'name': 'Emma', 'salary': 8000},

   'emp3': {'name': 'Brad', 'salary': 8500}

sample\_dict = {  
 'emp1': {'name': 'Jhon', 'salary': 7500},  
 'emp2': {'name': 'Emma', 'salary': 8000},  
 'emp3': {'name': 'Brad', 'salary': 6500}  
}  
  
sample\_dict['emp3']['salary'] = 8500  
print(sample\_dict)