

Exercise Problems for List

Exercise 1: Reverse a list in Python

Exercise 2: Concatenate two lists index-wise : Write a program to add two lists index-wise. Create a new list that contains the 0th index item from both the list, then the 1st index item, and so on till the last element. any leftover items will get added at the end of the new list.

Exercise 3: Turn every item of a list into its square : Given a list of numbers. write a program to turn every item of a list into its square.

L1=[Hi, Hello] & L2=[Guys, Friends].

Exercise 4: Concatenate two lists in the following order L_n=[Hi Guys, Hi friends, Hello Guys, Hello Friends]

Exercise 5: Iterate both lists simultaneously : Given a two Python list. Write a program to iterate both lists simultaneously and display items from list1 in original order and items from list2 in reverse order.

Exercise 6: Remove empty strings from the list of strings

Exercise 7: Add new item to list after a specified item

Exercise 8: Extend nested list by adding the sublist: You have given a nested list. Write a program to extend it by adding the sublist ["h", "i", "j"] in such a way that it will look like the following list.

list1 = ["a", "b", ["c", ["d", "e", ["f", "g"], "k"], "l"], "m", "n"] sub_list = ["h", "i", "j"] Expected Output: ['a', 'b', ['c', ['d', 'e', ['f', 'g', 'h', 'i', 'j'], 'k'], 'l'], 'm', 'n']

Exercise 9: Replace list's item with new value if found: You have given a Python list. Write a program to find value 20 in the list, and if it is present, replace it with 200. Only update the first occurrence of an item.

Exercise 10: Remove all occurrences of a specific item from a list: Given a Python list, write a program to remove all occurrences of item 20.

```
In [1]: 1 #1
        2 list1 = [100, 200, 300, 400, 500]
        3 list1.reverse()
        4 print(list1)
```

[500, 400, 300, 200, 100]

```
In [2]: 1 #2
        2 #Use the zip() function.
        3 #This function takes two or more iterables (like list, dict, string),
        4 list1 = ["M", "na", "i", "Ke"]
        5 list2 = ["y", "me", "s", "lly"]
        6 list3 = [i + j for i, j in zip(list1, list2)]
        7 print(list3)
        8
```

['My', 'name', 'is', 'Kelly']

Hint for Question 3: Using loop and list method

- Create an empty result list
- Iterate a numbers list using a loop
- In each iteration, calculate the square of a current number and add it to the result list using the append() method.

In [4]:

```

1  #3 (Solution way 1)
2  numbers = [1, 2, 3, 4, 5, 6, 7]
3  # result list
4  res = []
5  for i in numbers:
6      # calculate square and add to the result list
7      res.append(i * i)
8  print(res)

```

```
[1, 4, 9, 16, 25, 36, 49]
```

In [3]:

```

1  #3 (Solution way 2)
2  numbers = [1, 2, 3, 4, 5, 6, 7]
3  res = [x * x for x in numbers]
4  print(res)

```

```
[1, 4, 9, 16, 25, 36, 49]
```

In [9]:

```

1  #4
2  # Hint: Use a list comprehension to iterate two lists using a for loop
3
4  list1 = ["Hello ", "Hi "]
5  list2 = ["Guys", "Friends"]
6
7  res = [x + y for x in list1 for y in list2]
8  print(res)

```

```
['Hello Guys', 'Hello Friends', 'Hi Guys', 'Hi Friends']
```

Hint for Question 5: The `zip()` function can take two or more lists, aggregate them in a tuple, and returns it.

- Pass the first argument as a list1 and second argument as a list2[::-1] (reverse list using list slicing)
- Iterate the result using a for loop

In [10]:

```

1  #5
2  list1 = [10, 20, 30, 40]
3  list2 = [100, 200, 300, 400]
4
5  for x, y in zip(list1, list2[::-1]):
6      print(x, y)

```

```

10 400
20 300
30 200
40 100

```

```
In [ ]: 1 #6
2 #Hint- Use a filter() function to remove the None / empty type from th
3 list1 = ["Mike", "", "Emma", "Kelly", "", "Brad"]
4
5 # remove None from list1 and convert result into list
6 res = list(filter(None, list1))
7 print(res)
```

Hint for question 7: The given list is a nested list Use indexing to locate the specified item, then use the append() method to add a new item after it.

```
In [11]: 1 #7
2 list1 = [10, 20, [300, 400, [5000, 6000], 500], 30, 40]
3
4 # understand indexing
5 # list1[0] = 10
6 # list1[1] = 20
7 # list1[2] = [300, 400, [5000, 6000], 500]
8 # list1[2][2] = [5000, 6000]
9 # list1[2][2][1] = 6000
10
11 # solution
12 list1[2][2].append(7000)
13 print(list1)
```

```
[10, 20, [300, 400, [5000, 6000, 7000], 500], 30, 40]
```

Hint for Question 8: The given list is a nested list. Use indexing to locate the specified sublist item, then use the extend() method to add new items after it.

```
In [12]: 1 #8
2
3 list1 = ["a", "b", ["c", ["d", "e", ["f", "g"], "k"], "l"], "m", "n"]
4 sub_list = ["h", "i", "j"]
5
6 # understand indexing
7 # list1[2] = ['c', ['d', 'e', ['f', 'g'], 'k'], 'l']
8 # list1[2][1] = ['d', 'e', ['f', 'g'], 'k']
9 # list1[2][1][2] = ['f', 'g']
10
11 # solution
12 list1[2][1][2].extend(sub_list)
13 print(list1)
```

```
['a', 'b', ['c', ['d', 'e', ['f', 'g', 'h', 'i', 'j'], 'k'], 'l'], 'm', 'n']
```

Hint for Question 9: Use list method index(20) to get the index number of a 20. Next, update the item present at the location using the index number.

```
In [ ]: 1 #9
        2 list1 = [5, 10, 15, 20, 25, 50, 20]
        3
        4 # get the first occurrence index
        5 index = list1.index(20)
        6
        7 # update item present at Location
        8 list1[index] = 200
        9 print(list1)
```

An Introduction to Functions in Python

- A function is a block of code which only runs when it is called.
- You can pass data, known as parameters, into a function.
- A function can return data as a result.

```
In [14]: 1 # Creating a Function: In Python a function is defined using the def k
        2 def my_function():
        3     print("Hello from a function")
        4 # Calling a Function:
        5 my_function()
```

Hello from a function

```
In [18]: 1 #10
        2 list1 = [5, 20, 15, 20, 25, 50, 20]
        3
        4 # List comprehension
        5 # remove specific items and return a new List
        6 def remove_value(sample_list, val):
        7     return [i for i in sample_list if i != val] #!= means not equal to
        8
        9 res = remove_value(list1, 20)
        10 print(res)
```

[5, 15, 25, 50]

```
In [ ]: 1
```

```
In [ ]: 1
```