Python3 Exercises

LIST

WARM-UP WITH EASIER ONES

For the following exercises, make them all functions.

1. Perform sum(), multiple(), fraction() with the items in a list entered by users. Your program should also list all the operations for user to choose from.

2. Return the largest and smallest number from a list. Hint : divide and conquer

3. Find the size of each object in the list, and the size of the whole list.   Hint: int(log(n, 256))

4. Return the number of strings where the string length is 2 or more and the first and last character are same from a given list of strings.

   Sample List : ['abc', 'xyz', 'aba', '1221']
   Expected Sample Result : 2

5. Create a list, sorted in increasing order by the last element in each tuple from a given list of non-empty tuples.
   Sample List : [(2, 5), (1, 2), (4, 4), (2, 3), (2, 1)]
   Expected Result : [(2, 1), (1, 2), (2, 3), (4, 4), (2, 5)]

6. Remove duplicates from a list. If the lf the list is empty, report it accordingly.

7. Clone or copy a list.

8. What happened to the list:

   lst = ["HELLO", 5, [10], True]
   print(lst)
   lst[2].append(50)
   print(lst)

9. Write a Program to check if the n-th element exists in a given list.

10. Find the list of words that are longer than n from a given list of words.

11. Function to read in two lists and returns True if they have at least one common member

12. Print a specified list after removing the 0th, 4th and 5th elements.
    Sample List : ['Red', 'Green', 'White', 'Black', 'Pink', 'Yellow']
    Expected Output : ['Green', 'White', 'Black']

13. Generate a 3*4*6 3D array whose each element is *.

14. Write a Program to print the numbers of a specified list after removing even numbers from it.

15. Combine two lists, but remove all duplicates.

16. Get the frequency of the elements in a list.

17. Split a list of a set of numbers into 3x4

18. Create a list by concatenating a given list which range goes from 1 to n.
    Sample list : ['p', 'q']
    n =5
    Sample Output : ['p1', 'q1', 'p2', 'q2', 'p3', 'q3', 'p4', 'q4', 'p5', 'q5']

MORE DIFFICULT ONES

19. Check whether a list contains a sublist.

20. Check whether two lists are a palindrome .

21. Split a list every Nth element.
    Sample list: ['a', 'b', 'c', 'd', 'e', 'f', 'g', 'h', 'i', 'j', 'k', 'l', 'm', 'n']
    Expected Output: [['a', 'd', 'g', 'j', 'm'], ['b', 'e', 'h', 'k', 'n'], ['c', 'f', 'i', 'l']]

22. Compute the similarity between two lists.
    Sample data: ["red", "orange", "green", "blue", "white"], ["black", "yellow", "green", "blue"]
    Expected Output: Color1-Color2: ['white', 'orange', 'red']
                      Color2-Color1: ['black', 'yellow']

23. Replace the last element in a list with another list.

Sample data : [1, 3, 5, 7, 9, 10], [2, 4, 6, 8]

Expected Output: [1, 3, 5, 7, 9, 2, 4, 6, 8]

24. Find the list in a list of lists whose sum of elements is the highest.

Sample lists: [1,2,3], [4,5,6], [10,11,12], [7,8,9]

Expected Output: [10, 11, 12]

MINI-PROJECTS

25. Compute all prime numbers up to specified n using Sieve of Eratosthenes method for computing primes upto a specified number.

26. Creates a list of words, and determine the number of sets of anagrams.

TUPLE

1. Create a tuple tup = ("HELLO", 5, [], True), unpack them back into different variables

2. Expand the [ ] to 50 of them.

3. create the colon of a tuple.

4. Find the repeated items of a tuple.

5. Convert a list to a tuple.

6. Remove an item from a tuple.

7. Slice a tuple.

8. Find the length of a tuple. Then, return Nth item of a tuple.   It should also check it the tuple is empty also.

9. unzip a list of tuples into individual lists.

10. reverse a tuple.

11. Print a tuple with string formatting.

12. Replace last value of tuples in a list.   Do both of the following input sample.

    Sample list: [(10, 20, 40), (40, 50, 60), (70, 80, 90)]
    Expected Output: [(10, 20, 100), (40, 50, 100), (70, 80, 100)]

    Sample data: [(), (), ('',), ('a', 'b'), ('a', 'b', 'c'), ('d')]
    Expected output: [('',), ('a', 'b'), ('a', 'b', 'c'), 'd']

13. Sort a tuple by its float element.

    Sample data: [('item1', '12.20'), ('item2', '15.10'), ('item3', '24.5')]
    Expected Output: [('item3', '24.5'), ('item2', '15.10'), ('item1', '12.20')]

14. Count the elements in a list until an element is a tuple.