Python Practice Questions

Note: Use different methods such as loops, comprehensions, lambda, and other functions to solve the below questions where ever possible. In this way, the problem-solving approach can be improved.

1. Write a Python program to reverse a string.
    a. User Input = "DSE at Great Learning"

2. Write a Python program to find the sum of all numbers in a list(without using the inbuilt sum function).
    a. Input = [4,3,5,6,7,8,9]

3. Write a program to reverse the words in the given string
    a. Input = "Welcome to the DSE program"

4. Write a Python program to calculate the sum of digits in a number.
    a. Number = 187

5. Write a Python program to find a list's maximum and minimum elements.
    a. List1 = [10,6,7,4,8,19]

6. Write a Python program to remove the i^{th} value in a given string
    a. Sting = "Data science"
    b. I = 3 here, I is a string index position at which you have to remove the character of the string or skip the character of the string.

7. Write a program to find the length of a string using a WHILE or FOR loop or reduce function.
    a. String = "Great Learning"

8. Write a program to remove the numbers from the string.

a. Input = “Great345Learning”

9. Write a program to print even-length words in a string.
    a. The task is to print all the words with even lengths.
    b. String = “Data science is one of the fascinating fields”
10. Write a Python program to check if a string is a palindrome.
    a. String = “Racecar”

11. Write a Python program to find the common elements between two lists.
    a. List1 = [2,3,4,6,5,7,8,5]
    b. List2 = [4,9,10,4,1,7,3]

12. Write a Python program to count the frequency of each character in a string.
    a. String = “Programmer”

13. Write a Python program to check if a number is a prime number.
    a. Input1 = 7
    b. Input2 = 4

    Check the program with the input1 first and then check it out with the second input if the program is able to give accurate results in the first test case.

14. Write a Python program to check if a string is a pangram (define pangram).
    a. String = “The quick brown fox jumps over the lazy dog”

15. Write a Python program to check if a number is a perfect square.
    a. Input1 = 36
    b. Input2 = 5

16. Write a Python program to find the ASCII value of a character.
    a. Input = “S”

17. Write a Python program to calculate the product of all numbers in a list.

a. List1 = [4,3,6,8,6]

18. Write a Python program to find the factorial of the number
    a. Input = 5

19. Write a Python program to generate a Fibonacci sequence.
    a. Input = 6
    b. Generate the Fibonacci series for the number 6

20. Write a Python program to remove all vowels from a string.
    a. String = “Data science and engineering program”

21. Write a Python program to find the common characters between two strings.
    a. String1 = “Data science”
    b. String2 = “Machine Learning”

22. Write a Python program to calculate the product of all numbers in a list.
    a. List1 = [4,5,3,6,8]

23. Write a Python program to count the number of words in a string.
    a. String1 = “Data science and engineering at Great Learning”

24. Write a Python program to check if a string is a valid palindrome ignoring non-alphanumeric characters.
    a. String = “Race8car23”

25. Write a Python program to find the factorial of a number using recursion.
    a. Input_number = 7

26. Write a Python program to find the sum of all numbers in a list using recursion.
    a. Input1 = [4,5,3,6,8,12,18,14]

27. Write a Python program to find the prime numbers between two given numbers(the two numbers not included).
    a. Input:
        i. Number1 = 5
        ii. Number2 = 100

28. Write a Python program to find the second-largest number in a list
    a. Input:

       List1 = [4,5,3,6,7,2,6,8,4,6,7,3,5,6,4,7,8,12]

29. Write a Python program to find the median of a list of numbers
    a. Input:

       List1 = [4,5,3,6,7,2,6,8,4,6,7,3,5,6,4,7,8,12]

30. Write a program to find out the frequency of the words in the given list.
    a. String1 = [“Data”,”Science”,”Data”,”Python”,”Data”,”Python”]
    b. Expected output: {“Data”:3,”Python”:2,”Science”:1}

31. Write a program to construct an n*m matrix using the given list
    a. Input_list = [6, 3, 7, 2, 6, 8, 4, 3, 9, 2, 1, 3]
    b. Output = [[6, 3, 7, 2], [6, 8, 4, 3], [9, 2, 1, 3]]

32. Write a Python program to check if a number is an Armstrong(define Armstrong number) number.
    a. Input = 371
    b. Output = Yes

33. Python Program to get the Longest Alphabetic order of the Kth index from list values
    a. Explanation: Given a string list, the task is to write a Python program to extract Strings that form the longest increasing alphabetic order at the Kth index. K should be less than the minimum length of all strings.

b. Input: input_list = [“gfg”, “is”, “best”, “for”, “geeks”, “and”, “cs”], K = 0

c. Output: [‘best’, ‘for’, ‘geeks’]

34. Write a Python program to remove duplicates from a list without using the remove function.
    a. input = [3,4,5,7,4,5,6]
    b. Output = [3,4,5,7,6]

35. Python Program to Split each word according to a given percent
    a. Given Strings with words, the task is to write a Python program to split each word into two halves based on assigned percentages according to the given values.
    b. Input: 'Great Learning is the one of the best institutes that provides great learning'
    c. Output: ‘Gr eat Lear ning i s t he o ne o f t he be st insti tutes th at prov ides gr eat lear ning’
    d. An explanation for the output: Each word after splitting by 50 percent, the result is the output

36. Consider the following dictionary

    fruits={'apple':10, 'orange':6, 'bananas':30}

    Do the following
    1. Modify value of key orange to 50
    2.. Add a key tomato with a value of 100
    3. Print out the contents of the dictionary as tuples
    4. Change it to a pandas data frame

37. Write a Python program to find the smallest missing number in a list of integers.
    a. List1 = [30,31,32,33,35,39]

       Answer is 34

       Explanation: The smallest missing number is 34 in this case.

38. The median of the Two lists

    Given two lists nums1 and nums2 of size m and n respectively, return the median of the two lists.

    a. Example 1:

       Input: nums1 = [1,3], nums2 = [2]

Output: 2.00000

Explanation: merged list = [1,2,3] and the median is 2.

b. Example 2:

Input: nums1 = [1,2], nums2 = [3,4]

Output: 2.50000

Explanation: merged array = [1,2,3,4] and the median is (2 + 3) / 2 = 2.5.

39. Longest Palindromic Substring: -

Given a string s, return the longest palindromic substring in s.

a. Example 1:

Input: s = "cbbd"

Output: "bb"

b. Example 2:

s = "babad"

Output: "bab"

Explanation: "aba" is also a valid answer.

40. Longest Substring Without Repeating Characters

Given a string s, find the length of the longest substring without repeating characters.

Example 1:

Input: s = "abcabcbb"

Output: 3

Explanation: The answer is "abc", with a length of 3.

41. Given a list of integer numbers and an integer target, return indices of the two numbers such that they add up to the target.

a. You may assume that each input would have exactly one solution, and you may not use the same element twice.

b. You can return the answer in any order.

c. Input: nums = [2,7,11,15], target = 9

d. Output: [0,1]

e. Explanation: Because nums[0] + nums[1] == 9, we return [0, 1].

42. Python program to get all possible slices of a string for K number of slices
    a. Given a string, the task is to write a Python program to get all possible slices for the K number of slices.
    b. Input:
        i. String = “DSECOURSE”,
        ii. K = 3
    c. Output:

    [['D', 'S', 'ECOURSE'], ['D', 'SE', 'COURSE'], ['D', 'SEC', 'OURSE'], ['D', 'SECO', 'URSE'], ['D', 'SECOU', 'RSE'], ['D', 'SECOUR', 'SE'], ['D', 'SECOURS', 'E'], ['DS', 'E', 'COURSE'], ['DS', 'EC', 'OURSE'], ['DS', 'ECO', 'URSE'], ['DS', 'ECOU', 'RSE'], ['DS', 'ECOUR', 'SE'], ['DS', 'ECOURS', 'E'], ['DSE', 'C', 'OURSE'], ['DSE', 'CO', 'URSE'], ['DSE', 'COU', 'RSE'], ['DSE', 'COUR', 'SE'], ['DSE', 'COURS', 'E'], ['DSEC', 'O', 'URSE'], ['DSEC', 'OU', 'RSE'], ['DSEC', 'OUR', 'SE'], ['DSEC', 'OURS', 'E'], ['DSECO', 'U', 'RSE'], ['DSECO', 'UR', 'SE'], ['DSECO', 'URS', 'E'], ['DSECOU', 'R', 'SE'], ['DSECOU', 'RS', 'E'], ['DSECOUR', 'S', 'E']]

    Explanation:

    All possible 3 slices for constructing string are returned.

43. Python program to Reverse a range in a list
    a. Given a List, our task is to write a Python program to reverse a range in the list.
    b. List1 = [6, 3, 1, 8, 9, 2, 10, 12, 7, 4, 11], end = 3, 9
    c. **Output :** [6, 3, 1, 7, 12, 10, 2, 9, 8, 4, 11]
    d. **Explanation:** 8, 9, 2, 10, 12, 7 are reversed in the list to 7, 12, 10, 2, 9, 8.

44. Python program to extract rows from Matrix that has distinct data types
    a. Given a Matrix, the task is to write a Python program to extract rows with no repeated data types.
    b. **input :** test_list = [[4, 3, 1], [“python”, 3, {4:2}], [3, 1, “java”], [9, (2, 3)]]
    c. **Output :** [[‘python’, 3, {4: 2}], [9, (2, 3)]]
    d. **Explanation :** [4, 3, 1] are all integers hence omitted. [9, (2, 3)] has integer and tuple, different data types, hence included in results.

45. Python program to sort Palindrome Words in a Sentence
    a. Given a string **S** representing a sentence, the task is to reorder all the palindromic words present in the sentence in sorted order.
    b. **Input:** S = “Please refer to the madam to know the level”
    c. **Output:** Please level to the madam to know the refer
    d. **Explanation:** Here “refer”, “madam”, and “level” are the palindromic words. Sorting them generates the sequence {“level”, “madam”, “refer”}.
46. Python Program to Split joined consecutive similar characters
    a. Given a String, our task is to write a Python program to split on the occurrence of a non-similar character.
    b. **Input :** test_str = ‘DDDSSSEEE’
    c. **Output :** ['DDD', 'SSS', 'EEE']
    d. **Explanation:** All similar consecutive characters are converted to separate strings.

47. Python program to display the half-diamond pattern of numbers with a star border
    a. Given a number n, the task is to write a Python program to print a half-diamond pattern of numbers with a star border.
    b. **Input:** n = 5
    c. **Output:**

```
*
*1*
*121*
*12321*
*1234321*
*123454321*
*1234321*
*12321*
*121*
*1*
*
```

48. Python Program to remove a specific digit from every element of the list

a. Given a list of elements, the task here is to write a Python program that can remove the presence of all a specific digit from every element and then return the resultant list.
b. **Input**: test_list = [333, 893, 1948, 34, 2346], K = 3
c. **Output** : [", 89, 1948, 4, 246]
d. **Explanation**: All occurrences of 3 are removed.

49. Python program to Sort a List of Dictionaries by the Sum of their Values
    a. Given the Dictionary List, sort by summation of their values.
    b. **Input** : list1 = [{1 : 3, 4 : 5, 3 : 5}, {1 : 100}, {8 : 9, 7 : 3}]
    c. **Output** : [{8: 9, 7: 3}, {1: 3, 4: 5, 3: 5}, {1: 100}]
    d. **Explanation**: 12 < 13 < 100, sorted by values sum

50. Python program to find start and end indices of all Words in a String
    a. Given a String, return all the start indices and end indices of each word.
    b. The original string is: Machine Learning is Best for DSE
    c. Word Ranges are: [(0, 6), (8, 15), (17, 18), (20, 23), (25, 27), (29, 31)]
    d. Explanation: The machine starts with the 0th index and ends with the 6th index.

51. Consider the following list

lst=[['Python', 'creativity', 'universe'], ['interview', 'study', 'job', 'university', 'lecture'], ['task', 'objective', 'aim', 'subject', 'programming', 'test', 'research']]

From a list of the list get tuples having the list, number of items in the list and the longest word

Example Output: [(['Python', 'creativity', 'universe'], 3, 'creativity'),...]

52. Define a number" as a list of digits.
    a. Inputs:
        i. x=[3,1,4,1,5,9,2,6,5,3,5,8,9,7,9,3,2,3,8,5]
        ii. y=[2,7,1,8,2,8,1,8,2,8,4,5,9,0,4,5,5,3,4,9]

Write a program that:

a. Finds the sum (x+y) considered as 20-digit numbers" and prints it as a list of digits.
b. Finds the product 15*x considered as a product of numbers" and prints it as a list of digits.

53. Get a password as input from the user and check whether the password has combinations of uppercases,numbers&lower cases. if not ask the user to give the input again.

54. Define a function that can generate a dictionary where the keys are numbers between 1 and 20 (both included) and the values are squares of keys. The function should just print the keys only.

55. Write a function called roll() that returns a list of three rolled dice. It is expected that roll() will yield different results each time called.

56. Write a function called repeatString(myString, n) that prints myString a total of n times.

57. Write a function to find the given number in the list and returns the index position of it if the value is found in the list else return -1. Use the binary search method to solve this problem
    a. Input:
        i. arr = [2, 3, 4, 10, 40]
        ii. x = 10

58. Write a function to find the given number in the list and returns the index position of it if the value is found in the list else return -1. Use the binary search method with using a recursive method to solve this problem
    a. Input:
        i. arr = [2, 3, 4, 10, 40,90,78]
        ii. x = 99

59. Write a function to detect the 13th Friday. The function can accept two parameters, and both will be numbers. The first parameter will be the number indicating the month, and the second will be the year in four digits. Your function should parse the parameters, and it must return True when the month contains a Friday with the 13th, else return False.

a. Input:
    i. Month = 6
    ii. Year = 2000

60. Write a function in Python to parse a string such that it accepts a parameter- an encoded string. This encoded string will contain a first name, a last name, and an id. You can separate the values in the string by any number of zeros. The id will not contain any zeros. The function should return a Python dictionary with the first name, last name, and id values.
    a. Example:

        For example, if the input would be "John000Doe000123". Then the function should return: { "first_name": "John", "last_name": "Doe", "id": "123" }