CONSULTADD *presents*

PYTHON ASSIGNMENT

INSTRUCTIONS

Hi There,

- To Start the assignments you have to create a package named Python Assignments and make a directory named Beginner, attempt the questions in that directory creating different files name Q1.py, Q2.py.... and so on.
- This task contains 12 questions for **Level - I Beginner Level.**
- All the questions are **compulsory.**
- To submit the assignments create a git repository of the package and upload that repository to **GitHub** and share the respective link to your trainer or support trainer.

LEVEL - 1

1.Write a program in Python to perform the following operation:

- If a number is divisible by 3 it should print “Consultadd” as a string
- If a number is divisible by 5 it should print “Python Training” as a string
- If a number is divisible by both 3 and 5 it should print “Consultadd - Python Training” as a string.

2. Write a program that accepts a string as input from the user and calculates the number of digits and letters.

Input: Hello123

Output: Alphabets: 5 & Number : 3

3. Write a Python program to input marks for five subjects Physics, Chemistry, Biology, Mathematics, and Computer. Calculate the percentage and grade according to the following:

- Percentage >= 90% : Grade A
- Percentage >= 80% : Grade B
- Percentage >= 70% : Grade C
- Percentage >= 60% : Grade D
- Percentage >= 40% : Grade E
- Percentage < 40% : Grade F

4. Write a Python program to find the sum of all odd numbers between two given numbers.

Start = 1, stop = 10

Sum of odd numbers: 25

LEVEL - 1

5. Write a Python program to find the factorial of a number using a for loop.

6. Write a Python program to check if a given number is a perfect number.
A Perfect number is a positive integer that is equal to the sum of its proper divisors. For instance, 6 has divisors 1, 2, and 3, and 1 + 2 + 3 = 6, so 6 is a perfect number.

Input: 5
Output: No

7. Write a Python program to check if a string is an anagram of another string.

string1 = "listen", string2 = "silent"
Output: True

8. Write a Python program to calculate the LCM (Least Common Multiple) of two numbers.

number1 = 12, number2 = 18
LCM of 12 and 18 are: 36

9. Write a Python program to count the frequency of each element in a list.

Input_list = [1, 2, 3, 2, 4, 1, 2, 4, 5]
Frequency count: {1: 2, 2: 3, 3: 1, 4: 2, 5: 1}

LEVEL - I

10. Write a Python program to reverse the order of words in a given sentence.

Input_sentence = “Hello, World! Welcome to Python programming.”

Output after reverse = “programming. Python to Welcome World! Hello,”

11. Write a Python program to calculate the sum of digits of a given number until the sum becomes a single-digit number.

Sample Input: num = 987

Sample Output: Sum_of_digits = 24,

Again compute the sum of digits so that it can be reduced to on single digit.

Final Output: 6

12. Write a Python program to reverse a number using a while loop.

Sample Input: num = 12345

Sample Output: revnum = 54321

LEVEL - II

1. Write a Python program to find the common elements between two lists.

   Sample Input: l1 = [1, 2, 3, 4, 5] and l2 = [4, 5, 6, 7, 8]

   Sample output: [4, 5]

2. Create a function that takes a list and returns a new list with unique elements of the first list.

   Sample Input: list1 = [1, 2, 2, 3, 4, 4, 5, 5]

   Sample Output: list2 = [1, 2, 3, 4, 5]

3. Given an array of N integers and an integer K, find the number of pairs of elements in the array whose sum is equal to K.

   Sample Input: arr = [1, 2, 3, 4, 5], k = 6

   Sample Output: Pair count: 2

4. Given an array of size N. The task is to rotate array by D elements towards right

   Sample Input: arr = [1, 2, 3, 4, 5], D = 2

   Sample Output: arr after rotation = [4, 5, 1, 2, 3]

LEVEL - II

5. You are developing a program that analyzes weather data. Write a Python function that takes a list of temperature readings for a specific location and determines the average temperature, highest temperature, and lowest temperature.

Input: temperature_readings = [25, 28, 21, 24, 27]
Output:
Average Temperature: 25.0
Highest Temperature: 28
Lowest Temperature: 21

6. Write a Python program to check if a number is a power of two using recursion.

7. Write a Python function that finds the median of a list of numbers.
Sample Input: number_list = [7, 2, 5, 1, 9, 3]
Sample Output: Median: 4.0

8. Write a Python function that counts the number of vowels in a given string.

Sample Input: string = "Hello, World!"
Sample Output: Number of vowels: 3

9. Write a Python program that executes an operation on a list and handles an IndexError exception if the index is out of range.

LEVEL - II

10. We are making n stone piles! The first pile has n stones. If n is even, then all piles have an even number of stones. If n is odd, all piles have an odd number of stones. Each pile must have more stones than the previous pile but as few as possible. Write a Python program to find the number of stones in each pile.

Sample Input: n = 7

Sample Output: Stones in a single pile = [2, 4, 6]

11. Write a Python program to create a list of given strings individually of the list using the Python map function.

Eg. Input:

['Red', 'Blue', 'Black', 'White', 'Pink']

Output:

[['R', 'e', 'd'], ['B', 'l', 'u', 'e'], ['B', 'l', 'a', 'c', 'k'], ['W', 'h', 'i', 't', 'e'], ['P', 'i', 'n', 'k']]

12. Create a login page backend to ask users to enter the username and password. Make sure to ask for a Re-Type Password and if the password is incorrect give a chance to enter it again but it should not be more than 3 times.

13. Write a Python program to find if a given string starts with a given character using Lambda.

Sample input: input_string = "Hello, World!", given_char = "H"

Sample Output: True

LEVEL - III

1.Read the doc.txt file using Python File handling concept and return only the even length string from the file. Consider the content of doc.txt as given below:

Hello I am a file

Where you need to return the data string which is of even length. Make sure you return the content in The same link as it is present.

2. Write a program to count the lines in a file “demo.txt”

3. Aditi has used text editing software to type some text. After saving the article as words.txt, she realized that she had wrongly typed the alphabet “J" instead of “I" everywhere in the article.
Write a function definition for JtoI() in Python that would display the corrected version of the entire content of the file WORDS.TXT with all the alphabet "J" to be displayed as an alphabet "I" on the screen.
Note: Assume that words.txt does not contain any J alphabet otherwise.

4. Define a class named Shape and its subclass Square. The Square class has an init function which takes length as argument. Both classes have an area function which can print the area of the shape where Shape’s area is 0 by default.

LEVEL - III

5. Create a class 'Time' and initialize it with hours and minutes. Create a method addTime() which should take two Time objects and add them.

E.g.- (2 hour and 50 min)+(1 hr and 20 min) is (4 hr and 10 min)

Create another method displayTime() which should print the time. Also, create a method displayMinute() which should display the total minutes in the Time.
E.g.- (1 hr 2 min) should display 62 minutes.

6. Create the custom Python classes which have methods and attributes and implement single inheritance, multiple inheritance, and multilevel inheritance

7. Write a program to construct a dictionary from the two lists containing the names of students and their corresponding subjects. The dictionary should map the students with their respective subjects. Let's see how to do this using for loops and dictionary comprehension.

Input: [Sam, Alice, Mona] ,
[Commerce, Science, Computer]
Output: [Sam: Commerce, Alice: Science , Mona: Computer]

LEVEL - III

8. You need to write a function that accepts an encoded string as a parameter.
This string will contain a first name, last name, and an id.
Values in the string can be separated by any number of zeros. The id is a numeric value but will contain no zeros. The function should parse the string and return a Python dictionary that contains the first name, last name, and id values.
For example:

Input : "Robert000Smith000123"

Output:

{ "first_name": "Robert", "last_name": "Smith", "id": "123" }

9. Given an input string, write a function that returns the run length encoded string for the input string.
For Example:

Input: wwwwaaadebbbbbw

Output: w4a3d1e1b5w1

10. A cafe has N computers. Several customers come to the cafe to use these computers. A customer will be serviced only if there is any unoccupied computer at the moment the customer visits the cafe. If there is no unoccupied computer, the customer leaves the cafe.

LEVEL - III

You are given an integer N representing the number of computers in the cafe and a sequence of uppercase letters S. Every letter in S occurs exactly two times. The first occurrence denotes the arrival of a customer and the second occurrence denotes the departure of the same customer if he gets allocated the computer.

You have to find the number of customers that walked away without using a computer.

Example 1:

Input:

N = 3

S = GACCBDDBAGEE

Output: 1

Explanation: Only D will not be able to get any computer. So the answer is 1.

Example 2:

Input:

N = 1

S = ABCBAC

Output: 2

Explanation: B and C will not be able to get any computers. So the answer is 2.

Don't feel shy to ask questions !