**String-related and Integer-related Functions**

1. Write a function to
   1. add three numbers.
   2. multiply two numbers.
   3. subtract two numbers.
   4. divide first number by second number and return the quotient and remainder separately.
   5. find the square of a number.
   6. find the greater of the two numbers given. | max() conditionals and looping
   7. find the cube of a number.
   8. find the area of a square.
   9. find the area of a circle.
   10. find the simple interest given principal, interest rate and time period.
   11. find the compound interest given principal, interest rate and time period.
   12. print a random integer between two given integers. | random - figure out which function of random module
   13. print 5 random integers between two given integers.
       1. random module
       2. for loop
       3. while loop
       4. loop inside function
       5. loop outside function
   14. check if a number is prime or not. | loop + conditionals + modulus operator
   15. compute 5/0 and use try/except to catch the exceptions. Also, print the exception.
2. Write a function to remove vowels from a given string.
3. Write a function to find if a string is palindrome or not.
4. Write a function to reverse a string.
5. Write a function to find if a given string consists of all 5 vowels.
6. Write a function to print character and its frequency of occurrence in a given string.
7. Write a function to remove all non-alphabetic and non-numeric characters from the given string.
8. Given a pattern that a URL starts with http:// and ends with .com, write a function to determine if the given string is a URL.
9. Write a function to clean string using given rules:
   1. remove “ing” from the end of the word.
   2. remove more than one consecutive space and replace with a single space.
   3. remove comma, fullstop, hyphen from the given string.
10. Write a function to convert a given string to datetime.
11. Leetcode: 1108: Given a valid (IPv4) IP address, return a defanged version of that IP address. A defanged IP address replaces every period "." with "[.]".
    1. Example 1:
       1. Input: address = "1.1.1.1"
       2. Output: "1[.]1[.]1[.]1"
12. Leetcode: 1408: Given an array of string words. Return all strings in words which are substrings of another word in any order. String words[i] is substring of words[j], if can be obtained by removing some characters to the left and/or right side of words[j].
    1. Example 1:

Input: words = ["mass","as","hero","superhero"]

Output: ["as","hero"]

Explanation: "as" is substring of "mass" and "hero" is substring of "superhero".

["hero","as"] is also a valid answer.

1. Write a function to
   1. return 3rd letter of the given string or None if the given string is less than 3 characters. | Index
   2. return odd indexed characters from a given string or None if the string is empty. | Index with Integer operations | for + integer
   3. return the 3rd to 5th character of the given string or None if the string is less than five characters. | Slicing with length and conditionals
   4. return the joined string given two input strings. | Concatenate
   5. return all the words of a given string split on space (“ “) without using the inbuilt method of .split(). | Loop and conditionals
   6. return the number of times “a” appears in the given string.
   7. return the number of times vowels appear in the given string. | list
   8. return the character which appears the most number of times in the given string.
   9. return the number of times each character appears in the string.
   10. return the string after removing the character “i” from the given string.
   11. return the string after removing all vowels from the given string.
   12. return the string converted to title case, lowercase and uppercase.
   13. check if a string is palindrome or not. | interview question - advanced
   14. print the company name of a given email address where the email addresses are in the "username@companyname.com" format and are composed of only alphabets.

**List and Dictionaries**

1. Write a function to print the sum of all values of a dictionary.
2. Write a function to print the sum of all keys of a dictionary.
3. Write a function to print the keys and values of a dictionary in sorted order.
4. Write a function to merge two sorted lists into a third sorted list.
5. Write a function to find all the pairs of two integers in an unsorted array that sum up to a given value.
6. Write a function to remove all duplicate words from a given text.
7. Write a function to sort a list of tuples by the second element of the tuple.
8. Given two lists, write a function to print the elements present in the first list which are not present in the second list.
9. Given a list of strings, create all possible anagrams and store as a dictionary where key is the string and value is the list of anagrams.
   1. given\_list = [“abc”, “efg”]  
      result = { “abc”: [“abc”, “acb”, “bac”, “bca”, “cab”, “cba”], “efg”: [...]}
10. Write a function to find the maximum product of two elements in a list of integers.
11. Given two lists, write a function to find the maximum product of two elements within or across both lists.
12. Questions: Write a function to:
    1. sum all the elements of a list.
    2. find the largest element in the given list.
    3. to find the second largest number in a list.
    4. find the smallest element in the given list.
    5. to interchange first and last elements in a list.
    6. Python program to swap 3rd and 5th elements of a list else return None if the list has less than 3 elements.
    7. to find the length of the given list without using the len() function.
    8. to check if an element exists in the given list.
    9. print the elements of the list in the reverse order.
    10. find the product of all the numbers in the list.
    11. to print even numbers in a list
    12. to print odd numbers in a list
    13. to print values present at even index in the list (0, 2, 4 etc)
    14. to print values present at odd index in the list (0, 2, 4 etc)
    15. to print positive numbers in a list
    16. to print negative numbers in a list
    17. to print all positive numbers in a range
    18. to print all negative numbers in a range
    19. to print all the words in uppercase in a given list.
    20. to find which elements present in the first list are not present in the second list.
    21. to print the number of times each element occurs in the list.