

1. Write a Python function that takes a sequence of numbers and determines if all the numbers are different from each other.
2. Write a Python program to create all possible strings by using 'a', 'e', 'i', 'o', 'u'. Use the characters exactly once.
3. Write a Python program to remove and print every third number from a list of numbers until the list becomes empty.
4. Write a Python program to find unique triplets whose three elements gives the sum of zero from an array of n integers.
5. Write a Python program to create the combinations of 3 digit combo.
6. Write a Python program to print a long text, convert the string to a list and print all the words and their frequencies.
7. Write a Python program to count the number of each character of a given text of a text file.
8. Write a Python program to get the top stories from Google news.
9. Write a Python program to get a list of locally installed Python modules.
10. Write a Python program to display some information about the OS where the script is running.
11. Write a Python program to check the sum of three elements (each from an array) from three arrays is equal to a target value. Print all those three-element combinations.  
Sample data:  

```
/*  
X = [10, 20, 20, 20]  
Y = [10, 20, 30, 40]  
Z = [10, 30, 40, 20]  
target = 70  
*/
```
12. Write a Python program to create all possible permutations from a given collection of distinct numbers.

13. Write a Python program to get all possible two digit letter combinations from a digit (1 to 9) string.

```
string_maps = {  
"1": "abc",  
"2": "def",  
"3": "ghi",  
"4": "jkl",  
"5": "mno",  
"6": "pqrs",  
"7": "tuv",  
"8": "wxy",  
"9": "z"  
}
```

14. Write a Python program to add two positive integers without using the '+' operator.

Note: Use bit wise operations to add two numbers.

15. Write a Python program to check the priority of the four operators (+, -, \*, /).

16. Write a Python program to get the third side of right angled triangle from two given sides.

17. Write a Python program to get all strobogrammatic numbers that are of length n. A strobogrammatic number is a number whose numeral is rotationally symmetric, so that it appears the same when rotated 180 degrees. In other words, the numeral looks the same right-side up and upside down (e.g., 69, 96, 1001).

For example,

Given n = 2, return ["11", "69", "88", "96"].

Given n = 3, return ['818', '111', '916', '619', '808', '101', '906', '609', '888', '181', '986', '689']

18. Write a Python program to find the median among three given numbers.

19. Write a Python program to find the value of n where n degrees of number 2 are written sequentially in a line without spaces.

20. Write a Python program to find the number of zeros at the end of a factorial of a given positive number.

Range of the number(n): ( $1 \leq n \leq 2^{109}$ ).

21. Write a Python program to find the number of notes (Sample of notes: 10, 20, 50, 100, 200 and 500 ) against an given amount.

Range - Number of notes(n) : n ( $1 \leq n \leq 1000000$ ).

22. Write a Python program to create a sequence where the first four members of the sequence are equal to one, and each successive term of the sequence is equal to the sum of the four previous ones. Find the Nth member of the sequence.

23. Write a Python program that accept a positive number and subtract from this number the sum of its digits and so on. Continues this operation until the number is positive.

24. Write a Python program to find the number of divisors of a given integer is even or odd.

25. Write a Python program to find the digits which are absent in a given mobile number.

26. Write a Python program to compute the summation of the absolute difference of all distinct pairs in an given array (non-decreasing order).

Sample array: [1, 2, 3]

Then all the distinct pairs will be:

1 2

1 3

2 3

27. Write a Python program to find the type of the progression (arithmetic progression/geometric progression) and the next successive member of a given three successive members of a sequence.

According to Wikipedia, an arithmetic progression (AP) is a sequence of numbers such that the difference of any two successive members of the sequence is a constant. For instance, the sequence 3, 5, 7, 9, 11, 13, . . . is an arithmetic progression with common difference 2. For this problem, we will limit ourselves to arithmetic progression whose common difference is a non-zero integer.

On the other hand, a geometric progression (GP) is a sequence of numbers where each term after the first is found by multiplying the previous one by a fixed non-zero number called the common ratio. For example, the sequence 2, 6, 18, 54, . . . is a

geometric progression with common ratio 3. For this problem, we will limit ourselves to geometric progression whose common ratio is a non-zero integer.

28. Write a Python program to print the length of the series and the series from the given 3rd term, 3rd last term and the sum of a series.

Input data:

3rd term - 3

3rd last term - 118 55

Sum of the series - 91

29. Write a Python program to find common divisors between two numbers in a given pair

30. Write a Python program to reverse the digits of a given number and add it to the original, If the sum is not a palindrome repeat this procedure.

Note: A palindrome is a word, number, or other sequence of characters which reads the same backward as forward, such as madam or racecar.

31. Write a Python program to count the number of carry operations for each of a set of addition problems.

According to Wikipedia " In elementary arithmetic, a carry is a digit that is transferred from one column of digits to another column of more significant digits. It is part of the standard algorithm to add numbers together by starting with the rightmost digits and working to the left. For example, when 6 and 7 are added to make 13, the "3" is written to the same column and the "1" is carried to the left".