1. Write a program to generate a fancy number for a new vehicle considering the following constraints:
2. The fancy number should have 4-digits.
3. The sum of these 4-digits should be 12.
4. The 3rd digit should be equal to the difference between the 1st and the 2nd digit.
5. The 4th digit should be equal to the sum of the 1st and the 3rd digit.

The program should be able to generate all the possible 4-digit numbers that meet the above listed criteria.

1. Write a program to accept a two-dimensional array containing integers as the parameter and determine the following from the elements of the array:
2. element with minimum value in the entire array
3. element with maximum value in the entire array
4. the elements with minimum and maximum values in each column
5. the elements with minimum and maximum values in each row

Example:

Input:

[[0 1 2 3]  
 [3 4 5 5]  
 [6 7 8 8]  
 [9 0 1 9]]

Output:

minimum value element in the array: 0

maximum value element in the array: 9

elements with minimum values column-wise: [0 0 1 3]  
 elements with maximum values column-wise: [9 7 8 9]  
 elements with minimum values row-wise: [0 3 6 0]

elements with maximum values row-wise: [3 5 8 9]

1. Write a program to determine the work hours of the day entered based on the timetable provided below.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Mon | Tue | Wed | Thu | Fri | Sat | Sun |
| 3 | 3 | 3 | 3 | 3 | 3 | 0 |
| 2 | 2 | 2 | 2 | 2 | 1 | 0 |
| 2 | 2 | 2 | 1 | 1 | 0 | 0 |

Example:

Input: Thu

Output: [3,2,1]

Input: Sat

Output: [3,1,0]

1. Write a program to accept an input string from the user and determine the vowels in the string and calculate the number of vowels. (Hint: Use *filter* method.)

Example:

Input: quintessential

Output: ['u', 'i', 'e', 'e', 'i', 'a']; 6

1. Write a program to add the elements of 2 arrays that are of the same dimension. (Hint: Use *map* method.)

Example:

Input:

x = [1,2,3,4]

y = [5,6,7,8]

Output:

z = [6,8,10,12]

1. Write a program to find the sum of the given elements of the list. (Hint: Use *reduce* method.)

Example:

Input:

list = [1, 2, 3, 4, 5, 6, 7, 8, 9]

Output:

Sum of elements = 45

1. Write a program to find the sum of squares of only the even numbers in the given list. (Hint: Use the methods *filter*, *map*, *reduce*.)

Example:

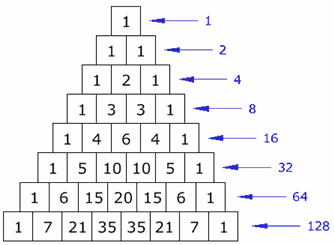
Input:

list = [1, 2, 3, 4, 5, 6, 7, 8, 9]

Output:

Sum of squares of even numbers = 120

1. Write a function which implements the Pascal's triangle.



1. Write a program to find the word(s) that occur maximum and minimum number of times in the given paragraph. Also, display those words next to their respective count.

Input:

"Comprehensions are a feature of Python which I would really miss if I ever have to leave it. Comprehensions are constructs that allow sequences to be built from other sequences. Several types of comprehensions are supported in both Python 2 and Python 3."

Output:

Word appearing maximum times: *abcdefg*; *x* times

Word appearing minimum times: *pqrstuv*; *y* times

(Where *abcdefg* and *pqrstuv* are words from the given paragraph; *x* and *y* are the number of instances these words appear in the paragraph.)

1. Write a program to count the number of unique words and the number of occurrences of each of those words from the question provided below.

Input:

"How much wood would a woodchuck chuck if the woodchuck could chuck wood?"

Output:

Number of unique words: *x*

*abcd*: *p* times

*efgh*: *q* times

*rstu*: *t* times

……

(Where *abcd, efgh* and *stuv* are words from the given input question; *p, q* and *t* are the number of instances these words appear in the input.)

1. Following are the initials of players who play various games. Some of these players play more than one game.

Cricket: [ "PKM", "ALN", "GLN", "NVR", "PVR", "KM", "VP", "CS", "MCS"]

Football: [ "PKM", "ALN","RMZ","CS", "MCS"]

Badminton: [ "PKM", "ALN", "NV", "KM","RMV"]

Write a program to:

1. List those players who play all three games.
2. List those players who play exactly one game.