Capgemini Coding Challenge

1) Problem Statement

u have write a function that accepts a String which length is "len", the String has Some "#", in it u have to move all the hashes to front of the string and return the whole String back & print it.

Python

```
S = "Move# Hash# to# Front"
hashes = [ch for ch in S if ch == '#']
others = [ch for ch in S if ch != '#']

result = ''.join(hashes + others)
print(result)
```

2) Problem Statement

M T W T F S S

COMPASS

Date :

Given a string with consecutive duplicate characters, compress it by replacing consecutive duplicates with character followed by its count.

python

```
S = "aabbbeeeeffggg"
Compressed = []
count = 1

for i in range(1, len(S)):
    if S[i] == S[i-1]:
        count += 1
    else
        Compressed.append[S[i-1] + (str(count) if count > 1 else "")]
        count = 1

Compressed.append(S[-1] + (str(count) if count > 1 else ""))

result = ''.join(Compressed)
print(result)
```

Output:- a2b4e4f2g3

3) Problem statement (Spiral matrix Traversal)

Given an m x n matrix, traverse it's elements in a spiral order

Python

COMPASS

M T W T F S S

Date:

Input:-

5 -1
1 2 3 4
5 6 7 8
9 10 11 12
13 14 15 16
17 18 19 20

output:- 1 2 3 4 8 12 16 20 19 18 17 13 9 5 6 7 11 15 14 10

Code

```
def spiralOrder(matrix):
    if not matrix:
        return []
    res = []
    top, bottom = 0, len(matrix)-1
    left, right = 0, len(matrix)[0])-1

    while top <= bottom and left <= right:
        for i in range(left, right+1):
            res.append(matrix[top][i])
        top += 1

        for i in range(top, bottom+1):
            res.append(matrix[i][right])
        right -= 1

        if top <= bottom:
            for i in range(right, left-1, -1):
                res.append(matrix[bottom][i])
```

M T W T F S S

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Date :

```
        bottom -= 1
    if left <= right:
        for i in range(bottom, top, -1):
            res.append(matrix[i][left])
        left += 1
return res

matrix = [
        [1,2,3,4],
        [5,6,7,8],
        [9,10,11,12],
        [13,14,15,16],
        [17,18,19,20]
]
print(SpiralOrder(matrix))
```

4) problem statent : Count integer occurance

Given an array of integers count & print occurances of each unique integer in format.

<number> occurs <count> times.

Input :- 10
12 3 3 4 1 4 5 1 2

output :- 1 occurs 3 times
2 occurs 2 times
3 occurs 2 times
4 occurs 2 times
5 occurs 1 times.

Code:

```
arr = list(map(int, input().split()[1:]))
freq = {}
for num in arr:
    freq[num] = freq.get(num, 0) + 1
for num in sorted(freq):
    print(f"{num} occurs {freq[num]} times")
```

5) Problem Statement (Solve Equation)

Given values for a, b, & (compute coeff of eq:

$$a^3 + a^2b + 2a^2b + 2ab^2 + ab^2 + b^3$$

Code:-

```
a, b = map(int, input().split())
term1 = a**3
term2 = a**2 * b
term3 = 2 * a**2 * b
term4 = 2 * a * b**2
term5 = a * b**2
term6 = b**3
result = term1 + term2 + term3 + term4 + term5
         + term6
print(result)
```

6) Problem Statement

A function tell us
1. How many dealership there are

M T W T F S S

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Date :

2 The total no. of cars in each dealership our task is to calculate how many tyres would be in each dealership.

Input :-

3
4.2
4.0
1.2

Output :-

20
16
8

Code :-

```
N = int(input())
for i in range(N):
    value = float(input())
    integer_part = int(value)
    decimal_part = value - integer_part
    decimal_tyres = round(decimal_part
                          * 20)
    total_tyres = integer_part * 4 + deci
                  al_tyres
    print(total_tyres)
```