Problem Solving & Coding – Level I
[Data Structure Foundations]
(Array Applications)

Solve the following problems using computer with help of Python/C++/Java/C# language as means of communication.

Problem 1: Scrabble Score

In the game of Scrabble, each letter has points associated with it. The total score of a word is the sum of the scores of its letters. Create a function named *wordScore* that returns the total score of the given word. More common letters are worth fewer points while less common letters are worth more points. The points associated with each letter are shown below:

One point	A, E, I, L, N, O, R, S, T and U
Two points	D and G
Three points	B, C, M and P
Four points	F, H, V, W and Y
Five points	K
Eight points	J and X
Ten points	Q and Z

Write a main program that demonstrates your function.

Problem 2: Longest Palindrome

Given a string s which consists of lowercase or uppercase letters, return the length of the longest palindrome that can be built with those letters. Assume that letters are case sensitive, for example, "Aa" is not considered a palindrome here.

Input: s = "abccccdd"
Output: 7
Source: https://leetcode.com/problems/longest-palindrome/description/

Problem3: BigInteger Addition

Given two non-negative integers, num1 and num2 represented as string, return the sum of num1 and num2 as a string. You must not use any built-in BigInteger library or convert the inputs to integer directly.

Input: num1 = "456", num2 = "77"
Output: "533"
Source: https://leetcode.com/problems/add-strings/description/

Problem 4: Parity of a Matrix

A boolean matrix has the parity property when each row and each column has an even number of bits(i.e., even sum) that are set. Create a function named *parityOfMatrix* that reads in a matrix and checks if it has the parity property. If parity property is satisfied then return "ok". If not, your program should return "corrupt". Include a main program to test your function.

Input: 4 × 4 matrix

1 0 1 0
0 0 0 0
1 1 1 1
0 1 0 1

Output: "ok"

Explanation: The sums of the rows are 2, 0, 4, and 2. The sums of the columns are 2, 2, 2, and 2.

Problem 5: Number of Days between Dates

Write a program to count the number of days between two dates. The two dates are given as strings, their format is YYYY-MM-DD as shown in the examples.

Input: date1 = "2020-01-15", date2 = "2019-12-31"
Output: 15
Source: https://leetcode.com/problems/number-of-days-between-two-dates/description/