Problem Solving & Coding – Level I
[Language Foundations]
(Simulation)

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

Problem 1: Random License Plate

In a particular jurisdiction, older license plates consist of three letters followed by three digits and new license plate format consists of four digits followed by three letters. Create a function named *randomLicencePlate* that generates a random license plate. Your function should have approximately equal odds of generating a sequence of characters for an old license plate or a new license plate.

Write a main program that calls your function and displays the randomly generated license plate.

Problem 2: Rock Paper Scissors

Rock paper scissors is a hand game for two or more players. Participants say "rock, paper, scissors" and then simultaneously form their hands into the shape of a rock (a fist), a piece of paper (palm facing downward), or a pair of scissors (two fingers extended). The rules are straightforward:

- **Rock** smashes scissors
- **Paper** covers rock
- **Scissors** cut paper
- If both players say **same thing**, then it is a draw

Let us simulate the game between a player and computer as an opponent. Create a function named *getUserMove* which reads user move from command line and returns that move. Create a function named *getComputerMove* which returns the random move of computer. Create a function named *getResult* that takes both user and computer moves as input, then returns 1, 0 or -1 for win, loss and draw respectively.

Write a main function that simulates the game for about 10 times and displays the number of wins, losses and draws of a player.

Problem 3: Coin Flip

In this program, you have to simulate a random process of flipping a coin until you get the same outcome(either both are heads or both are tails) in two consecutive flips. Create a function named *getNumOfFlips* that simulates the process and returns the number of flips required to get two consecutive heads or two consecutive tails.

Each call to your function may return varied number of flips. So, write a main program that calls your function 10 times and displays minimum, maximum and average number of flips required to get the desired outcome.