Subject: 19CSE305

Lab Session: 01

Notes:

1. Please read the assignment notes carefully and comply to the guidelines provided.
2. Code should be checked into the GitHub. These details shall be provided in the Lab.
3. If you have not completed the prerequisite assignments, please complete them before the next lab session.

Coding Instructions:

1. The code should be modularized; The asked functionality should be available as a function. Please create multiple functions if needed. However, all functions should be present within a single code block, if you are using Jupyter or Colab notebooks.
2. There should be no print statement within the function. All print statements should be in the main program.
3. Please use proper naming of variables.
4. For lists, strings and matrices, you may use your input values as appropriate.
5. Please make inline documentation / comments as needed within the code blocks.

Set A (for roll numbers ending with odd digits)

1. Consider the given list as [2, 7, 4, 1, 3, 6]. Write a program to count pairs of elements with sum equal to 10.
2. Write a program that takes a list of real numbers as input and returns the range (difference between minimum and maximum) of the list. Check for list being less than 3 elements in which case return an error message (Ex: “Range determination not possible”). Given a list [5,3,8,1,0,4], the range is 8 (8-0).
3. Write a program that accepts a square matrix A and a positive integer m as arguments and returns A^m.
4. Write a program to count the highest occurring character & its occurrence count in an input string. Consider only alphabets. Ex: for “hippopotamus” as input string, the maximally occurring character is ‘p’ & occurrence count is 3.

Set B (for roll numbers ending with even digits)

1. Write a program to count the number of vowels and consonants present in an input string.
2. Write a program that accepts two matrices A and B as input and returns their product AB. Check if A & B are multipliable; if not, return error message.
3. Write a program to find the number of common elements between two lists. The lists contain integers.
4. Write a program that accepts a matrix as input and returns its transpose.