

Experiment:3

Introduction to Python for Linear Algebra and Matrix Operations

1. Function and NumPy

- (a) Write a Python function (naming string reverse) to reverse the given string and then, check whether the string is palindrome or not.
- (b) Write a function that takes a list of three numbers and returns the largest number that can be obtained by adding any two numbers.
- (c) Create the below two matrices:

$$(i) \quad A = \begin{bmatrix} 1 & -1 & 3 \\ 5 & 7 & 9 \\ -4 & 2 & 8 \end{bmatrix}, \quad B = \begin{bmatrix} 5 & 7 & 4 \\ -1 & 2 & 5 \\ 0 & 8 & 4 \end{bmatrix}$$

- (d) Find $AB - B^2A$,
 - (i) Display the second row and third column of $AB - B^2A$.
 - (ii) Find the max and min entry of $AB - B^2A$.
 - (iii) Compute the sum of the diagonal entries of $AB - B^2A$.
- (e) Show that

$$A^3 - 16A^2 + 70A - 228I = O.$$

- (f) Write a Python function that takes two matrices as input, then check whether they are compatible with matrix multiplication. If yes, then find their product. {Do it first by using in-build function and then without using in-build function(Means explicitly).}