**Practical 6: NumPy (Batch 2)**

1. Write a python code for addition, subtraction and multiplication of two 4x4 matrices.
2. Create a 5 by 2 integer array from a range between 100 to 200 such that the difference between each element is 10. Print the same.
3. Consider two matrices

M1=([[2,3,4], [6,5,2], [6,7,3]])

M2=([[1,4,2], [4,3,6],[5,9,8]])

Calculate manually as well as develop the python program for the following:

(1) matrix multiplication (dot product) (2) inner product (3) cross product (4) outer product

1. Randomly generate the marks of the 80 students in the range of 40 to 95. Write a NumPy program to compute the 70 percentile for all elements in a given array. (Hint: use np.random.randint(start,stop,no\_of\_items) for list generation) (Hint: Use np.percentile)
2. Create the chessboard like structure black-0, white-1 in minimum(2) no. of lines of code. Use indexing of array.

For the question 6 given below use linear algebra package under numpy. Add these statements i.e. for eigenvalues,

*import numpy as np*

*from numpy import linalg*

*np.linalg.eig(a)*

1. Write a NumPy program to compute the eigenvalues and right eigenvectors of a given square array.

Arr =( [[1,4,8], [8,9,2],[9,7,8]])