

Introduction to Computer Programming and Data Structures

Assignment 06

Maximum Marks: **150**
Topic: Matrix Algorithms

Submission Deadline: **2023-June-02**

Assignment problem # AP0601

- **Problem:** Given file containing a square float matrix. find the inverse of it, if exists. Display the inverse matrix in the terminal.
- **Input:** A path to the input file (say "input_matrix.txt")
 - The first line contains a positive integer n , the order of the matrix.
 - It follows n lines where in each line is the row of the matrix where the elements are separated by spaces.

[80]

Assignment problem # AP0602

- **Problem:** Given file containing a square float matrix, find the determinant of it, if exists. Use row reduction method to calculate the determinant.
- **Input:** A path to the input file (say "input_matrix.txt")
 - The first line contains a positive integer n , the order of the matrix
 - It follows n lines where in each line is the row of the matrix where the elements are separated by spaces.
- **Output:** Determinant value in the terminal

[30]

Assignment problem # AP0603

- **Problem:** Given a square float matrix, find a dominant eigenvalue and corresponding dominant eigenvector, using power method ¹.
- **Input:** A path to the input file (say "input.matrix.txt")
 - The first line contains a positive integer n , the order of the matrix
 - It follows n lines where in each line is the row of the matrix where the elements are separated by spaces.
- **Output:** print a dominant eigenvalue and corresponding eigenvector in the terminal.

[40]

¹see the course webpage for the related materials