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Institute for Advancing Intelligence, TCG CREST
(TCG Centres for Research and Education in Science and Technology)

Introduction to Programming and Data Structures, 2023-24, Semester-II
Assignment 06

Maximum Marks: **150** Submission Deadline: **2023-Oct-00**
Topic: Matrix Algorithms

Assignment problem # AP0601

- **Problem**: Given a file containing a square float matrix do the following operations.
  1. **Inverse**: find the inverse of it, if exists. Display the inverse matrix in the terminal.
  2. **Determinant**: find the determinant of it, if exists. Use row reduction method to calculate the determinant.
  3. **Eigenvalue:** find a dominant eigenvalue and corresponding dominant eigenvector, using power method
- **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:** Inverse, Determinant, eigenvalue and eigenvector in the terminal.

[70+40+50]