Project 5: Systems of Linear Equations and College Football Team Ranking

Goals:
To develop a ranking system for Big 12 college football teams based on the 2016-2017 season data by formulating and solving a system of linear equations using Gaussian elimination.

Getting Started:
Define an appropriate system of 10 linear equations where the unknown variables represent team rankings. (This should be unique for all the students as this is a solo task).
The rankings will be determined by setting up a system of linear equations and solving it using Gaussian elimination.

Problem Background:
Ranking sports teams based on performance is a challenging task, especially in college football, where teams play a limited number of games against a subset of all teams. To fairly rank teams, we need a mathematical model that considers game results systematically.

Task:

- Formulating the System of Equations:
- Define an appropriate system of 10 linear equations where the unknown variables represent team rankings. (This should be unique for all the students as this is a solo task)
- Express these equations in matrix form Ax = b, where A is the coefficient matrix, x is the vector of rankings, and b represents game results in a suitable format.
- Solving Using Gaussian Elimination
- Implement Gaussian elimination to solve the system Ax = b.
- Your implementation should handle forward elimination and back substitution.
- The rankings should be normalized in a way that ensures a meaningful comparison among teams.
- Sorting and Displaying Results
- Sort the teams based on the computed rankings.
- Display the rankings in a readable format, showing the team names in order from best to worst.