

Numpy Assignment

Problem 1:

Matrix Creation and Manipulation:

- Create a 3x3 matrix of random integers between 1 and 10.
- Extract the first row and first column from the matrix.
- Replace all even numbers in the matrix with 0.

Problem 2:

Matrix Operations:

- Create two 2x2 matrices and perform the following operations:
 - Matrix addition
 - Matrix multiplication (element-wise)
 - Matrix dot product (matrix multiplication)
 - Find the transpose of one of the matrices.
 - Compute the inverse of a 2x2 matrix, if it exists.
-

Problem 3:

Determinant and Rank:

- Create a 3x3 matrix and find its determinant.
- Find the rank of a 4x4 matrix.

Problem 4:

Solving a System of Linear Equations:

- Given the system of equations:
 - $2x+3y= 5$
 - $4x + 6y = 10$

Solve this system using NumPy's linear algebra functions

Problem 5:

Matrix Slicing and Indexing:

- Create a 5x5 matrix of integers from 1 to 25. Extract the submatrix consisting of rows 2 to 4 and columns 2 to 4.
- Set the diagonal elements of the matrix to 0.