CS3081 Computational Mathematics

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14/03/2019

0.1 Question 4.23

Question: Write a user-defined MATLAB function that decomposes an n x n matrix [A] into a lower triangular matrix [L] and an upper triangular matrix [U] (such that [A] = [L][U]) using the Gauss elimination method (without pivoting). For the function name and arguments, use [L, U] = LUdecomp-Gauss (A), where the input argument A is the matrix to be decomposed and the output arguments L and U are the corresponding upper and lower triangular matrices. Use LUdecompGaus s to determine the LU decomposition of the following matrix:

$$\begin{bmatrix} 4 & -1 & 3 & 2 \\ -8 & 0 & -3 & -3.5 \\ 2 & -3.5 & 10 & 3.75 \\ -8 & -4 & 1 & -0.5 \end{bmatrix}$$