Lmatrix( ) — Elimination matrix

Description

Lmatrix(\(n\)) returns the \(n(n + 1)/2 \times n^2\) elimination matrix \(L\) for which \(L* \text{vec}(X) = \text{vech}(X)\), where \(X\) is an \(n \times n\) symmetric matrix.

Syntax

\[
\text{real matrix Lmatrix(real scalar } n)\]

Remarks and examples

Elimination matrices are frequently used in computing derivatives of functions of symmetric matrices. Section 9.6 of Lütkepohl (1996) lists many useful properties of elimination matrices.

Conformability

\[
\text{Lmatrix}(n): \quad n: 1 \times 1 \\
\text{result: } n(n + 1)/2 \times n^2
\]

Diagnostics

\(\text{Lmatrix}(n)\) aborts with error if \(n\) is less than 0 or is missing. \(n\) is interpreted as \(\text{trunc}(n)\).

Reference


Also see

[M-5] Dmatrix( ) — Duplication matrix
[M-5] Kmatrix( ) — Commutation matrix
[M-5] vec( ) — Stack matrix columns
[M-4] Standard — Functions to create standard matrices