**Syntax**

```plaintext
real matrix Lmatrix(real scalar n)
```

**Description**

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

**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**

\( \text{Lmatrix}(n): \)

- \( n: \) \( 1 \times 1 \)
- \( \text{result:} \) \( n(n + 1)/2 \times n^2 \)

**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