#### **Kmatrix()** — Commutation matrix

DescriptionSyntaxRemarks and examplesConformabilityDiagnosticsReferenceAlso see

## Description

Kmatrix(*m*, *n*) returns the  $mn \times mn$  commutation matrix K for which K\*vec(X) = vec(X'), where X is an  $m \times n$  matrix.

#### Syntax

real matrix Kmatrix(real scalar m, real scalar n)

#### **Remarks and examples**

Commutation matrices are frequently used in computing derivatives of functions of matrices. Section 9.2 of Lütkepohl (1996) lists many useful properties of commutation matrices.

## Conformability

```
\begin{array}{rl} \texttt{Kmatrix}(m,n):\\ m: & 1 \times 1\\ n: & 1 \times 1\\ result: & mn \times mn \end{array}
```

# Diagnostics

Kmatrix(m, n) aborts with error if either m or n is less than 0 or is missing. m and n are interpreted as trunc(m) and trunc(n).

#### Reference

Lütkepohl, H. 1996. Handbook of Matrices. New York: Wiley.

## Also see

[M-5] **Dmatrix()** — Duplication matrix

[M-5] Lmatrix() — Elimination matrix

- [M-5] vec() Stack matrix columns
- [M-4] Standard Functions to create standard matrices

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