Dmatrix( ) — Duplication matrix

Description

`Dmatrix(`n`)` returns the $n^2 \times n(n+1)/2$ duplication matrix `D` for which `D*vech(`X`) = vec(`X`)`, where X is an arbitrary $n \times n$ symmetric matrix.

Syntax

real matrix `Dmatrix(`*real scalar* n`)`

Remarks and examples

Duplication matrices are frequently used in computing derivatives of functions of symmetric matrices. Section 9.5 of Lütkepohl (1996) lists many useful properties of duplication matrices.

Conformability

`Dmatrix(`n`)`:

n:	1×1
result:	$n^2 \times n(n+1)/2$

Diagnostics

`Dmatrix(`n`)` aborts with error if n is less than 0 or is missing. n is interpreted as `trunc(`n`)`.

Reference

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

Also see

[M-5] **Kmatrix( )** — Commutation matrix

[M-5] **Lmatrix( )** — Elimination matrix

[M-5] **vec( )** — Stack matrix columns

[M-4] **Standard** — Functions to create standard matrices