sublowertriangle( ) — Return a matrix with zeros above a diagonal

Description

sublowertriangle(A, p) returns A with the elements above a diagonal set to zero. In the returned matrix, $A[i,\ j] = 0$ for all $i - j < p$. If it is not specified, p is set to zero.

_sublowertriangle() mirrors sublowertriangle() but modifies A. _sublowertriangle(A, p) sets $A[i,\ j] = 0$ for all $i - j < p$. If it is not specified, p is set to zero.

Syntax

numeric matrix sublowertriangle(*numeric matrix A* [, *numeric scalar p*])

void _sublowertriangle(*numeric matrix A* [, *numeric scalar p*])

where argument p is optional.

Remarks and examples

Remarks are presented under the following headings:

Get lower triangle of a matrix

If A is a square matrix, then sublowertriangle(A, 0) = lowertriangle(A). sublowertriangle() is a generalization of lowertriangle().

We begin by defining A

```
: A = (1, 2, 3 \ 4, 5, 6 \ 7, 8, 9)
```

sublowertriangle(A, 0) returns A with zeros above the main diagonal as does lowertriangle():

```
: sublowertriangle(A, 0)
        1   2   3
     +-------------+
   1 |  1   0   0  |
   2 |  4   5   0  |
   3 |  7   8   9  |
     +-------------+
```

sublowertriangle(A, 1) returns A with zeros in the main diagonal and above.

```
: sublowertriangle(A, 1)
       1   2   3
    +-------------+
  1 |  0   0   0  |
  2 |  4   0   0  |
  3 |  7   8   0  |
    +-------------+
```

sublowertriangle(A, p) can take negative p. For example, setting p $= -1$ yields

```
: sublowertriangle(A, -1)
       1   2   3
    +-------------+
  1 |  1   2   0  |
  2 |  4   5   6  |
  3 |  7   8   9  |
    +-------------+
```

Nonsquare matrices

sublowertriangle() and _sublowertriangle() may be used with nonsquare matrices.

For instance, we define a nonsquare matrix A

```
: A = (1, 2, 3, 4 \ 5, 6, 7,  8 \ 9, 10, 11, 12)
```

We use sublowertriangle() to obtain the lower triangle of A:

```
: sublowertriangle(A, 0)
        1    2    3    4
    +---------------------+
  1 |   1    0    0    0  |
  2 |   5    6    0    0  |
  3 |   9   10   11    0  |
    +---------------------+
```

Conformability

sublowertriangle(A, p):

input:

A:	$r \times c$
p:	1×1 (optional)

output:

result:	$r \times c$

_sublowertriangle(A, p):

input:

A:	$r \times c$
p:	1×1 (optional)

output:

A:	$r \times c$

Diagnostics

None.

Also see

[M-4] **manipulation** — Matrix manipulation