1 SUMMARY
To delete a column from an \( n \times n \) triangular matrix to get \( V = \{ v_j \}_{j=0}^{n-1} \) and return a related triangular matrix \( U = \{ u_{ji} \}_{i=1}^{n} \) such that \( U^T U = V^T V \).

Both the original matrix and \( U \) are stored in a compact form.


2 HOW TO USE THE PACKAGE
2.1 The argument list
The single precision version

\[
\text{CALL MC17A}(A,N,I,W)
\]

The double precision version

\[
\text{CALL MC17AD}(A,N,I,W)
\]

\( A \) is a REAL (DOUBLE PRECISION in the D version) array of length at least \( n(n+1)/2 \), whose elements must be set by the user to the elements of \( U \). It is convenient to use the notation \( d_1, l_{21}, l_{31}, \ldots, l_{n1}, d_2, l_{32}, \ldots, d_n \) for these elements, to let \( D \) be the diagonal matrix whose diagonal elements are \( d_1, d_2, \ldots, d_n \), and to let \( L \) be the lower triangular matrix with ones on the diagonal whose other non-zero elements are \( l_{ij} \) \((i \geq j)\). Then \( D \) and \( L \) are related to \( U \) by the equation \( U^T U = LDL^T \). On exit from the subroutine the first \( n(n-1)/2 \) elements of \( A \) represent the required upper triangular matrix, in the \( D-L \) form that is used for input.

\( N \) is an INTEGER variable which must be set by the user to a positive integer that is the dimension of \( U \). The subroutine decreases its value by one to the dimension of the new matrix, unless the chosen column number \( i \) fails to satisfy the condition \( 1 \leq i \leq n \).

\( I \) is an INTEGER variable which must be set by the user to the number of the column to be removed from the original matrix. It is unchanged by the subroutine.

\( W \) is a REAL (DOUBLE PRECISION in the D version) array whose first \( n-1 \) components are used for working space.

3 GENERAL INFORMATION
Workspace: The total amount of work is bounded by a multiple of \( n^2 \), and depends on the position of the selected column \( i \), there being less calculation when \( i \) is closer to \( n \).

Use of common: None.

Other routines called directly: MC11A/AD.

Input/output: None.

Restrictions: There is no upper bound on the value of \( n \).