unit triangular matrix

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Entry type	Definition
Classification	msc 15-00
Synonym	unit left triangular matrix
Synonym	unit right triangular matrix
Defines	unit upper triangular matrix
Defines	unit lower triangular matrix

A *unit triangular matrix* is a triangular matrix with 1 on the diagonal. i.e.

A *unit upper triangular matrix* is of the form

$$\begin{bmatrix} 1 & a_{12} & a_{13} & \cdots & a_{1n} \\ 0 & 1 & a_{23} & \cdots & a_{2n} \\ 0 & 0 & 1 & \cdots & a_{3n} \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ 0 & 0 & 0 & \cdots & 1 \end{bmatrix}$$

and is sometimes called a *unit right triangular matrix*.

A *unit lower triangular matrix* is of the form

$$\begin{bmatrix} 1 & 0 & 0 & \cdots & 0 \\ a_{21} & 1 & 0 & \cdots & 0 \\ a_{31} & a_{32} & 1 & \cdots & 0 \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ a_{n1} & a_{n2} & a_{n3} & \cdots & 1 \end{bmatrix}$$

and is sometimes called a *unit left triangular matrix*.