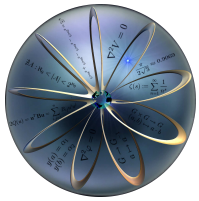

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monomial matrix

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Let A be a matrix with entries in a field K. If in every http://planetmath.org/node/2464row and every http://planetmath.org/node/2464column of A there is exactly one nonzero entry, then A is a *monomial matrix*.

Obviously, a monomial matrix is a square matrix and there exists a rearrangement of and such that the result is a diagonal matrix.

The $n \times n$ monomial matrices form a group under matrix multiplication. This group contains the $n \times n$ permutation matrices as a subgroup. A monomial matrix is invertible but, unlike a permutation matrix, not necessarily http://planetmath.org/node/1176orthogonal. The only exception is when $K = \mathbb{F}_2$ (the finite field with 2 elements), where the $n \times n$ monomial matrices and the $n \times n$ permutation matrices coincide.