NAME

SGETRF - computes an LU factorization of a general M-by-N matrix A using partial pivoting with row interchanges

SYNOPSIS

SUBROUTINE SGETRF(

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M, N, A, LDA, IPIV, INFO )
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INTEGER INFO, LDA, M, N

INTEGER IPIV(*)

REAL A(LDA, *)

PURPOSE

SGETRF computes an LU factorization of a general M-by-N matrix A using partial pivoting with row interchanges. The factorization has the form

A = P * L * U

where P is a permutation matrix, L is lower triangular with unit diagonal elements (lower trapezoidal if m > n), and U is upper triangular (upper trapezoidal if m < n).

This is the right-looking Level 3 BLAS version of the algorithm.

ARGUMENTS

M (input) INTEGER

The number of rows of the matrix A. $M \ge 0$.

N (input) INTEGER

The number of columns of the matrix A. $N \ge 0$.

A (input/output) REAL array, dimension (LDA,N)

On entry, the M-by-N matrix to be factored. On exit, the factors L and U from the factorization A = P*L*U; the unit diagonal elements of L are not stored.

- LDA (input) INTEGER The leading dimension of the array A. LDA $\geq \max(1,M)$.
- IPIV (output) INTEGER array, dimension (min(M,N)) The pivot indices; for 1 <= i <= min(M,N), row i of the matrix was interchanged with row IPIV(i).

INFO (output) INTEGER

= 0: successful exit

< 0: if INFO = -i, the i-th argument had an illegal value

> 0: if INFO = i, U(i,i) is exactly zero. The factorization has been completed, but the factor U is exactly singular, and division by zero will occur if it is used to solve a system of equations.