NAME

SGETRI - computes the inverse of a matrix using the LU factorization computed by SGETRF

SYNOPSIS

SUBROUTINE SGETRI(

N, A, LDA, IPIV, WORK, LWORK, INFO)

INTEGER   INFO, LDA, LWORK, N

INTEGER   IPIV(*)

REAL   A(LDA, *), WORK(*)

PURPOSE

SGETRI computes the inverse of a matrix using the LU factorization computed by SGETRF. This method inverts U and then computes inv(A) by solving the system inv(A)*L = inv(U) for inv(A).

ARGUMENTS

N   (input) INTEGER
       The order of the matrix A. N >= 0.

A   (input/output) REAL array, dimension (LDA,N)
       On entry, the factors L and U from the factorization A = P*L*U as computed by SGETRF. On exit, if INFO = 0, the inverse of the original matrix A.

LDA   (input) INTEGER
       The leading dimension of the array A. LDA >= max(1,N).

IPIV   (input) INTEGER array, dimension (N)
       The pivot indices from SGETRF; for 1<=i<=N, row i of the matrix was interchanged with row IPIV(i).

WORK   (workspace/output) REAL array, dimension (MAX(1,LWORK))
       On exit, if INFO=0, then WORK(1) returns the optimal LWORK.

LWORK (input) INTEGER
       The dimension of the array WORK. LWORK >= max(1,N). For optimal performance LWORK >= N*NB, where NB is the optimal blocksize returned by ILAENV. If LWORK = -1, then a workspace query is assumed; the routine only calculates the optimal size of the WORK array, returns this value as the first entry of the WORK array, and no error message related to LWORK is issued by XERBLA.

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 matrix is singular and its inverse could not be computed.