

NAG Fortran Library Chapter Contents

F07 – Linear Equations (LAPACK)

Note: please refer to the Users' Note for your implementation to check that a routine is available.

F07 Chapter Introduction

Routine Name	Mark of Introduction	Purpose
F07AAF	21	Computes the solution to a real system of linear equations
F07ABF	21	Uses the <i>LU</i> factorization to compute the solution, error-bound and condition estimate for a real system of linear equations
F07ADF	15	<i>LU</i> factorization of real <i>m</i> by <i>n</i> matrix
F07AEF	15	Solution of real system of linear equations, multiple right-hand sides, matrix already factorized by F07ADF (DGETRF)
F07AFF	21	Computes row and column scalings intended to equilibrate a general real matrix and reduce its condition number
F07AGF	15	Estimate condition number of real matrix, matrix already factorized by F07ADF (DGETRF)
F07AHF	15	Refined solution with error bounds of real system of linear equations, multiple right-hand sides
F07AJF	15	Inverse of real matrix, matrix already factorized by F07ADF (DGETRF)
F07ANF	21	Computes the solution to a complex system of linear equations
F07APF	21	Uses the <i>LU</i> factorization to compute the solution, error-bound and condition estimate for a complex system of linear equations
F07ARF	15	<i>LU</i> factorization of complex <i>m</i> by <i>n</i> matrix
F07ASF	15	Solution of complex system of linear equations, multiple right-hand sides, matrix already factorized by F07ARF (ZGETRF)
F07ATF	21	Computes row and column scalings intended to equilibrate a general complex matrix and reduce its condition number
F07AUF	15	Estimate condition number of complex matrix, matrix already factorized by F07ARF (ZGETRF)
F07AVF	15	Refined solution with error bounds of complex system of linear equations, multiple right-hand sides
F07AWF	15	Inverse of complex matrix, matrix already factorized by F07ARF (ZGETRF)
F07BAF	21	Computes the solution to a real banded system of linear equations
F07BBF	21	Uses the <i>LU</i> factorization to compute the solution, error-bound and condition estimate for a real banded system of linear equations
F07BDF	15	<i>LU</i> factorization of real <i>m</i> by <i>n</i> band matrix
F07BEF	15	Solution of real band system of linear equations, multiple right-hand sides, matrix already factorized by F07BDF (DGBTRF)
F07BFF	21	Computes row and column scalings intended to equilibrate a real banded matrix and reduce its condition number
F07BGF	15	Estimate condition number of real band matrix, matrix already factorized by F07BDF (DGBTRF)
F07BHF	15	Refined solution with error bounds of real band system of linear equations, multiple right-hand sides
F07BNF	21	Computes the solution to a complex banded system of linear equations
F07BPF	21	Uses the <i>LU</i> factorization to compute the solution, error-bound and condition estimate for a complex banded system of linear equations
F07BRF	15	<i>LU</i> factorization of complex <i>m</i> by <i>n</i> band matrix
F07BSF	15	Solution of complex band system of linear equations, multiple right-hand sides, matrix already factorized by F07BRF (ZGBTRF)
F07BTF	21	Computes row and column scalings intended to equilibrate a complex banded matrix and reduce its condition number

F07BUF	15	Estimate condition number of complex band matrix, matrix already factorized by F07BRF (ZGBTRF)
F07BVF	15	Refined solution with error bounds of complex band system of linear equations, multiple right-hand sides
F07CAF	21	Computes the solution to a real tridiagonal system of linear equations
F07CBF	21	Uses the <i>LU</i> factorization to compute the solution, error-bound and condition estimate for a real tridiagonal system of linear equations
F07CDF	21	<i>LU</i> factorization of real tridiagonal matrix
F07CEF	21	Solves a real tridiagonal system of linear equations using the <i>LU</i> factorization computed by F07CDF (DGTTRF)
F07CGF	21	Estimates the reciprocal of the condition number of a real tridiagonal matrix using the <i>LU</i> factorization computed by F07CDF (DGTTRF)
F07CHF	21	Refined solution with error bounds of real tridiagonal system of linear equations, multiple right-hand sides
F07CNF	21	Computes the solution to a complex tridiagonal system of linear equations
F07CPF	21	Uses the <i>LU</i> factorization to compute the solution, error-bound and condition estimate for a complex tridiagonal system of linear equations
F07CRF	21	<i>LU</i> factorization of complex tridiagonal matrix
F07CSF	21	Solves a complex tridiagonal system of linear equations using the <i>LU</i> factorization computed by F07CDF (DGTTRF)
F07CUF	21	Estimates the reciprocal of the condition number of a complex tridiagonal matrix using the <i>LU</i> factorization computed by F07CDF (DGTTRF)
F07CVF	21	Refined solution with error bounds of complex tridiagonal system of linear equations, multiple right-hand sides
F07FAF	21	Computes the solution to a real symmetric positive-definite system of linear equations
F07FBF	21	Uses the Cholesky factorization to compute the solution, error-bound and condition estimate for a real symmetric positive-definite system of linear equations
F07FDF	15	Cholesky factorization of real symmetric positive-definite matrix
F07FEF	15	Solution of real symmetric positive-definite system of linear equations, multiple right-hand sides, matrix already factorized by F07FDF (DPOTRF)
F07FFF	21	Computes row and column scalings intended to equilibrate a real symmetric positive-definite matrix and reduce its condition number
F07FGF	15	Estimate condition number of real symmetric positive-definite matrix, matrix already factorized by F07FDF (DPOTRF)
F07FHF	15	Refined solution with error bounds of real symmetric positive-definite system of linear equations, multiple right-hand sides
F07FJF	15	Inverse of real symmetric positive-definite matrix, matrix already factorized by F07FDF (DPOTRF)
F07FNF	21	Computes the solution to a complex Hermitian positive-definite system of linear equations
F07FPF	21	Uses the Cholesky factorization to compute the solution, error-bound and condition estimate for a complex Hermitian positive-definite system of linear equations
F07FRF	15	Cholesky factorization of complex Hermitian positive-definite matrix
F07FSF	15	Solution of complex Hermitian positive-definite system of linear equations, multiple right-hand sides, matrix already factorized by F07FRF (ZPOTRF)
F07FTF	21	Computes row and column scalings intended to equilibrate a complex Hermitian positive-definite matrix and reduce its condition number
F07FUF	15	Estimate condition number of complex Hermitian positive-definite matrix, matrix already factorized by F07FRF (ZPOTRF)
F07FVF	15	Refined solution with error bounds of complex Hermitian positive-definite system of linear equations, multiple right-hand sides
F07FWF	15	Inverse of complex Hermitian positive-definite matrix, matrix already factorized by F07FRF (ZPOTRF)
F07GAF	21	Computes the solution to a real symmetric positive-definite system of linear equations, packed storage

F07GBF	21	Uses the Cholesky factorization to compute the solution, error-bound and condition estimate for a real symmetric positive-definite system of linear equations, packed storage
F07GDF	15	Cholesky factorization of real symmetric positive-definite matrix, packed storage
F07GEF	15	Solution of real symmetric positive-definite system of linear equations, multiple right-hand sides, matrix already factorized by F07GDF (DPPTRF), packed storage
F07GFF	21	Computes row and column scalings intended to equilibrate a real symmetric positive-definite matrix and reduce its condition number, packed storage
F07GGF	15	Estimate condition number of real symmetric positive-definite matrix, matrix already factorized by F07GDF (DPPTRF), packed storage
F07GHF	15	Refined solution with error bounds of real symmetric positive-definite system of linear equations, multiple right-hand sides, packed storage
F07GJF	15	Inverse of real symmetric positive-definite matrix, matrix already factorized by F07GDF (DPPTRF), packed storage
F07GNF	21	Computes the solution to a complex Hermitian positive-definite system of linear equations, packed storage
F07GPF	21	Uses the Cholesky factorization to compute the solution, error-bound and condition estimate for a complex Hermitian positive-definite system of linear equations, packed storage
F07GRF	15	Cholesky factorization of complex Hermitian positive-definite matrix, packed storage
F07GSF	15	Solution of complex Hermitian positive-definite system of linear equations, multiple right-hand sides, matrix already factorized by F07GRF (ZPPTRF), packed storage
F07GTF	21	Computes row and column scalings intended to equilibrate a complex Hermitian positive-definite matrix and reduce its condition number, packed storage
F07GUF	15	Estimate condition number of complex Hermitian positive-definite matrix, matrix already factorized by F07GRF (ZPPTRF), packed storage
F07GVF	15	Refined solution with error bounds of complex Hermitian positive-definite system of linear equations, multiple right-hand sides, packed storage
F07GWF	15	Inverse of complex Hermitian positive-definite matrix, matrix already factorized by F07GRF (ZPPTRF), packed storage
F07HAF	21	Computes the solution to a real symmetric positive-definite banded system of linear equations
F07HBF	21	Uses the Cholesky factorization to compute the solution, error-bound and condition estimate for a real symmetric positive-definite banded system of linear equations
F07HDF	15	Cholesky factorization of real symmetric positive-definite band matrix
F07HEF	15	Solution of real symmetric positive-definite band system of linear equations, multiple right-hand sides, matrix already factorized by F07HDF (DPBTRF)
F07HFF	21	Computes row and column scalings intended to equilibrate a real symmetric positive-definite banded matrix and reduce its condition number
F07HGF	15	Estimate condition number of real symmetric positive-definite band matrix, matrix already factorized by F07HDF (DPBTRF)
F07HHF	15	Refined solution with error bounds of real symmetric positive-definite band system of linear equations, multiple right-hand sides
F07HNF	21	Computes the solution to a complex Hermitian positive-definite banded system of linear equations
F07HPF	21	Uses the Cholesky factorization to compute the solution, error-bound and condition estimate for a complex Hermitian positive-definite banded system of linear equations
F07HRF	15	Cholesky factorization of complex Hermitian positive-definite band matrix
F07HSF	15	Solution of complex Hermitian positive-definite band system of linear equations, multiple right-hand sides, matrix already factorized by F07HRF (ZPBTRF)

F07HTF	21	Computes row and column scalings intended to equilibrate a complex Hermitian positive-definite banded matrix and reduce its condition number
F07HUF	15	Estimate condition number of complex Hermitian positive-definite band matrix, matrix already factorized by F07HRF (ZPBTRF)
F07HVF	15	Refined solution with error bounds of complex Hermitian positive-definite band system of linear equations, multiple right-hand sides
F07JAF	21	Computes the solution to a real symmetric positive-definite tridiagonal system of linear equations
F07JBF	21	Uses the modified Cholesky factorization to compute the solution, error-bound and condition estimate for a real symmetric positive-definite tridiagonal system of linear equations
F07JDF	21	Computes the modified Cholesky factorization of a real symmetric positive-definite tridiagonal matrix
F07JEF	21	Solves a real symmetric positive-definite tridiagonal system using the modified Cholesky factorization computed by F07JDF (DPTTRF)
F07JGF	21	Computes the reciprocal of the condition number of a real symmetric positive-definite tridiagonal system using the modified Cholesky factorization computed by F07JDF (DPTTRF)
F07JHF	21	Refined solution with error bounds of real symmetric positive-definite tridiagonal system of linear equations, multiple right-hand sides
F07JNF	21	Computes the solution to a complex Hermitian positive-definite tridiagonal system of linear equations
F07JPF	21	Uses the modified Cholesky factorization to compute the solution, error-bound and condition estimate for a complex Hermitian positive-definite tridiagonal system of linear equations
F07JRF	21	Computes the modified Cholesky factorization of a complex Hermitian positive-definite tridiagonal matrix
F07JSF	21	Solves a complex Hermitian positive-definite tridiagonal system using the modified Cholesky factorization computed by F07JRF (ZPTTRF)
F07JUF	21	Computes the reciprocal of the condition number of a complex Hermitian positive-definite tridiagonal system using the modified Cholesky factorization computed by F07JRF (ZPTTRF)
F07JVF	21	Refined solution with error bounds of complex Hermitian positive-definite tridiagonal system of linear equations, multiple right-hand sides
F07MAF	21	Computes the solution to a real symmetric system of linear equations
F07MBF	21	Uses the diagonal pivoting factorization to compute the solution to a real symmetric system of linear equations
F07MDF	15	Bunch–Kaufman factorization of real symmetric indefinite matrix
F07MEF	15	Solution of real symmetric indefinite system of linear equations, multiple right-hand sides, matrix already factorized by F07MDF (DSYTRF)
F07MGF	15	Estimate condition number of real symmetric indefinite matrix, matrix already factorized by F07MDF (DSYTRF)
F07MHF	15	Refined solution with error bounds of real symmetric indefinite system of linear equations, multiple right-hand sides
F07MJF	15	Inverse of real symmetric indefinite matrix, matrix already factorized by F07MDF (DSYTRF)
F07MNF	21	Computes the solution to a complex Hermitian system of linear equations
F07MPF	21	Uses the diagonal pivoting factorization to compute the solution to a complex Hermitian system of linear equations
F07MRF	15	Bunch–Kaufman factorization of complex Hermitian indefinite matrix
F07MSF	15	Solution of complex Hermitian indefinite system of linear equations, multiple right-hand sides, matrix already factorized by F07MRF (ZHETRF)
F07MUF	15	Estimate condition number of complex Hermitian indefinite matrix, matrix already factorized by F07MRF (ZHETRF)
F07MVF	15	Refined solution with error bounds of complex Hermitian indefinite system of linear equations, multiple right-hand sides
F07MWF	15	Inverse of complex Hermitian indefinite matrix, matrix already factorized by F07MRF (ZHETRF)
F07NNF	21	Computes the solution to a complex symmetric system of linear equations

F07NPF	21	Uses the diagonal pivoting factorization to compute the solution to a complex symmetric system of linear equations
F07NRF	15	Bunch–Kaufman factorization of complex symmetric matrix
F07NSF	15	Solution of complex symmetric system of linear equations, multiple right-hand sides, matrix already factorized by F07NRF (ZSYTRF)
F07NUF	15	Estimate condition number of complex symmetric matrix, matrix already factorized by F07NRF (ZSYTRF)
F07NVF	15	Refined solution with error bounds of complex symmetric system of linear equations, multiple right-hand sides
F07NWF	15	Inverse of complex symmetric matrix, matrix already factorized by F07NRF (ZSYTRF)
F07PAF	21	Computes the solution to a real symmetric system of linear equations, packed storage
F07PBF	21	Uses the diagonal pivoting factorization to compute the solution to a real symmetric system of linear equations, packed storage
F07PDF	15	Bunch–Kaufman factorization of real symmetric indefinite matrix, packed storage
F07PEF	15	Solution of real symmetric indefinite system of linear equations, multiple right-hand sides, matrix already factorized by F07PDF (DSPTRF), packed storage
F07PGF	15	Estimate condition number of real symmetric indefinite matrix, matrix already factorized by F07PDF (DSPTRF), packed storage
F07PHF	15	Refined solution with error bounds of real symmetric indefinite system of linear equations, multiple right-hand sides, packed storage
F07PJF	15	Inverse of real symmetric indefinite matrix, matrix already factorized by F07PDF (DSPTRF), packed storage
F07PNF	21	Computes the solution to a complex Hermitian system of linear equations, packed storage
F07PPF	21	Uses the diagonal pivoting factorization to compute the solution to a complex Hermitian system of linear equations, packed storage
F07PRF	15	Bunch–Kaufman factorization of complex Hermitian indefinite matrix, packed storage
F07PSF	15	Solution of complex Hermitian indefinite system of linear equations, multiple right-hand sides, matrix already factorized by F07PRF (ZHPTRF), packed storage
F07PUF	15	Estimate condition number of complex Hermitian indefinite matrix, matrix already factorized by F07PRF (ZHPTRF), packed storage
F07PVF	15	Refined solution with error bounds of complex Hermitian indefinite system of linear equations, multiple right-hand sides, packed storage
F07PWF	15	Inverse of complex Hermitian indefinite matrix, matrix already factorized by F07PRF (ZHPTRF), packed storage
F07QNF	21	Computes the solution to a complex symmetric system of linear equations, packed storage
F07QPF	21	Uses the diagonal pivoting factorization to compute the solution to a complex symmetric system of linear equations, packed storage
F07QRF	15	Bunch–Kaufman factorization of complex symmetric matrix, packed storage
F07QSF	15	Solution of complex symmetric system of linear equations, multiple right-hand sides, matrix already factorized by F07QRF (ZSPTRF), packed storage
F07QUF	15	Estimate condition number of complex symmetric matrix, matrix already factorized by F07QRF (ZSPTRF), packed storage
F07QVF	15	Refined solution with error bounds of complex symmetric system of linear equations, multiple right-hand sides, packed storage
F07QWF	15	Inverse of complex symmetric matrix, matrix already factorized by F07QRF (ZSPTRF), packed storage
F07TEF	15	Solution of real triangular system of linear equations, multiple right-hand sides
F07TGF	15	Estimate condition number of real triangular matrix
F07THF	15	Error bounds for solution of real triangular system of linear equations, multiple right-hand sides
F07TJF	15	Inverse of real triangular matrix

F07TSF	15	Solution of complex triangular system of linear equations, multiple right-hand sides
F07TUF	15	Estimate condition number of complex triangular matrix
F07TVF	15	Error bounds for solution of complex triangular system of linear equations, multiple right-hand sides
F07TWF	15	Inverse of complex triangular matrix
F07UEF	15	Solution of real triangular system of linear equations, multiple right-hand sides, packed storage
F07UGF	15	Estimate condition number of real triangular matrix, packed storage
F07UHF	15	Error bounds for solution of real triangular system of linear equations, multiple right-hand sides, packed storage
F07UJF	15	Inverse of real triangular matrix, packed storage
F07USF	15	Solution of complex triangular system of linear equations, multiple right-hand sides, packed storage
F07UUF	15	Estimate condition number of complex triangular matrix, packed storage
F07UVF	15	Error bounds for solution of complex triangular system of linear equations, multiple right-hand sides, packed storage
F07UWF	15	Inverse of complex triangular matrix, packed storage
F07VEF	15	Solution of real band triangular system of linear equations, multiple right-hand sides
F07VGF	15	Estimate condition number of real band triangular matrix
F07VHF	15	Error bounds for solution of real band triangular system of linear equations, multiple right-hand sides
F07VSF	15	Solution of complex band triangular system of linear equations, multiple right-hand sides
F07VUF	15	Estimate condition number of complex band triangular matrix
F07VVF	15	Error bounds for solution of complex band triangular system of linear equations, multiple right-hand sides
