

NAG Fortran Library Routine Document

F06UDF

Note: before using this routine, please read the Users' Note for your implementation to check the interpretation of *bold italicised* terms and other implementation-dependent details.

1 Purpose

F06UDF returns, via the function name, the value of the 1-norm, the ∞ -norm, the Frobenius norm, or the maximum absolute value of the elements of a complex n by n Hermitian matrix, stored in packed form.

2 Specification

double precision FUNCTION F06UDF (NORM, UPLO, N, AP, WORK)

INTEGER

N

double precision

WORK(*)

complex*16

AP(*)

CHARACTER*1

NORM, UPLO

3 Description

None.

4 References

None.

5 Parameters

1: NORM – CHARACTER*1

Input

On entry: specifies the value to be returned:

- if NORM = '1' or 'O', the 1-norm;
- if NORM = 'I', the ∞ -norm (= the 1-norm for a Hermitian matrix);
- if NORM = 'F' or 'E', the Frobenius (or Euclidean) norm;
- if NORM = 'M', the value $\max_{i,j} |a_{ij}|$ (not a norm).

Constraint: NORM = '1', 'O', 'I', 'F', 'E' or 'M'.

2: UPLO – CHARACTER*1

Input

On entry: specifies whether the upper or lower triangular part of A is stored as follows:

- if UPLO = 'U', the upper triangular part of A is stored;
- if UPLO = 'L', the lower triangular part of A is stored.

Constraint: UPLO = 'U' or 'L'.

3: N – INTEGER

Input

On entry: n , the order of the matrix A .

Constraint: $N \geq 0$.

- 4: AP(*) – **complex*16** array *Input*

Note: the dimension of the array AP must be at least $\max(1, N \times (N + 1)/2)$.

On entry: the n by n Hermitian matrix A , packed by columns. More precisely, if UPLO = 'U', the upper triangle of A must be stored with element a_{ij} in $AP(i + j(j - 1)/2)$ for $i \leq j$; if UPLO = 'L', the lower triangle of A must be stored with element a_{ij} in $AP(i + (2n - j)(j - 1)/2)$ for $i \geq j$.

- 5: WORK(*) – **double precision** array *Workspace*

Note: the dimension of the array WORK must be at least $\max(1, N)$ if NORM = '1', 'O' or 'T' and at least 1 otherwise.

6 Error Indicators and Warnings

None.
