

NAG Fortran Library Routine Document

F06RCF

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

F06RCF 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 real n by n symmetric matrix.

2 Specification

```
double precision FUNCTION F06RCF (NORM, UPLO, N, A, LDA, WORK)
INTEGER                                N, LDA
double precision                    A(LDA,*), WORK(*)
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 symmetric 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: A(LDA,*) – *double precision* array *Input*
Note: the second dimension of the array A must be at least $\max(1, N)$.
On entry: the n by n symmetric matrix A . If UPLO = 'U', the upper triangle of A must be stored and the elements of the array below the diagonal are not referenced; if UPLO = 'L', the lower triangle of A must be stored and the elements of the array above the diagonal are not referenced.
- 5: LDA – INTEGER *Input*
On entry: the first dimension of the array A as declared in the (sub)program from which F06RCF is called.
Constraint: $LDA \geq \max(1, N)$.
- 6: WORK(*) – *double precision* array *Workspace*
Note: the dimension of the array WORK must be at least $\max(1, N)$ if NORM = '1', 'O' or 'I' and at least 1 otherwise.

6 Error Indicators and Warnings

None.
