

NAG Fortran Library Routine Document

F06RAF

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

F06RAF 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 m by n matrix.

2 Specification

```
double precision FUNCTION F06RAF (NORM, M, N, A, LDA, WORK)
INTEGER                                M, N, LDA
double precision                     A(LDA,*), WORK(*)
CHARACTER*1                           NORM
```

3 Description

None.

4 References

None.

5 Parameters

- | | | |
|----|--|--------------|
| 1: | NORM – CHARACTER*1 | <i>Input</i> |
| | <i>On entry:</i> specifies the value to be returned: | |
| | if NORM = '1' or 'O', the 1-norm; | |
| | if NORM = 'I', the ∞ -norm; | |
| | if NORM = 'F' or 'E', the Frobenius (or Euclidean) norm; | |
| | if NORM = 'M', the value $\max_{i,j} a_{ij} $ (not a norm). | |
| | <i>Constraint:</i> NORM = '1', 'O', 'I', 'F', 'E' or 'M'. | |
| 2: | M – INTEGER | <i>Input</i> |
| | <i>On entry:</i> m , the number of rows of the matrix A . | |
| | <i>Constraint:</i> $M \geq 0$. | |
| 3: | N – INTEGER | <i>Input</i> |
| | <i>On entry:</i> n , the number of columns of the matrix A . | |
| | <i>Constraint:</i> $N \geq 0$. | |
| 4: | A(LDA,*) – double precision array | <i>Input</i> |
| | Note: the second dimension of the array A must be at least $\max(1, N)$. | |
| | <i>On entry:</i> the m by n matrix A . | |

- 5: LDA – INTEGER *Input*
On entry: the first dimension of the array A as declared in the (sub)program from which F06RAF is called.
Constraint: $LDA \geq \max(1, M)$.
- 6: WORK(*) – *double precision* array *Workspace*
Note: the dimension of the array WORK must be at least $\max(1, M)$ if NORM = 'I' and at least 1 otherwise.

6 Error Indicators and Warnings

None.
