

NAG 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

```
FUNCTION F06RAF (NORM, M, N, A, LDA, WORK)
REAL (KIND=nag_wp) F06RAF
INTEGER             M, N, LDA
REAL (KIND=nag_wp) A(LDA,*), WORK(*)
CHARACTER(1)        NORM
```

3 Description

None.

4 References

None.

5 Arguments

- | | | |
|----|---|--------------|
| 1: | <p>NORM – CHARACTER(1)</p> <p><i>On entry:</i> specifies the value to be returned.</p> <p>NORM = '1' or 'O'
The 1-norm.</p> <p>NORM = 'I'
The ∞-norm.</p> <p>NORM = 'F' or 'E'
The Frobenius (or Euclidean) norm.</p> <p>NORM = 'M'
The value $\max_{i,j} a_{ij}$ (not a norm).</p> <p><i>Constraint:</i> NORM = '1', 'O', 'I', 'F', 'E' or 'M'.</p> | <i>Input</i> |
| 2: | <p>M – INTEGER</p> <p><i>On entry:</i> m, the number of rows of the matrix A.</p> <p>When $M = 0$, F06RAF is set to zero.</p> <p><i>Constraint:</i> $M \geq 0$.</p> | <i>Input</i> |
| 3: | <p>N – INTEGER</p> <p><i>On entry:</i> n, the number of columns of the matrix A.</p> | <i>Input</i> |

When $N = 0$, F06RAF is set to zero.

Constraint: $N \geq 0$.

4: A(LDA,*) – REAL (KIND=nag_wp) array *Input*

Note: the second dimension of the array A must be at least N.

On entry: 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(*) – REAL (KIND=nag_wp) 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.

7 Accuracy

Not applicable.

8 Parallelism and Performance

F06RAF is not threaded in any implementation.

9 Further Comments

None.

10 Example

None.
