NAG Library Routine Document

F06QHF

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

F06QHF forms the real m by n rectangular or trapezoidal matrix A given by

$$a_{ij} = \begin{cases} \text{diag} & \text{if } i = j \\ \text{const} & \text{if } i \neq j \end{cases}.$$

2 Specification

```
SUBROUTINE F06QHF (MATRIX, M, N, CON, DIAG, A, LDA)
INTEGER             M, N, LDA
REAL (KIND=nag_wp) CON, DIAG, A(LDA,*)
CHARACTER(1)        MATRIX
```

3 Description

None.

4 References

None.

5 Arguments

1: MATRIX – CHARACTER(1) *Input*

On entry: the matrix type.

MATRIX = 'G'
General matrix.

MATRIX = 'U'
Upper trapezoidal matrix (upper triangular if $m = n$).

MATRIX = 'L'
Lower trapezoidal matrix (lower triangular if $m = n$).

Constraint: MATRIX = 'G', 'U' or 'L'.

2: M – INTEGER *Input*

On entry: m, the number of rows of the matrix A.

Constraint: M ≥ 0.

3: N – INTEGER *Input*

On entry: n, the number of columns of the matrix A.

Constraint: N ≥ 0.

4: CON – REAL (KIND=nag_wp) *Input*

On entry: the value to be assigned to the off-diagonal elements of A.

5: DIAG – REAL (KIND=nag_wp) *Input*

On entry: the value to be assigned to the diagonal elements of A.

6: A(LDA, $*$) – REAL (KIND=nag_wp) array *Output*

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

On exit: the m by n general or trapezoidal matrix A.

If MATRIX = 'U', A is upper trapezoidal and the elements of the array below the diagonal are not referenced.

If MATRIX = 'L', A is lower trapezoidal and the elements of the array above the diagonal are not referenced.

7: LDA – INTEGER *Input*

On entry: the first dimension of the array A as declared in the (sub)program from which F06QHF is called.

Constraint: LDA $\geq \max(1, \mathrm{M})$.

6 Error Indicators and Warnings

None.

7 Accuracy

Not applicable.

8 Parallelism and Performance

F06QHF is not threaded in any implementation.

9 Further Comments

None.

10 Example

None.