

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: | <p>MATRIX – CHARACTER(1)</p> <p><i>On entry:</i> the matrix type.</p> <p>MATRIX = 'G'</p> <p>General matrix.</p> <p>MATRIX = 'U'</p> <p>Upper trapezoidal matrix (upper triangular if $m = n$).</p> <p>MATRIX = 'L'</p> <p>Lower trapezoidal matrix (lower triangular if $m = n$).</p> <p><i>Constraint:</i> MATRIX = 'G', 'U' or 'L'.</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><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> <p><i>Constraint:</i> $N \geq 0$.</p> | <i>Input</i> |
| 4: | <p>CON – REAL (KIND=nag_wp)</p> <p><i>On entry:</i> the value to be assigned to the off-diagonal elements of A.</p> | <i>Input</i> |

- 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: $LDA \geq \max(1, M)$.

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.
