

NAG Fortran 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
  double precision CON, DIAG, A(LDA,*)
  CHARACTER*1     MATRIX
```

3 Description

None.

4 References

None.

5 Parameters

- | | | |
|----|---|--------------|
| 1: | MATRIX – CHARACTER*1 | <i>Input</i> |
| | <i>On entry:</i> the matrix type: | |
| | if MATRIX = 'G', general matrix; | |
| | if MATRIX = 'U', upper trapezoidal matrix (upper triangular if $m = n$); | |
| | if MATRIX = 'L', lower trapezoidal matrix (lower triangular if $m = n$). | |
| | <i>Constraint:</i> MATRIX = 'G', 'U' or 'L'. | |
| 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: | CON – double precision | <i>Input</i> |
| | <i>On entry:</i> the value to be assigned to the off-diagonal elements of A . | |
| 5: | DIAG – double precision | <i>Input</i> |
| | <i>On entry:</i> the value to be assigned to the diagonal elements of A . | |

6: A(LDA,*) – *double precision* array *Output*

Note: the second dimension of the array A must be at least $\max(1, N)$.

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.
