NAG Fortran Library Routine Document

F06THF

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

F06THF forms the complex 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 F06THF (MATRIX, M, N, CON, DIAG, A, LDA)
INTEGER             M, N, LDA
complex*16          CON, DIAG, A(LDA,*)
CHARACTER*1         MATRIX
```

3 Description

None.

4 References

None.

5 Parameters

1: MATRIX – CHARACTER*1 *Input*

On entry: 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 $m = n$).

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

2: M – INTEGER *Input*

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

Constraint: $\mathrm{M} \geq 0$.

3: N – INTEGER *Input*

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

Constraint: $\mathrm{N} \geq 0$.

4: CON – ***complex*16*** *Input*

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

5: DIAG – ***complex*16*** *Input*

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

6: A(LDA,$*$) – ***complex*16*** array *Output*

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

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 F06THF is called.

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

6 Error Indicators and Warnings

None.