1 Purpose

nag_dtr_load (f16qgc) initialises a real triangular matrix.

2 Specification

void nag_dtr_load (Nag_OrderType order, Nag_UploType uplo, Integer n, double alpha, double diag, double a[], Integer pda, NagError *fail)

3 Description

nag_dtr_load (f16qgc) forms the real $n$ by $n$ triangular matrix $A$ given by

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

4 References

None.

5 Parameters

1: order – Nag_OrderType 

   Input

   On entry: the order parameter specifies the two-dimensional storage scheme being used, i.e., row-major ordering or column-major ordering. C language defined storage is specified by order = Nag_RowMajor. See Section 2.2.1.4 of the Essential Introduction for a more detailed explanation of the use of this parameter.

   Constraint: order = Nag_RowMajor or Nag_ColMajor.

2: uplo – Nag_UploType 

   Input

   On entry: specifies whether the upper or lower triangular part of $A$ is stored as follows:

   if uplo = Nag_Upper, the upper triangular part of $A$ is stored;

   if uplo = Nag_Lower, the lower triangular part of $A$ is stored.

   Constraint: uplo = Nag_Upper or Nag_Lower.

3: n – Integer 

   Input

   On entry: $n$, the order of the matrix $A$.

   Constraint: $n \geq 0$.

4: alpha – double 

   Input

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

5: diag – double 

   Input

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

6: a[dim] – double 

   Output

   Note: the dimension, dim, of the array a must be at least max(1, pda × n).
If order = Nag_ColMajor, the \((i, j)\)th element of the matrix \(A\) is stored in \(a[(j-1) \times \text{pda} + i - 1]\) and if order = Nag_RowMajor, the \((i, j)\)th element of the matrix \(A\) is stored in \(a[(i-1) \times \text{pda} + j - 1]\).

On exit: the \(n\) by \(n\) triangular matrix \(A\). If uplo = Nag_Upper, \(A\) is upper triangular and the elements of the array below the diagonal are not referenced; if uplo = Nag_Lower, \(A\) is lower triangular and the elements of the array above the diagonal are not referenced.

7: \(\text{pda} - \) Integer

\(\text{Input}\)

On entry: the stride separating matrix row or column elements (depending on the value of order) in the array \(a\).

Constraint: \(\text{pda} \geq \max(1, \text{n})\).

8: \(\text{fail} - \) NagError *

\(\text{Input}/\text{Output}\)

The NAG error parameter (see the Essential Introduction).

6 Error Indicators and Warnings

NE_INT

On entry, \(\text{n} = \langle\text{value}\rangle\).

Constraint: \(\text{n} \geq 0\).

On entry, \(\text{pda} = \langle\text{value}\rangle\).

Constraint: \(\text{pda} \geq \max(1, \text{n})\).

NE_BAD_PARAM

On entry, parameter \(\langle\text{value}\rangle\) had an illegal value.

7 Accuracy

Not applicable.

8 Further Comments

None.

9 Example

None.