NAG C Library Function Document

nag_dge_load (f16qhc)

1   Purpose

nag_dge_load (f16qhc) initialises a real general matrix.

2   Specification

```
void nag_dge_load (Nag_OrderType order, Integer m, Integer n, double alpha,
    double diag, double a[], Integer pda, NagError *fail)
```

3   Description

nag_dge_load (f16qhc) forms the real m by n general matrix A given by

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

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:    **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:    **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 $\max(1, \mathbf{pda} \times \mathbf{n})$ when **order** = **Nag_ColMajor** and at least $\max(1, \mathbf{pda} \times \mathbf{m})$ when **order** = **Nag_RowMajor**.

If **order** = **Nag_ColMajor**, the (i, j)th element of the matrix A is stored in $\mathbf{a}[(j-1) \times \mathbf{pda} + i - 1]$ and if **order** = **Nag_RowMajor**, the (i, j)th element of the matrix A is stored in $\mathbf{a}[(i-1) \times \mathbf{pda} + j - 1]$.

On entry: the m by n general matrix A.

7:     **pda** – Integer   *Input*

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

Constraints:

> if **order** = **Nag_ColMajor**, **pda** $\geq$ max$(1, \mathbf{m})$;
> if **order** = **Nag_RowMajor**, **pda** $\geq$ max$(1, \mathbf{n})$.

8:     **fail** – NagError *   *Input/Output*

The NAG error parameter (see the Essential Introduction).

6   Error Indicators and Warnings

NE_INT

On entry, $\mathbf{m} = \langle value \rangle$.
Constraint: $\mathbf{m} \geq 0$.

On entry, $\mathbf{n} = \langle value \rangle$.
Constraint: $\mathbf{n} \geq 0$.

On entry, $\mathbf{pda} = \langle value \rangle$.
Constraint: $\mathbf{pda} \geq$ max$(1, \mathbf{m})$.

On entry, $\mathbf{pda} = \langle value \rangle$.
Constraint: $\mathbf{pda} \geq$ max$(1, \mathbf{n})$.

NE_BAD_PARAM

On entry, parameter $\langle value \rangle$ had an illegal value.

7   Accuracy

Not applicable.

8   Further Comments

None.

9   Example

See Section 9 of the document for nag_dbdsqr (f08mec).