NAG C Library Function Document

nzg_ztr_load (f16tgc)

1   Purpose

nzg_ztr_load (f16tgc) initialises a complex triangular matrix.

2   Specification

```
void nag_ztr_load (Nag_OrderType order, Nag_UploType uplo, Integer n,
    Complex alpha, Complex diag, Complex a[], Integer pda, NagError *fail)
```

3   Description

nzg_ztr_load (f16tgc) forms the complex n by n triangular 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:    **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** ≥ 0.

4:    **alpha** – Complex   *Input*

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

5:    **diag** – Complex   *Input*

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

6:    **a**[*dim*] – Complex   *Output*

    Note: the dimension, *dim*, of the array **a** must be at least $\max(1, \textbf{pda} \times \textbf{n})$.

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 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:    **pda** – Integer   *Input*

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

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

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

The NAG error parameter (see the Essential Introduction).

6   Error Indicators and Warnings

NE_INT

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

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

None.