NAG Fortran Library Routine Document

D02NRF

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

D02NRF is an enquiry routine for communicating with D02NMF or D02NNF when supplying columns of a sparse Jacobian matrix.

2 Specification

```
SUBROUTINE D02NRF (J, IPLACE, INFORM)
INTEGER            J, IPLACE, INFORM(23)
```

3 Description

D02NRF is required when D02NMF or D02NNF is being used with sparse matrix linear algebra. After an exit from D02NMF or D02NNF with IREVCM = 8, D02NRF must be called to determine which column of the Jacobian is required and where it is to be placed in the array RWORK (a parameter of D02NMF or D02NNF).

4 References

See the D02M/N Sub-chapter Introduction.

5 Parameters

1: J – INTEGER *Output*

On exit: the index j of the column of the Jacobian which is required.

2: IPLACE – INTEGER *Output*

On exit: indicates which locations in the array RWORK to fill with the jth column.

If IPLACE = 1 the (i,j)th element of the Jacobian must be placed in RWORK$(50 + 2 \times \text{NEQMAX} + i)$, otherwise the (i,j)th element must be placed in RWORK$(50 + \text{NEQMAX} + i)$.

If JCEVAL = 'F', in the previous call to D02NUF, then IPLACE = 2 always, hence the jth column of the Jacobian must be placed in RWORK$(50 + \text{NEQMAX} + i)$, for $i = 1, 2, \ldots, \text{NEQ}$.

RWORK, NEQ and NEQMAX are parameters of D02NMF and D02NNF.

3: INFORM(23) – INTEGER array *Communication Array*

On entry: contains information supplied by the integrator.

6 Error Indicators and Warnings

None.

7 Accuracy

Not applicable.

8 Further Comments

None.

9 Example

See Section 9 of the document for D02NNF.