Z01CDFP (INDXG2P)

NAG Parallel Library Routine Document

Note: Before using this routine, please read the Users' Note for your implementation to check for implementation-dependent details. You are advised to enclose any calls to NAG Parallel Library routines between calls to Z01AAFP and Z01ABFP.

1 Description

Z01CDFP (INDXG2P) identifies the row (or column) coordinate of a processor within the logical processor grid which processes a particular element of a matrix distributed in a cyclic 2-d block fashion. The row (or column) index of the matrix element must be the index in the full matrix, not the submatrix as described in the F07 and F08 routines. Z01CDFP (INDXG2P) is a ScaLAPACK function which is described in Section 3.1 of some F07 and F08 routine documents.

2 Specification

```
INTEGER FUNCTION Z01CDFP(INDXG, MBORNB, IPROC, I1PROC, MPORNP)
ENTRY            INDXG2P(INDXG, MBORNB, IPROC, I1PROC, MPORNP)
INTEGER                  INDXG, MBORNB, IPROC, I1PROC, MPORNP
```

3 Data Distribution

3.1 Definitions

The following definitions are used in describing the data distribution within this document:

m_p	–	the number of rows in the logical processor grid.
n_p	–	the number of columns in the logical processor grid.
M_b	–	the blocking factor for the distribution of the rows of the matrix.
N_b	–	the blocking factor for the distribution of the columns of the matrix.

3.2 Global and Local Arguments

The input argument INDXG, MBORNB, IPROC and MPORNP are global and so should have the same value on entry to the routine on each processor. However, this condition is not checked by this routine. The remaining arguments are local.

4 Arguments

1: INDXG — INTEGER *Global Input*

On entry: the global index for which the process coordinate is required.

2: MBORNB — INTEGER *Global Input*

On entry: the blocking factor (N_b or M_b) for the matrix across the rows or columns.

3: IPROC — INTEGER
Not used (dummy argument).

4: I1PROC — INTEGER *Global Input*

On entry: the row or column index in the processor grid of the processor holding the first row or column of the matrix. (IDESCA(7) or IDESCA(8), in ScaLAPACK [1] terminology.)

5: MPORNP — INTEGER *Global Input*

On entry: the number of processors in the processor column or row (n_p or m_p) over which the matrix is distributed.

5 Errors and Warnings

None.

6 Further Comments

It is the users' responsibility to check the input values before entry to Z01CDFP (INDXG2P).

7 References

[1] Choi J, Dongarra J J, Ostrouchov S, Petitet A P, Walker D W and Whaley R C (1994) The Design and Implementation of the ScaLAPACK LU, QR and Cholesky Factorization Routines *LAPACK Working Note 80. Technical Report CS-94-246* Department of Computer Science, University of Tennessee, 107 Ayres Hall, Knoxville, TN 37996-1301, USA

8 Example

None.