NAG Library Routine Document

F06EUF (DGTHR)

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

F06EUF (DGTHR) gathers specified (usually nonzero) elements of a real vector y in full storage form into a sparse real vector x in compressed form.

2 Specification

```
SUBROUTINE F06EUF (NZ, Y, X, INDX)
INTEGER            NZ, INDX(*)
REAL (KIND=nag_wp) Y(*), X(*)
```

The routine may be called by its BLAS name ***dgthr***.

3 Description

F06EUF (DGTHR) gathers the specified elements of a vector, y, in full storage form, into x, the equivalent sparse vector compressed form.

4 References

Dodson D S, Grimes R G and Lewis J G (1991) Sparse extensions to the Fortran basic linear algebra subprograms *ACM Trans. Math. Software* **17** 253–263

5 Arguments

1: NZ – INTEGER *Input*

On entry: the number of nonzeros in the compressed sparse vector x.

2: Y$(*)$ – REAL (KIND=nag_wp) array *Input*

Note: the dimension of the array Y must be at least $\max_k\{\text{INDX}(k)\}$.

On entry: the vector y. Only elements corresponding to indices in INDX are accessed.

3: X$(*)$ – REAL (KIND=nag_wp) array *Output*

Note: the dimension of the array X must be at least $\max(1, \text{NZ})$.

On exit: the compressed vector x.

4: INDX$(*)$ – INTEGER array *Input*

Note: the dimension of the array INDX must be at least $\max(1, \text{NZ})$.

On entry: INDX(i) must contain the index Y(i), for $i = 1, 2, \ldots, \text{NZ}$, which is to be gathered into x.

6 Error Indicators and Warnings

None.

7 Accuracy

Not applicable.

8 Parallelism and Performance

F06EUF (DGTHR) is not threaded in any implementation.

9 Further Comments

None.

10 Example

None.