

# NAG Library Routine Document

## F06EWF (DSCTR)

**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

F06EWF (DSCTR) scatters the elements of a sparse real vector  $x$  stored in compressed form, into a real vector  $y$  in full storage form.

### 2 Specification

```
SUBROUTINE F06EWF (NZ, X, INDX, Y)
  INTEGER          NZ, INDX(*)
  REAL (KIND=nag_wp) X(*), Y(*)
```

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

### 3 Description

F06EWF (DSCTR) scatters the elements of a vector  $x$ , stored in compressed form, into a vector,  $y$ , in full storage 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  | <i>Input</i>  |
|    | <i>On entry:</i> the number of nonzeros in the sparse vector $x$ .  |               |
| 2: | X(*) – REAL (KIND=nag_wp) array   | <i>Input</i>  |
|    | <b>Note:</b> the dimension of the array X must be at least $\max(1, \text{NZ})$ .   |               |
|    | <i>On entry:</i> the nonzero elements of the sparse vector $x$ .  |               |
| 3: | INDX(*) – INTEGER array   | <i>Input</i>  |
|    | <b>Note:</b> the dimension of the array INDX must be at least $\max(1, \text{NZ})$ .  |               |
|    | <i>On entry:</i> INDX( $i$ ) must contain the index of X( $i$ ) in the sparse vector $x$ , for $i = 1, 2, \dots, \text{NZ}$ . |               |
|    | <i>Constraint:</i> the indices must be distinct.  |               |
| 4: | Y(*) – REAL (KIND=nag_wp) array   | <i>Output</i> |
|    | <b>Note:</b> the dimension of the array Y must be at least $\max_k \{\text{INDX}(k)\}$ .                                      |               |
|    | <i>On exit:</i> the vector $y$ . Only elements corresponding to indices in INDX are altered.                                  |               |

### 6 Error Indicators and Warnings

None.

## **7 Accuracy**

Not applicable.

## **8 Parallelism and Performance**

F06EWF (DSCTR) is not threaded in any implementation.

## **9 Further Comments**

None.

## **10 Example**

None.

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