

# NAG Library Routine Document

## F06EDF (DSCAL)

**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

F06EDF (DSCAL) multiplies a real vector by a real scalar.

### 2 Specification

```
SUBROUTINE F06EDF (N, ALPHA, X, INCX)
  INTEGER          N, INCX
  REAL (KIND=nag_wp) ALPHA, X(*)
```

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

### 3 Description

F06EDF (DSCAL) performs the operation

$$x \leftarrow \alpha x$$

where  $x$  is an  $n$ -element real vector scattered with stride INCX, and  $\alpha$  is a real scalar.

### 4 References

Lawson C L, Hanson R J, Kincaid D R and Krogh F T (1979) Basic linear algebra subprograms for Fortran usage *ACM Trans. Math. Software* **5** 308–325

### 5 Parameters

- |    |   |                     |
|----|---|---------------------|
| 1: | N – INTEGER   | <i>Input</i>        |
|    | <i>On entry:</i> $n$ , the number of elements in $x$ .  |                     |
| 2: | ALPHA – REAL (KIND=nag_wp)  | <i>Input</i>        |
|    | <i>On entry:</i> the scalar $\alpha$ .  |                     |
| 3: | X(*) – REAL (KIND=nag_wp) array   | <i>Input/Output</i> |
|    | <b>Note:</b> the dimension of the array X must be at least $\max(1, 1 + (N - 1) \times \text{INCX})$ .                                  |                     |
|    | <i>On entry:</i> the $n$ -element vector $x$ . $x_i$ must be stored in $X(1 + (i - 1) \times \text{INCX})$ , for $i = 1, 2, \dots, N$ . |                     |
|    | Intermediate elements of X are not referenced.  |                     |
|    | <i>On exit:</i> the vector $\alpha x$ stored in the array elements used to supply the original vector $x$ .                             |                     |
|    | Intermediate elements of X are unchanged.   |                     |
| 4: | INCX – INTEGER  | <i>Input</i>        |
|    | <i>On entry:</i> the increment in the subscripts of X between successive elements of $x$ .  |                     |
|    | <i>Constraint:</i> $\text{INCX} > 0$ .  |                     |

## **6 Error Indicators and Warnings**

None.

## **7 Accuracy**

Not applicable.

## **8 Parallelism and Performance**

Not applicable.

## **9 Further Comments**

None.

## **10 Example**

None.

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