NAG Library Routine Document

F06EAF (DDOT)

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

F06EAF (DDOT) computes the scalar product of two real vectors.

2 Specification

```
FUNCTION F06EAF (N, X, INCX, Y, INCY)
REAL (KIND=nag_wp) F06EAF
INTEGER            N, INCX, INCY
REAL (KIND=nag_wp) X(*), Y(*)
```

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

3 Description

F06EAF (DDOT) returns, via the function name, the value of the scalar product

$$x^{\mathrm{T}}y$$

where x and y are n-element real vectors scattered with stride INCX and INCY respectively.

4 References

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

5 Arguments

1: N – INTEGER *Input*

On entry: n, the number of elements in x and y.

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

Note: the dimension of the array X must be at least $\max(1, 1 + (\mathrm{N} - 1) \times |\mathrm{INCX}|)$.

On entry: the n-element vector x.

If INCX > 0, x_i must be stored in X$(1 + (i - 1) \times \mathrm{INCX})$, for $i = 1, 2, \ldots, \mathrm{N}$.

If INCX < 0, x_i must be stored in X$(1 - (\mathrm{N} - i) \times \mathrm{INCX})$, for $i = 1, 2, \ldots, \mathrm{N}$.

Intermediate elements of X are not referenced.

3: INCX – INTEGER *Input*

On entry: the increment in the subscripts of X between successive elements of x.

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

Note: the dimension of the array Y must be at least $\max(1, 1 + (\mathrm{N} - 1) \times |\mathrm{INCY}|)$.

On entry: the n-element vector y.

If INCY > 0, y_i must be stored in Y$(1 + (i - 1) \times \mathrm{INCY})$, for $i = 1, 2, \ldots, \mathrm{N}$.

If INCY < 0, y_i must be stored in Y$(1 - (\text{N} - i) \times \text{INCY})$, for $i = 1, 2, \ldots, \text{N}$.

Intermediate elements of Y are not referenced.

5: INCY – INTEGER *Input*

On entry: the increment in the subscripts of Y between successive elements of y.

6 Error Indicators and Warnings

None.

7 Accuracy

Not applicable.

8 Parallelism and Performance

F06EAF (DDOT) is not threaded in any implementation.

9 Further Comments

None.

10 Example

None.