

NAG Library Routine Document

F16DLF

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

F16DLF sums the elements of an integer vector.

2 Specification

```
INTEGER FUNCTION F16DLF(N, X, INCX)
INTEGER                                N, X(1+(N-1)*ABS(INCX)), INCX
```

3 Description

F16DLF returns the sum

$$x_1 + x_2 + \cdots + x_n$$

of the elements of an n -element integer vector x , via the function name.

If $N \leq 0$ on entry, F16DLF immediately returns the value 0.

4 References

Basic Linear Algebra Subprograms Technical (BLAST) Forum (2001) *Basic Linear Algebra Subprograms Technical (BLAST) Forum Standard* University of Tennessee, Knoxville, Tennessee URL: <http://www.netlib.org/blas/blast-forum/blas-report.pdf>

5 Parameters

- | | | |
|----|--|--------------|
| 1: | N – INTEGER | <i>Input</i> |
| | <i>On entry:</i> n , the number of elements in x . | |
| 2: | $X(1 + (N - 1) \times INCX)$ – INTEGER array | <i>Input</i> |
| | <i>On entry:</i> the vector x . Element x_i is stored in $X(1 + (i - 1) \times INCX)$, for $i = 1, 2, \dots, n$. | |
| 3: | INCX – INTEGER | <i>Input</i> |
| | <i>On entry:</i> the increment in the subscripts of X between successive elements of x . | |
| | <i>Constraint:</i> $INCX \neq 0$. | |

6 Error Indicators and Warnings

If $INCX = 0$, an error message is printed and program execution is terminated.

7 Accuracy

Not applicable.

8 Further Comments

None.

9 Example

This example computes the sum of the elements of

$$x = (1, 10, 11, -2, 9)^T.$$

9.1 Program Text

```
*      F16DLF Example Program Text
*      Mark 22 Release. NAG Copyright 2007.
*      .. Parameters ..
      INTEGER          NIN, NOUT
      PARAMETER        (NIN=5,NOUT=6)
      INTEGER          NMAX, INCMAX
      PARAMETER        (NMAX=10,INCMAX=NMAX)
*      .. Local Scalars ..
      INTEGER          I, INCX, N, SUMVAL
*      .. Local Arrays ..
      INTEGER          X(1+(NMAX-1)*ABS(INCMAX))
*      .. External Functions ..
      INTEGER          F16DLF
      EXTERNAL         F16DLF
*      .. Intrinsic Functions ..
      INTRINSIC        ABS
*      .. Executable Statements ..
      CONTINUE

*      WRITE (NOUT,*) 'F16DLF Example Program Results'

*      Skip heading in data file
*
      READ (NIN,*)

*      Read N and INCX from data file
*
      READ (NIN,*) N, INCX

*      IF (N.LE.NMAX .AND. ABS(INCX).LE.INCMAX) THEN
*
*          Read X from data file
*
*          READ (NIN,*) (X(I),I=1,1+(N-1)*ABS(INCX),INCX)
*
*          Sum the elements of X
*
*          SUMVAL = F16DLF(N,X,INCX)
*
*          WRITE (NOUT,*)
*          WRITE (NOUT,99999) SUMVAL
      END IF
*
99999 FORMAT (1X,'Sum of elements of X is',I5)
      END
```

9.2 Program Data

F16DLF Example Program Data	
5 1	: N and INCX
1 10 11 -2 9	: Array X

9.3 Program Results

```
F16DLF Example Program Results

Sum of elements of X is    29
```