NAG C Library Function Document

zhemv (f06scc)

1 Purpose

zhemv (f06scc) performs the matrix-vector operation

$$y \leftarrow \alpha Ax + \beta y,$$

where A is an n by n complex Hermitian matrix, x and y are n element complex vectors, and α and β are complex scalars.

2 Specification

```
#include <nag.h>
#include <nagf06.h>
void zhemv (MatrixTriangle uplo, Integer n, Complex alpha, const Complex a[],
     Integer tda, const Complex x[], Integer incx, Complex beta, Complex y[],
     Integer incy)
```

3 Arguments

1: **uplo** – MatrixTriangle *Input*

On entry: specifies whether the upper or lower triangular part of A is stored as follows:

if **uplo** = **UpperTriangle**, the upper triangular part of A is stored;
if **uplo** = **LowerTriangle**, the lower triangular part of A is stored.

Constraint: **uplo** = **UpperTriangle** or **LowerTriangle**.

2: **n** – Integer *Input*

On entry: n, the order of the matrix A.

Constraint: $\mathbf{n} \geq 0$.

3: **alpha** – Complex *Input*

On entry: the scalar α.

4: **a**[**n** × **tda**] – const Complex *Input*

On entry: the n by n Hermitian matrix A.

uplo = **UpperTriangle**

The upper triangle of A must be stored and the elements of the array below the diagonal are not referenced.

uplo = **LowerTriangle**

The lower triangle of A must be stored and the elements of the array above the diagonal are not referenced.

5: **tda** – Integer *Input*

On entry: the second dimension of the array **a** as declared in the function from which zhemv (f06scc) is called.

Constraint: $\mathbf{tda} \geq \max(1, \mathbf{n})$.

6: **x**[**n**] – const Complex *Input*

On entry: the incremented array **x** must contain the n element vector x.

7: **incx** – Integer *Input*

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

Constraint: **incx** $\neq 0$.

8: **beta** – Complex *Input*

On entry: the scalar β.

9: **y**[**n**] – Complex *Input/Output*

On entry: the incremented array **y** must contain the n element vector y.

On exit: the updated vector y.

10: **incy** – Integer *Input*

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

Constraint: **incy** $\neq 0$.

4 Error Indicators and Warnings

If a function is called with an invalid argument then an error message is output on stderr, giving the name of the function and the number of the first invalid argument, and execution is terminated.