NAG Fortran Library Routine Document

F06BEF

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

F06BEF generates a Jacobi plane rotation with parameters c and s, which diagonalizes a given 2 by 2 real symmetric matrix:

$$\begin{pmatrix} c & s \\ -s & c \end{pmatrix}\begin{pmatrix} x & y \\ y & z \end{pmatrix}\begin{pmatrix} c & -s \\ s & c \end{pmatrix} = \begin{pmatrix} a & 0 \\ 0 & b \end{pmatrix}.$$

2 Specification

```
SUBROUTINE F06BEF (JOB, X, Y, Z, C, S)
double precision      X, Y, Z, C, S
CHARACTER*1           JOB
```

3 Description

None.

4 References

None.

5 Parameters

1: JOB – CHARACTER*1 *Input*

On entry: specifies the property which determines the precise form of the rotation:

if JOB = 'B', $c \geq 1/\sqrt{2}$;
if JOB = 'S', $0 \leq c \leq 1/\sqrt{2}$;
if JOB = 'M', $|a| \geq |b|$.

Constraint: JOB = 'B', 'S' or 'M'.

2: X – ***double precision*** *Input/Output*

On entry: the value x, the $(1,1)$ element of the input matrix.

On exit: the value a.

3: Y – ***double precision*** *Input/Output*

On entry: the value y, the $(1,2)$ or $(2,1)$ element of the input matrix.

On exit: the value t, the tangent of the rotation.

4: Z – ***double precision*** *Input/Output*

On entry: the value z. the $(2,2)$ element of the input matrix.

On exit: the value b.

5: C – ***double precision*** *Output*

On exit: the value c, the cosine of the rotation.

6: S – ***double precision*** *Output*

On exit: the value s, the sine of the rotation.

6 Error Indicators and Warnings

None.