

NAG Library Routine Document

E05JAF

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

E05JAF is used to initialize communication data for the suite of multi-level coordinate search routines: E05JBF, E05JCF, E05JDF, E05JEF, E05JFF, E05JGF, E05JHF, E05JJF, E05JKF and E05JLF.

2 Specification

```
SUBROUTINE E05JAF (N_R, COMM, LCOMM, IFAIL)
  INTEGER          N_R, LCOMM, IFAIL
  REAL (KIND=nag_wp) COMM(LCOMM)
```

3 Description

E05JAF initializes the communication array COMM for the solver E05JBF and the optional-argument handlers E05JCF, E05JDF, E05JEF, E05JFF, E05JGF, E05JHF, E05JJF, E05JKF and E05JLF.

4 References

None.

5 Arguments

- 1: N_R – INTEGER *Dummy*
This argument is no longer accessed by E05JAF.
- 2: COMM(LCOMM) – REAL (KIND=nag_wp) array *Communication Array*
On exit: COMM **must not** be altered between calls to any of the routines E05JBF, E05JCF, E05JDF, E05JEF, E05JFF, E05JGF, E05JHF, E05JJF, E05JKF and E05JLF.
- 3: LCOMM – INTEGER *Input*
On entry: the dimension of the array COMM as declared in the (sub)program from which E05JAF is called.
Constraint: LCOMM \geq 100.
- 4: IFAIL – INTEGER *Input/Output*
On entry: IFAIL must be set to 0, -1 or 1. If you are unfamiliar with this argument you should refer to Section 3.4 in How to Use the NAG Library and its Documentation for details.
For environments where it might be inappropriate to halt program execution when an error is detected, the value -1 or 1 is recommended. If the output of error messages is undesirable, then the value 1 is recommended. Otherwise, if you are not familiar with this argument, the recommended value is 0. **When the value -1 or 1 is used it is essential to test the value of IFAIL on exit.**
On exit: IFAIL = 0 unless the routine detects an error or a warning has been flagged (see Section 6).

6 Error Indicators and Warnings

If on entry $IFAIL = 0$ or -1 , explanatory error messages are output on the current error message unit (as defined by X04AAF).

Errors or warnings detected by the routine:

$IFAIL = 1$

On entry, $LCOMM = \langle value \rangle$.
Constraint: $LCOMM \geq 100$.

$IFAIL = -99$

An unexpected error has been triggered by this routine. Please contact NAG.

See Section 3.9 in How to Use the NAG Library and its Documentation for further information.

$IFAIL = -399$

Your licence key may have expired or may not have been installed correctly.

See Section 3.8 in How to Use the NAG Library and its Documentation for further information.

$IFAIL = -999$

Dynamic memory allocation failed.

See Section 3.7 in How to Use the NAG Library and its Documentation for further information.

7 Accuracy

Not applicable.

8 Parallelism and Performance

E05JAF is threaded by NAG for parallel execution in multithreaded implementations of the NAG Library.

Please consult the X06 Chapter Introduction for information on how to control and interrogate the OpenMP environment used within this routine. Please also consult the Users' Note for your implementation for any additional implementation-specific information.

9 Further Comments

The time taken by E05JAF is negligible.

10 Example

See Section 10 in E05JBF and E05JCF.
