

# NAG Fortran Library Routine Document

## G05YEF

**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

G05YEF initializes the Sobol generator. It must be called before using G05YFF and is required if a Sobol sequence is wanted from G05YJF or G05YKF.

### 2 Specification

```
SUBROUTINE G05YEF (IDIM, IREF, ISKIP, IFAIL)
  INTEGER          IDIM, IREF(2000), ISKIP, IFAIL
```

### 3 Description

G05YEF places vital initialization information into the array IREF for subsequent use by the generator routines.

### 4 References

None.

### 5 Parameters

- |    |                                                                                                                                                                                            |                     |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| 1: | IDIM – INTEGER                                                                                                                                                                             | <i>Input</i>        |
|    | <i>On entry:</i> the number of dimensions required.                                                                                                                                        |                     |
|    | <i>Constraint:</i> $1 \leq \text{IDIM} \leq 40$ .                                                                                                                                          |                     |
| 2: | IREF(2000) – INTEGER array                                                                                                                                                                 | <i>Output</i>       |
|    | <i>On exit:</i> contains initialization information for use with the generator routines. IREF should not be altered in any way between initialization and calls of the generator routines. |                     |
| 3: | ISKIP – INTEGER                                                                                                                                                                            | <i>Input</i>        |
|    | <i>On entry:</i> the number of terms of the sequence to skip on initialization.                                                                                                            |                     |
|    | <i>Constraint:</i> $\text{ISKIP} \leq 2^{15}$ .                                                                                                                                            |                     |
| 4: | IFAIL – INTEGER                                                                                                                                                                            | <i>Input/Output</i> |
|    | <i>On entry:</i> IFAIL must be set to 0, –1 or 1. Users who are unfamiliar with this parameter should refer to Chapter P01 for details.                                                    |                     |
|    | <i>On exit:</i> IFAIL = 0 unless the routine detects an error (see Section 6).                                                                                                             |                     |

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, for users not familiar with this parameter the recommended value is 0. **When the value –1 or 1 is used it is essential to test the value of IFAIL on exit.**

## 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,  $IDIM < 1$  or  $IDIM > 40$ .

$IFAIL = 2$

The value of  $ISKIP > 2^{15}$ .

## 7 Accuracy

Not applicable.

## 8 Further Comments

None.

## 9 Example

See Section 9 of the document for G05YFF.

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