NAG Fortran Library Routine Document

G05KCF

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

G05KCF sets the seeds to a non-repeatable initial value for the selected generator as used by and passed to the group of pseudo-random number routines G05K–G05Q.

2 Specification

```
SUBROUTINE G05KCF(IGEN, ISEED)
INTEGER           IGEN, ISEED(4)
```

3 Description

This routine sets the seeds used by the selected generator mechanism (see the G05 Chapter Introduction) to values calculated from the setting of the real-time clock. The pseudo-random number generator is selected by the input value of the parameter IGEN.

This routine will yield different subsequent sequences of random numbers in different runs of the calling program. It should be noted that there is no guarantee of statistical properties between sequences, only within sequences.

4 References

None.

5 Parameters

1: IGEN – INTEGER *Input*

On entry: must contain the identification number for the generator to be used to return a pseudo-random number and should remain unchanged until a re-initialisation by a call to one of the routines G05KBF or G05KCF. The values that may be chosen are:

IGEN $= 0$, the basic generator;

$1 \leq$ IGEN ≤ 273, a Wichman–Hill generator.

See the G05 Chapter Introduction for details.

Constraint: $0 \leq$ IGEN ≤ 273.

2: ISEED(4) – INTEGER array *Output*

On exit: contains values which define an initial state for the generator selected by the parameter IGEN. The values returned will differ for each run of the calling program.

6 Error Indicators and Warnings

None.

7 Accuracy

Not applicable.

8 Further Comments

None.

9 Example

The example program prints the first five pseudo-random real numbers from a uniform distribution between 0 and 1, generated by G05KAF after initialisation by G05KCF.

9.1 Program Text

Note: the listing of the example program presented below uses ***bold italicised*** terms to denote precision-dependent details. Please read the Users' Note for your implementation to check the interpretation of these terms. As explained in the Essential Introduction to this manual, the results produced may not be identical for all implementations.

```
*     G05KCF Example Program Text
*     Mark 20 Release. NAG Copyright 2001.
*     .. Parameters ..
      INTEGER          NOUT
      PARAMETER        (NOUT=6)
*     .. Local Scalars ..
      real             X
      INTEGER          I, IGEN
*     .. Local Arrays ..
      INTEGER          ISEED(4)
*     .. External Functions ..
      real             G05KAF
      EXTERNAL         G05KAF
*     .. External Subroutines ..
      EXTERNAL         G05KCF
*     .. Executable Statements ..
      WRITE (NOUT,*) 'G05KCF Example Program Results'
      WRITE (NOUT,*)
*     Initialise the seed
      ISEED(1) = 1762543
      ISEED(2) = 9324783
      ISEED(3) = 42344
      ISEED(4) = 742355
*     IGEN identifies the stream.
      IGEN = 1
      CALL G05KCF(IGEN,ISEED)
*
      DO 20 I = 1, 5
         X = G05KAF(IGEN,ISEED)
         WRITE (NOUT,99999) X
   20 CONTINUE
      STOP
*
99999 FORMAT (1X,F10.4)
      END
```

9.2 Program Data

None.

9.3 Program Results

```
 G05KCF Example Program Results

     0.5330
     0.5277
     0.5389
     0.0966
     0.9983
```