G05CBF – NAG Fortran Library Routine Document

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

G05CBF sets the seed used by the basic generator in the Chapter Introduction to a repeatable initial value.

2 Specification

```
SUBROUTINE G05CBF(I)
INTEGER        I
```

3 Description

This routine sets the internal seed used by the basic generator (see G05CAF) to a value n_0 calculated from the parameter i:

$$n_0 = 2i + 1.$$

It then generates the value n_1 and discards it.

This routine will yield different subsequent sequences of random numbers if called with different values of i, but the sequences will be repeatable 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: I — INTEGER *Input*

On entry: a number from which the new seed is to be calculated.

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 G05CAF after initialisation by G05CBF.

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.

```
*       G05CBF Example Program Text
*       Mark 14 Revised.  NAG Copyright 1989.
*       .. Parameters ..
        INTEGER          NOUT
        PARAMETER       (NOUT=6)
*       .. Local Scalars ..
        real             X
        INTEGER          I
*       .. External Functions ..
        real             G05CAF
        EXTERNAL         G05CAF
*       .. External Subroutines ..
        EXTERNAL         G05CBF
*       .. Executable Statements ..
        WRITE (NOUT,*) 'G05CBF Example Program Results'
        WRITE (NOUT,*)
*
        CALL G05CBF(0)
*
        DO 20 I = 1, 5
           X = G05CAF(X)
           WRITE (NOUT,99999) X
   20   CONTINUE
        STOP
*
99999 FORMAT (1X,F10.4)
        END
```

9.2 Program Data

None.

9.3 Program Results

```
G05CBF Example Program Results

    0.7951
    0.2257
    0.3713
    0.2250
    0.8787
```