

# NAG Library Routine Document

## X05BAF

**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

X05BAF returns the amount of processor time used since an unspecified previous time, via the routine name.

### 2 Specification

```
FUNCTION X05BAF ( )  
REAL (KIND=nag_wp) X05BAF
```

### 3 Description

X05BAF returns the number of seconds of processor time used since some previous time. The previous time is system dependent, but may be, for example, the time the current job or the current program started running.

If the system clock of the host machine is inaccessible for any reason, X05BAF returns the value zero.

### 4 References

None.

### 5 Arguments

None.

### 6 Error Indicators and Warnings

None.

### 7 Accuracy

The accuracy of the value returned depends on the accuracy of the system clock on the host machine.

### 8 Parallelism and Performance

X05BAF is not threaded in any implementation.

### 9 Further Comments

Since the value returned by X05BAF is the amount of processor time since some unspecified earlier time, no significance should be placed on the value other than as a marker to be compared with some later figure returned by X05BAF. The amount of processor time that has elapsed between two calls of X05BAF can be simply calculated as the earlier value subtracted from the later value.

## 10 Example

This example makes an initial call to X05BAF. In a loop it performs some computations and makes another call to X05BAF; the difference between the value from this call and the initial is used to track the time taken by those computations. The loop is exited if an allotted time limit is exceeded.

### 10.1 Program Text

```

Program x05baf

!      X05BAF Example Program Text

!      Mark 26 Release. NAG Copyright 2016.

!      .. Use Statements ..
      Use nag_library, Only: nag_wp, x05baf
!      .. Implicit None Statement ..
      Implicit None
!      .. Parameters ..
      Real (Kind=nag_wp), Parameter      :: timeout_s = 100._nag_wp
      Integer, Parameter                  :: nout = 6
      Integer, Parameter                  :: nterms = 10**7
!      .. Local Scalars ..
      Real (Kind=nag_wp)                  :: h, start
      Integer                              :: n
!      .. Intrinsic Procedures ..
      Intrinsic                           :: real
!      .. Executable Statements ..
      Write (nout,*) 'X05BAF Example Program Results'

      start = x05baf()

!      Do a non-trivial amount of intermediate work.

      h = 0._nag_wp
      n = 1

loop: Do
      h = h + 1.0_nag_wp/real(nterms-n+1,kind=nag_wp)

      If (x05baf()-start>timeout_s) Then
         Write (nout,*) 'Computation timed out.'
         Exit loop
      End If

      If (n==nterms) Then
         Exit loop
      End If

      n = n + 1
End Do loop

      Write (nout,99999) 'Computed ', n,
         ' terms of the harmonic series within the allotted time limit.'
99999 Format (1X,A,I8,A)
      Write (nout,99998) 'Value of partial sum is', h, '.'
99998 Format (1X,A,E13.5,A)
End Program x05baf

```

### 10.2 Program Data

None.

### **10.3 Program Results**

X05BAF Example Program Results

Computed 10000000 terms of the harmonic series within the allotted time limit.

Value of partial sum is 0.16695E+02.

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