1 SUMMARY

To compute the value of a polynomial

\[ P(x) = a_0 + a_1x + a_2x^2 + \ldots + a_nx^n \]

The value is calculated using the nested form

\[ P(x) = (\ldots((a_nx + a_{n-1})x + \ldots + a_1)x + a_0) \]

accumulating intermediate results double length.

ATTRIBUTES — Version: 1.0.0. Types: PB01A; PB01AD. Original date: August 1967. Origin: R.C.F.McLatchie, Harwell. Remark: PB01A was formerly called PB01AS.

2 HOW TO USE THE PACKAGE

2.1 The argument list

The single precision version

\[ P = \text{PB01A}(A, N, X) \]

The double precision version

\[ P = \text{PB01AD}(A, N, X) \]

A is a REAL (DOUBLE PRECISION in the D version) array which must be set by the user to contain the coefficients of the polynomial, i.e. set \( A(i+1) = a_i, i = 0, 1, \ldots, n. \)

N is an INTEGER variable which must be set by the user to \( n \) the degree of the polynomial.

X is a REAL (DOUBLE PRECISION in the D version) variable which must be set by the user to the value of \( x \) for which the value of the polynomial is required.

N.B. No arguments are changed by the subroutine.

P The subroutine is a function subroutine which returns the value of the polynomial. The double precision version must be declared as DOUBLE PRECISION in the calling program if the full precision is to be obtained.

3 GENERAL INFORMATION

Use of common: None.

Workspace: None.

Other routines called directly: None.

Input/output: None.

4 METHOD

The value of the polynomial is calculated using the nested form

\[ P(x) = (\ldots((a_nx + a_{n-1})x + a_{n-1})x + \ldots + a_1)x + a_0 \]

accumulating intermediate values in double length floating point registers.