1 SUMMARY

Computes values of the **Bessel functions** $J_0(x)$ **and** $Y_0(x)$. A Chebyshev series in x is used if $0 \le x \le 8$ and a similar series in $\dfrac{1}{x}$ if $x > 8$, see, C.W. Clenshaw, 'Mathematical Tables', Vol. 5, NPL.

ATTRIBUTES — Version: 1.0.0. **Types:** FF01A; FF01AD. **Calls:** FD05. **Original date:** April 1963. **Origin:** S.Marlow, Harwell.

2 HOW TO USE THE PACKAGE

The single precision version

        CALL FF01A(VJ0,VY0,X,N)

The double precision version

        CALL FF01AD(VJ0,VY0,X,N)

VJ0   is a REAL (DOUBLE PRECISION in the D version) variable which is set by the routine to the computed value of $J_0(x)$.

VY0   is a REAL (DOUBLE PRECISION in the D version) variable which is set by the routine to the computed value of $Y_0(x)$.

X   is a REAL (DOUBLE PRECISION in the D version) variable which must be set by the user to the value of the argument x. **Restriction:** $x \ne 0$, for a value of $Y_0(x)$, but if $x < 0$ then $|x|$ is used.

N   is an INTEGER variable which must be set by the user to select $J_0(x)$ only or both $J_0(x)$ and $Y_0(x)$, i.e.

        N ≤ 0 and $x \le 8$: only $J_0(x)$ is calculated.

        Otherwise: both $J_0(x)$ and $Y_0(x)$ are calculated.

3 GENERAL INFORMATION

Use of common: none.

Workspace: none.

Other routines: none.

Input/Output: none.

Restrictions:

$x \ne 0$ for $Y_0(x)$.

Accuracies:

  6 sig. figs using 4-byte arithmetic.

  9 sig. figs using 8-byte arithmetic.

4 METHOD

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