

ADAS Subroutine xxycf2

SUBROUTINE XXYCF2 (FCN, M, N, X, FVEC, FJAC, B, C)

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C
C ROUTINE: XXYCF2
C
C PURPOSE: CALCULATES AN ESTIMATE OF THE ELEMENTS OF THE VARIANCE-COVARIANCE
C          MATRIX OF THE ESTIMATED REGRESSION COEFFICIENTS FOR A NON-LINEAR
C          LEAST-SQUARES PROBLEM.
C
C          REPLACES NAG ROUTINE E04YCF WHEN CALLED AFTER E04GCF OR ANOTHER
C          ROUTINE THAT USES FIRST DERIVATIVES.
C*****
C          THIS ROUTINE CAN ONLY BE USED WHEN FIRST DERIVATIVES ARE AVAILABLE.
C*****
C          SEE THE DOCUMENTATION OF E04YCF AND THE E04 SERIES FOR MORE
C          INFORMATION ON THE MATHEMATICS OF CALCULATING THE VARIANCE-
C          COVARIANCE MATRIX.
C
C CALLING PROGRAM: GENERAL USE
C
C INPUT:
C   SUBROUTINE FCN - CALCULATES THE FUNCTIONS AND THEIR DERIVATIVES.
C                   IF ONE IS DIRECTLY REPLACING THE NAG ROUTINE THEN
C                   THIS ARGUMENT WILL BE LSFUN2 IN THE CALLING
C                   PROGRAM, AND LSFUN2 WILL HAVE TO BE MODIFIED TO
C                   ACCOMMODATE THE IFLAG VARIABLE. SEE BELOW FOR DETAILS.
C   (I*4)  M        - NUMBER OF FUNCTIONS
C   (I*4)  N        - NUMBER OF VARIABLES, N<=M
C   (R*8)  X        - VECTOR OF THE ESTIMATED SOLUTION
C   (R*8)  FVEC()   - THE FUNCTION EVALUATED AT X
C   (R*8)  FJAC()  - A WORK MATRIX OF DIMENSION (M,N)
C   (R*8)  B()     - A WORK VECTOR OF DIMENSION N
C
C OUTPUT:
C   (R*8)  C(,)    - THE VARIANCE-COVARIANCE MATRIX. DIMENSIONS NxN.
C
C ROUTINES:
C-----
C   NAME      SOURCE  PURPOSE
C-----
C   XXMINV   ADAS    INVERTS A SQUARE MATRIX
C   FCN      USER    CALCULATES FUNCTIONS AND THEIR FIRST DERIVATIVES
C {
C   SUBROUTINE FCN(M,N,X,FVEC,FJAC,LDFJAC,IFLAG)
C   INTEGER M,N,IFLAG, LDFJAC
C   REAL*8 X(N), FVEC(M), FJAC(LDFJAC,N)
C INPUT:
C   M,N      - AS ABOVE
C   LDFJAC   - FIRST DIMENSION OF FJAC
C   X        - VECTOR AT WHICH THE FUNCTION IS TO BE EVALUATED
C   IFLAG    - 1=> CALCULATE FVEC BUT DON'T CHANGE FJAC
C             - 2=> CALCULATE FJAC BUT DON'T CHANGE FVEC
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C OUTPUT:
C FVEC - FUNCTION EVALUATED AT X OR NOT CHANGED
C FJAC - JACOBIAN OF FUNCTION EVALUATED AT X OR NOT CHANGED
C }

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C VERSION 1.1 DATE: 31-05-96

C MODIFIED: WILLIAM OSBORN
C - FIRST VERSION

C
C VERSION 1.2 DATE: 16-05-07

C MODIFIED: ALLAN WHITEFORD
C - Updated comments as part of subroutine documentation
C procedure.

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INTEGER	M,	N		
REAL*8	B(N),	C(N,N),	FJAC(M,N),	FVEC(M)
REAL*8	X(N)			