

## ADAS Subroutine xxsim

SUBROUTINE XXSIM(A, IA, M, B, N, X, WKS, ERR, ISTOP)

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C  
C ROUTINE: XXSIM  
C  
C PURPOSE: SOLVES THE SYSTEM OF SIMULTANEOUS EQUATIONS AX=B USING THE  
C NETLIB LINALG ROUTINE LSQR WHICH FOLLOWS THIS ROUTINE ALONG  
C WITH ITS DEPENDENCIES. THIS ROUTINE REPLACES NAG LIBRARY  
C ROUTINE F04ATF. HOWEVER, THE LU DECOMPOSITION IS NOT OUTPUT.  
C  
C CALLING PROGRAM: GENERAL USE  
C  
C INPUT:  
C  
C (R\*8) A(,) THE MATRIX A  
C (I\*4) IA THE FIRST DIMENSION OF THE TWO-DIMENSIONAL  
C ARRAY A, IA<=M  
C (I\*4) M NUMBER OF ROWS OF A  
C (R\*8) B() RIGHT-HAND-SIDE VECTOR B, DIMENSION = M  
C (I\*4) N NUMBER OF COLUMNS OF A  
C (R\*8) WKS() WORKSPACE VECTOR, DIMENSION >= M\*N+2\*N  
C  
C OUTPUT:  
C  
C (R\*8) X() SOLUTION VECTOR X, DIMENSION = N  
C (R\*8) ERR() VECTOR OF THE ERROR ESTIMATES OF THE COMPONENTS OF  
C X. SEE VARIABLE 'SE' IN LSQR.  
C (I\*4) ISTOP AN ERROR CODE SET TO 0 OR 4 IF NO ERROR. SEE LSQR  
C FOR A DESCRIPTION OF THE ERROR CODES.  
C  
C CALLS:  
C (EXT.) MA SUBROUTINE TO CALCULATE PRODUCTS OF A WITH GIVEN  
C VECTORS. GIVEN NEXT IN THE FILE.  
C ROUTINES:  
C-----  
C NAME SOURCE PURPOSE  
C-----  
C LSQR NETLIB CALCULATES THE SOLUTION - SEE BELOW  
C-----  
C  
C AUTHOR: WILLIAM OSBORN (TESSELLA SUPPORT SERVICES PLC.)  
C  
C DATE: 10-06-96  
C  
C VERSION 1.1 DATE: 10-06-96  
C MODIFIED: WILLIAM OSBORN  
C - FIRST VERSION  
C VERSION 1.2 DATE: 13-09-96  
C MODIFIED: WILLIAM OSBORN  
C - ADDED IA PARAMETER SO THAT NON-SQUARE MATRICES CAN BE USED  
C  
C VERSION 1.3 DATE: 25-09-96

C MODIFIED: WILLIAM OSBORN

C - CHANGED DIMENSION OF B TO M

C

C VERSION 1.4

DATE: 14-06-2000

C MODIFIED: Martin O'Mullane

C - Changed iwk from real\*8 to integer.

C

C-----

INTEGER	IA,	ISTOP,	M,	N
REAL*8	A (IA, N) ,	B (M) ,	ERR (N)	
REAL*8	WKS (M*N+2*N) ,		X (N)	
INTEGER	IW (LENIW) ,	LENIW,	LENRW,	M
INTEGER	MODE,	N		
REAL*8	RW (LENRW) ,	X (N) ,	Y (M)	
DOUBLE PRECISION	ACOND,	ANORM,	ARNORM,	ATOL
DOUBLE PRECISION	BTOL,	CONLIM,	DAMP ,	RNORM
DOUBLE PRECISION	RW (LENRW) ,	SE (N) ,	U (M) ,	V (N)
DOUBLE PRECISION	W (N) ,	X (N) ,	XNORM	
INTEGER	ISTOP,	ITN,	ITNLIM	
INTEGER	IW (LENIW) ,	LENIW,	LENRW,	M
INTEGER	N,	NOUT		
DOUBLE PRECISION	X (N) ,	Y (N)		
INTEGER	INCX,	INCY,	N	
DOUBLE PRECISION	X (N)			
INTEGER	INCX,	N		
DOUBLE PRECISION	A,	X (N)		
INTEGER	INCX,	N		