NAME

UBANDH – CUTEr tool to extract a banded matrix out of the Hessian matrix.

SYNOPSIS

CALL UBANDH(N, GOTH, X, NSEMIB, BANDH, LBANDH)

DESCRIPTION

The UBANDH subroutine extracts the elements which lie within a band of given semi-bandwidth out of the Hessian matrix of the objective function of the problem decoded into OUTSDIF.d at the point X in the case where the only possible constraints are bound constraints.

ARGUMENTS

The arguments of UBANDH are as follows

N [in] - integer
the number of variables for the problem,

GOTH [in] - integer
a logical variable which specifies whether the second derivatives of the groups and elements have already been set (GOTH = .TRUE.) or if they should be computed (GOTH = .FALSE.),

X [in] - real/double precision
when GOTH = .FALSE., the derivatives will be evaluated at X. Otherwise X is not used.

NSEMIB [in] - integer
the required semi-bandwidth, i.e., the number of bands directly below the diagonal of the Hessian.

BANDH [out] - real/double precision
a two-dimensional array of dimension (0:LBANDH,N) which gives the lower triangular part of the band segment of the Hessian. The diagonal entry in column i is returned in location BANDH(0,i), while the entry j places below the diagonal in column i may be found in location BANDH(j,i),

LBANDH [in] - integer
the actual declared size of the leading dimension of BANDH (with LBANDH no smaller than NSEMIB). N.B. the leading component of BANDH includes the index 0 so strictly, the size of the leading dimension is LBANDH + 1.

NOTE

GOTH should be set to .TRUE. whenever

(1) a call has been made to UDH, USH, UGRDH or UGRSH at the current point, or

(2) a previous call to UBANDH, with GOTH = .FALSE., at the current point has been made.

Otherwise, it should be set .FALSE.

AUTHORS

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SEE ALSO

CUTEr (and SifDec): A Constrained and Unconstrained Testing Environment, revisited,
N.I.M. Gould, D. Orban and Ph.L. Toint,
ACM TOMS, **29**:4, pp.373-394, 2003.

CUTE: Constrained and Unconstrained Testing Environment, I. Bongartz, A.R. Conn, N.I.M. Gould and Ph.L. Toint, TOMS, **21**:1, pp.123-160, 1995.