NAME

UGRSH – CUTEr tool to evaluate the gradient and sparse Hessian matrix in coordinate format.

SYNOPSIS

CALL UGRSH(N, X, G, NNZH, LH, H, IRNH, ICNH)

DESCRIPTION

The UGRSH subroutine evaluates the gradient and 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. This Hessian matrix is stored as a sparse matrix in coordinate format.

ARGUMENTS

The arguments of UGRSH are as follows

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

X [in] - real/double precision
an array which gives the current estimate of the solution of the problem,

G [out] - real/double precision
an array which gives the value of the gradient of the objective function evaluated at X,

NNZH [out] - integer
the number of nonzeros in H,

LH [in] - integer
the actual declared dimensions of H, IRNH and ICNH,

H [out] - real/double precision
an array which gives the value of the Hessian matrix of the objective function evaluated at X. The i-th entry of H gives the value of the nonzero in row IRNH(i) and column ICNH(i). Only the upper triangular part of the Hessian is stored,

IRNH [out] - integer
an array which gives the row indices of the nonzeros of the Hessian matrix of the objective function evaluated at X,

ICNH [out] - integer
an array which gives the column indices of the nonzeros of the Hessian matrix of the objective function evaluated at X.

NOTE

Calling this routine is more efficient than separate calls to UGR and USH.

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.

csgrsh(3M).