NAME

CUTEST_ush − CUTEst tool to evaluate the sparse Hessian matrix of the objective function.

SYNOPSIS

CALL CUTEST_ush(status, n, X, nnzh, lh, H_val, H_row, H_col)

For real rather than double precision arguments, instead

CALL CUTEST_ush_s(...)

and for quadruple precision arguments, when available,

CALL CUTEST_ush_q(...)

DESCRIPTION

The CUTEST_ush subroutine evaluates the Hessian matrix of the objective function of the problem decoded from a SIF file by the script *sifdecoder* at the point X. This Hessian matrix is stored as a sparse matrix in coordinate format.

The problem under consideration is to minimize or maximize an objective function $f(x)$ over all $x \in R^n$ subject to the simple bounds $x^l \leq x \leq x^u$. The objective function is group-partially separable.

ARGUMENTS

The arguments of CUTEST_ush are as follows

status [out] - integer
the outputr status: 0 for a succesful call, 1 for an array allocation/deallocation error, 2 for an array bound error, 3 for an evaluation error,

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,

nnzh [out] - integer
the number of nonzero elements in the Hessian matrix,

lh [in] - integer
the actual declared dimensions of H_val, H_row and H_col,

H_val [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_val gives the value of the nonzero in row H_row(i) and column H_col(i). Only the upper triangular part of the Hessian is stored,

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

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

AUTHORS

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SEE ALSO

CUTEst: a Constrained and Unconstrained Testing Environment with safe threads,
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Computational Optimization and Applications **60**:3, pp.545-557, 2014.

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I. Bongartz, A.R. Conn, N.I.M. Gould and Ph.L. Toint,
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