

NAME

CUTEst_ugrdh – CUTEst tool to evaluate the gradient and Hessian matrix.

SYNOPSIS

CALL CUTEst_ugrdh(status, n, X, G, lh1, H_val)

DESCRIPTION

The CUTEst_ugrdh subroutine evaluates the gradient and 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 dense matrix.

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_ugrdh are as follows

status [out] - integer

the output status: 0 for a successful 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,

G [out] - real/double precision

an array which gives the value of the gradient of the objective function evaluated at X,

lh1 [in] - integer

the actual declared size of the leading dimension of H_val (with lh1 no smaller than N),

H_val [out] - real/double precision

a two-dimensional array which gives the value of the Hessian matrix of the objective function evaluated at X.

NOTE

Calling this routine is more efficient than separate calls to CUTEst_ugr and CUTEst_udh.

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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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CUTE: Constrained and Unconstrained Testing Environment,

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