NAME

CUTEST_cdh − CUTEst tool to evaluate the Hessian of the Lagrangian.

SYNOPSIS

CALL CUTEST_cdh(data, status, n, m, X, Y, lh1, H_val)

DESCRIPTION

The CUTEST_cdh subroutine evaluates the Hessian matrix of the Lagrangian function $l(x, y) = f(x) + y^T c(x)$ for the problem decoded from a SIF file by the script *sifdecode* at the point (x, y) = (X,Y). The 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 general equations $c_i(x) = 0$, $(i \in 1, \ldots, m_E)$, general inequalities $c_i^l(x) \leq c_i(x) \leq c_i^u(x)$, $(i \in m_E + 1, \ldots, m)$, and simple bounds $x^l \leq x \leq x^{u.}$ The objective function is group-partially separable and all constraint functions are partially separable.

ARGUMENTS

The arguments of CUTEST_cdh are as follows

data [inout] - CUTEST_data_type derived type
problem-specific private data,

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,

m [in] - integer
the total number of general constraints,

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

Y [in] - real/double precision
an array which gives the Lagrange multipliers,

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 Lagrangian function evaluated at X and Y.

AUTHORS

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

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.

sifdecode(1)

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