NAME

CUTEST_clfg − CUTEst tool to evaluate Lagrangian function value and possibly gradient.

SYNOPSIS

CALL CUTEST_clfg(status, n, m, X, Y, f, G, grad)

For real rather than double precision arguments, instead

CALL CUTEST_clfg_s(...)

and for quadruple precision arguments, when available,

CALL CUTEST_clfg_q(...)

DESCRIPTION

The CUTEST_clfg subroutine evaluates the value of the Lagrangian function $l(x, y) = f(x) + y^T c(x)$ for the problem decoded from a SIF file by the script *sifdecoder* at the point (X,Y), and possibly its gradient.

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 $c_i^l \leq c_i(x) \leq c_i^u$, $(i \in m_E + 1, \ldots, m)$, 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_clfg 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,

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,

f [out] - real/double precision
the value of the Lagrangian function evaluated at (X,Y),

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

grad [in] - logical
a logical variable which should be set to .TRUE. if the gradient of the Lagrangian function is required and .FALSE. otherwise.

NOTE

A call to CUTEST_clfg is more efficient than two separate calls to CUTEST_cfn and CUTEST_cgr.

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.

CUTEr (and SifDec): A Constrained and Unconstrained Testing Environment, revisited,
N.I.M. Gould, D. Orban and Ph.L. Toint,
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CUTE: Constrained and Unconstrained Testing Environment,
I. Bongartz, A.R. Conn, N.I.M. Gould and Ph.L. Toint,
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cutest_uofg(3M), sifdecoder(1).