NAME

CUTEST_cofsg_threaded − CUTEst tool to evaluate function value and possibly gradient.

SYNOPSIS

CALL CUTEST_cofsg_threaded(status, n, X, f, nnzg, lg, G_val, G_var, grad, thread)

DESCRIPTION

The CUTEST_cofsg_threaded subroutine evaluates the value of the objective function of the problem decoded from a SIF file by the script *sifdecoder* at the point X, 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 $c_i^l(x) \leq c_i(x) \leq c_i^u(x)$, $(i \in m_E + 1, \ldots, m)$, 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_cofsg_threaded 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, 4 for an out-of-range thread,

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,

f [out] - real/double precision
the value of the objective function evaluated at X,

nnzg [out] - integer
the number of nonzeros in G_val,

lg [in] - integer
the declared length of G_val and G_var,

G_val [out] - real/double precision
an array which gives the nonzeros of the gradient of the objective function evaluated at X. The i-th entry of G_val gives the value of the derivative with respect to variable G_var(i) of the objective function,

G_var [out] - integer
an array whose i-th component is the index of the variable with respect to which G_val(i) is the derivative,

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

thread [in] - integer
thread chosen for the evaluation; threads are numbered from 1 to the value threads set when calling CUTEST_csetup_threaded.

NOTE

A call to CUTEST_cofsg_threaded is more efficient than two separate calls to CUTEST_cfn_threaded and CUTEST_csgr_threaded.

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.

cutest_uofg_threaded(3M), cutest_cofg_threaded(3M), sifdecoder(1).

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the number of nonzeros in G_val,

lg [in] - integer
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G_val [out] - real/double precision
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