NAME

CUTEST_ccfsg_threaded − CUTEst tool to evaluate constraint functions values and possibly their gradients in sparse format.

SYNOPSIS

CALL CUTEST_ccfsg_threaded(status, n, m, X, C, nnzj, lj, J_val, J_var, J_fun, grad, thread)

DESCRIPTION

The CUTEST_ccfsg_threaded subroutine evaluates the values of the constraint functions of the problem decoded from a SIF file by the script *sifdecoder* at the point X, and possibly their gradients in the constrained minimization case. The gradients are stored in sparse format.

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_ccfsg_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,

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,

C [out] - real/double precision
an array which gives the values of the general constraint functions evaluated at X. The i-th component of C will contain the value of $c_i(x)$.

nnzj [out] - integer
the number of nonzeros in J_val,

lj [in] - integer
the actual declared dimensions of J_val, J_var and J_fun,

J_val [out] - real/double precision
an array which gives the values of the nonzeros of the general constraint functions evaluated at X. The i-th entry of J_val gives the value of the derivative with respect to variable J_var(i) of constraint function J_fun(i),

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

J_fun [out] - integer
an array whose i-th component is the index of the problem function of which J_val(i) is the derivative,

grad [in] - logical
a logical variable which should be set .TRUE. if the gradient of the constraint functions are 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.

AUTHORS

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

SEE ALSO

CUTEst: a Constrained and Unconstrained Testing Environment with safe threads,
N.I.M. Gould, D. Orban and Ph.L. Toint,
Technical Report, Rutherford Appleton Laboratory, 2013.

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, ACM TOMS, **21**:1, pp.123-160, 1995.

sifdecoder(1)

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the total number of general constraints,

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

C [out] - real/double precision
an array which gives the values of the general constraint functions evaluated at X. The i-th component of C will contain the value of $c_i(x)$.

nnzj [out] - integer
the number of nonzeros in J_val,

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an array whose i-th component is the index of the problem function of which J_val(i) is the derivative,

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thread chosen for the evaluation; threads are numbered from 1 to the value threads set when calling CUTEST_csetup_threaded.

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

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