

NAME

CUTEST_ccfg_threaded – CUTEst tool to evaluate constraint functions values and possibly their gradients.

SYNOPSIS

CALL CUTEST_ccfg_threaded(status, n, m, X, C, jtrans, lj1, lj2, J_val, grad, thread)

DESCRIPTION

The CUTEST_ccfg_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. The problem under consideration is to minimize or maximize an objective function $f(x)$ over all $x \in R^n$ subject to general equations $c_i(x) = 0$, ($i \in 1, \dots, m_E$), general inequalities $c_i^l(x) \leq c_i(x) \leq c_i^u(x)$, ($i \in m_E + 1, \dots, m$), 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_ccfg_threaded 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, 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 $c_i(x)$,

jtrans [in] - logical

a logical variable which should be set `.TRUE.` if the transpose of the constraint Jacobian is required and `.FALSE.` if the Jacobian itself is wanted. The Jacobian matrix is the matrix whose i -th row is the gradient of the i -th constraint function,

lj1 [in] - integer

the actual declared size of the leading dimension of J_val (with $lj1$ no smaller than n if $jtrans$ is `.TRUE.` or m if $jtrans$ is `.FALSE.`),

lj2 [in] - integer

the actual declared size of the second dimension of J_val (with $lj2$ no smaller than m if $jtrans$ is `.TRUE.` or n if $jtrans$ is `.FALSE.`),

J_val [out] - real/double precision

a two-dimensional array of dimension ($lj1, lj2$) which gives the value of the Jacobian matrix of the constraint functions, or its transpose, evaluated at X . If $jtrans$ is `.TRUE.`, the i,j -th component of the array will contain the i -th derivative of the j -th constraint function. Otherwise, if $jtrans$ is `.FALSE.`, the i,j -th component of the array will contain the j -th derivative of the i -th constraint function,

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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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.

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