

NAME

CUTEST_cisgr – CUTEst tool to evaluate the gradient of a problem function in sparse format

SYNOPSIS

CALL CUTEST_cisgr(status, n, iprob, X, nnzg, lg, G_val, G_var)

For real rather than double precision arguments, instead

CALL CUTEST_cisgr_s(...)

DESCRIPTION

The CUTEST_cisgr subroutine evaluates the gradient of either the objective function or a constraint function of the problem decoded from a SIF file by the script *sifdecoder* at the point X , in the constrained minimization case. The gradient is 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 $c_i(x) = 0$, ($i \in 1, \dots, m_E$), general inequalities $c_i^l \leq c_i(x) \leq c_i^u$ ($i \in m_E + 1, \dots, m$), 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_cisgr 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,

n [in] - integer

the number of variables for the problem,

iprob [in] - integer

the number of the problem function to be considered. If $\text{iprob} = 0$, the value of the objective function will be evaluated, while if $\text{iprob} = i > 0$, that of the i -th constraint will be evaluated,

X [in] - real/double precision

an array which gives the current estimate of the solution of the problem,

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 constraint function icon evaluated at X . The i -th entry of G_val gives the value of the derivative with respect to variable $G_var(i)$ of function icon.

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.

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,

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ACM TOMS, **29**:4, pp.373-394, 2003.

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I. Bongartz, A.R. Conn, N.I.M. Gould and Ph.L. Toint,
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sifdecoder(1), cutest_cigr(3)