NAME

CISH – CUTEr tool to evaluate the Hessian of an individual problem function, in sparse format.

By convention, the signs of the Lagrange multipliers V are set so the Lagrangian function can be written as $L(X, V) = f(X) + < c(X), V >$.

SYNOPSIS

CALL CISH(N, X, IPROB, NNZH, LH, H, IRNH, ICNH)

DESCRIPTION

The CISH subroutine evaluates the Hessian of a particular constraint function or the objective function for the problem decoded into OUTSDIF.d at the point X, and possibly its gradient in the constrained minimization case. The matrix is stored in sparse format.

ARGUMENTS

The arguments of CISH are as follows

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,

IPROB [in] - integer
the number of the problem function to be considered. If IPROB = 0, the Hessian of the objective function will be evaluated, while if IPROB = i > 0, that of the i-th constraint will be evaluated.

NNZH [out] - integer
the number of nonzeros in H,

LH [in] - integer
the actual declared dimensions of H, IRNH and ICNH,

H [out] - real/double precision
an array which gives the values of the Hessian matrix of the Lagrangian function evaluated at X and V. The i-th entry of H gives the value of the nonzero in row IRNH(i) and column ICNH(i). Only the upper triangular part of the Hessian is stored,

IRNH [out] - integer
an array which gives the row indices of the nonzeros of the Hessian matrix of the objective function evaluated at X and V, and

ICNH [out] - integer
an array which gives the column indices of the nonzeros of the Hessian matrix of the objective function evaluated at X and V.

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.