## NAME

CCFSG – CUTEr tool to evaluate constraint functions values and possibly gradients in sparse format.

## SYNOPSIS

CALL CCFSG( N, M, X, LC, C, NNZJ, LCJAC, CJAC, INDVAR, INDFUN, GRAD )

## DESCRIPTION

The CCFSG subroutine evaluates the values of the constraint functions of the problem decoded into OUTSDIF.d at the point X, and possibly their gradients in the constrained minimization case. The gradients are stored in sparse format.

## ARGUMENTS

The arguments of CCFSG are as follows

**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,

**LC** [in] - integer
the actual declared dimension of C, with LC no smaller than M,

**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 CJAC,

**LCJAC** [in] - integer
the actual declared dimensions of CJAC, INDVAR and INDFUN,

**CJAC** [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 CJAC gives the value of the derivative with respect to variable INDVAR(i) of constraint function INDFUN(i),

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

**INDFUN** [out] - integer
an array whose i-th component is the index of the problem function of which CJAC(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.

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## 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.