

## NAME

CCFG – CUTEr tool to evaluate constraint functions values and possibly gradients.

## SYNOPSIS

CALL CCFG( N, M, X, LC, C, JTRANS, LCJAC1, LCJAC2, CJAC, GRAD )

## DESCRIPTION

The CCFG 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.

## ARGUMENTS

The arguments of CCFG 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** [out] - 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  $c_i(x)$ ,

**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,

**LCJAC1** [in] - integer

the actual declared size of the leading dimension of CJAC (with LCJAC1 no smaller than N if JTRANS is `.TRUE.` or M if JTRANS is `.FALSE.`),

**LCJAC2** [in] - integer

the actual declared size of the second dimension of CJAC (with LCJAC2 no smaller than M if JTRANS is `.TRUE.` or N if JTRANS is `.FALSE.`),

**CJAC** [out] - real/double precision

a two-dimensional array of dimension (LCJAC1, LCJAC2) 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.

## AUTHORS

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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.

