## NAME

CUTEST_uofg − CUTEst tool to evaluate function value and possibly gradient.

## SYNOPSIS

CALL CUTEST_uofg( status, n, X, f, G, grad )

## DESCRIPTION

The CUTEST_uofg subroutine evaluates the value of the objective function of the problem decoded from a SIF file by the script *sifdecoder* at the point X, and possibly its gradient.

The problem under consideration is to minimize or maximize an objective function $f(x)$ over all $x \in R^n$ subject to the simple bounds $x^l \leq x \leq x^u$. The objective function is group-partially separable.

## ARGUMENTS

The arguments of CUTEST_uofg are as follows

**status** [out] - integer
the outputr status: 0 for a succesful 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,

**X** [in] - real/double precision
an array which gives the current estimate of the solution of the problem,

**f** [out] - real/double precision
the value of the objective function evaluated at X,

**G** [out] - real/double precision
an array which gives the value of the gradient of the objective function evaluated at X,

**grad** [in] - logical
a logical variable which should be set to .TRUE. if the gradient of the objective function is required and .FALSE. otherwise.

## NOTE

A call to CUTEST_uofg is more efficient than two separate calls to CUTEST_ufn and CUTEST_ugr.

## 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,
Computational Optimization and Applications **60**:3, pp.545-557, 2014.

*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.

cutest_cofg(3M), sifdecoder(1).