

**NAME**

CUTEST\_cvartype – CUTEst tool to determine the type of each variable.

**SYNOPSIS**

CALL CUTEST\_cvartype( status, n, X\_type )

**DESCRIPTION**

The CUTEST\_cvartype subroutine determines the type (continuous, 0-1, integer) of each variable involved in the problem decoded from a SIF file by the script *sifdecoder*.

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  $c_i^l(x) \leq c_i(x) \leq c_i^u(x)$ , ( $i \in m_E + 1, \dots, m$ ), 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\_cvartype 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,

**X\_type** [out] - integer

an integer array whose i-th component indicates the type of variable i. Possible values are 0 (a variable whose value may be any real number), 1 (an integer variable that can only take the values zero or one) and 2 (a variable that can only take integer values).

**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.

cutest\_uvartype(3M), sifdecoder(1).

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