

**NAME**

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

**SYNOPSIS**

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

For real rather than double precision arguments, instead

CALL CUTEST\_uvartype\_s( ... )

and for quadruple precision arguments, when available,

CALL CUTEST\_uvartype\_q( ... )

**DESCRIPTION**

The CUTEST\_uvartype 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 the simple bounds  $x^l \leq x \leq x^u$ . The objective function is group-partially separable.

**ARGUMENTS**

The arguments of CUTEST\_uvartype 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).

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**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\_cvartype*(3M), *sifdecoder*(1).