5.233 lex_lesseq_allperm

DESCRIPTION LINKS

Origin Inspired by [168]

Constraint lex_lesseq_allperm(VECTOR1, VECTOR2)

Synonym leximin.

Arguments

VECTOR1	:	collection(var−dvar)
VECTOR2	:	collection(var−dvar)

Restrictions

required(VECTOR1, var)
required(VECTOR2, var)
|VECTOR1| = |VECTOR2|

Purpose VECTOR1 is *lexicographically less than or equal to* all permutations of VECTOR2. Given two vectors, $\vec{X}$ and $\vec{Y}$ of n components, $\langle X_0, \ldots, X_{n-1}\rangle$ and $\langle Y_0, \ldots, Y_{n-1}\rangle$, $\vec{X}$ is *lexicographically less than or equal to* $\vec{Y}$ if and only if $n = 0$ or $X_0 < Y_0$ or $X_0 = Y_0$ and $\langle X_1, \ldots, X_{n-1}\rangle$ is *lexicographically less than or equal to* $\langle Y_1, \ldots, Y_{n-1}\rangle$.

Example $(\langle 1,2,3\rangle, \langle 3,1,2\rangle)$

The lex_lesseq_allperm constraint holds since vector $\langle 1,2,3\rangle$ is lexicographically less than or equal to all the permutations of vector $\langle 3,1,2\rangle$ (i.e., $\langle 1,2,3\rangle$, $\langle 1,3,2\rangle$, $\langle 2,1,3\rangle$, $\langle 2,3,1\rangle$, $\langle 3,1,2\rangle$, $\langle 3,2,1\rangle$).

Typical |VECTOR1| > 1

Symmetry All occurrences of two distinct values in VECTOR1.var or VECTOR2.var can be swapped; all occurrences of a value in VECTOR1.var or VECTOR2.var can be renamed to any unused value.

Arg. properties

Suffix-contractible wrt. VECTOR1 and VECTOR2 (*remove items from same position*).

Remark The lex_lesseq_allperm(VECTOR1, VECTOR2) can be reformulated as the conjunction sort(VECTOR2, VECTOR), lex_lesseq(VECTOR1, VECTOR).

Systems leximin in **Choco**.

Used in allperm.

See also **common keyword:** allperm (*matrix symmetry*,*lexicographic order*).

implies: lex_lesseq.

system of constraints: allperm.

Keywords

characteristic of a constraint: vector.

constraint type: predefined constraint, order constraint.

symmetry: symmetry, matrix symmetry, lexicographic order.