

5.190 lex2

	DESCRIPTION	LINKS
Origin	[148]	
Constraint	lex2(MATRIX)	
Synonyms	double_lex, row_and_column_lex.	
Type	VECTOR : collection(var-dvar)	
Argument	MATRIX : collection(vec - VECTOR)	
Restrictions	required(VECTOR, var) required(MATRIX, vec) same_size(MATRIX, vec)	
Purpose	Given a matrix of domain variables, enforces that both adjacent rows, and adjacent columns are lexicographically ordered (adjacent rows and adjacent columns can be equal).	
Example	$\left(\left\langle \begin{array}{l} \text{vec} - \langle 2, 2, 3 \rangle, \\ \text{vec} - \langle 2, 3, 1 \rangle \end{array} \right\rangle \right)$ <p>The lex2 constraint holds since:</p> <ul style="list-style-type: none"> • The first row $\langle 2, 2, 3 \rangle$ is lexicographically less than or equal to the second row $\langle 2, 3, 1 \rangle$. • The first column $\langle 2, 2 \rangle$ is lexicographically less than or equal to the second column $\langle 2, 3 \rangle$. • The second column $\langle 2, 3 \rangle$ is lexicographically less than or equal to the third column $\langle 3, 1 \rangle$. 	
Symmetry	One and the same constant can be added to the var attribute of all items of MATRIX.vec.	
Usage	A <i>symmetry-breaking</i> constraint.	
Remark	The idea of this <i>symmetry-breaking</i> constraint can already be found in the following articles of A. Lubiw [238, 239]. In block designs you sometimes want repeated blocks, so using the non-strict order would be required in this case.	
Reformulation	The lex2 constraint can be expressed as a conjunction of two lex_chain_lesseq constraints: A first lex_chain_lesseq constraint on the MATRIX argument and a second lex_chain_lesseq constraint on the transpose of the MATRIX argument.	

See also

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

implied by: strict_lex2.

part of system of constraints: lex_chain_lesseq.

Keywords

constraint type: predefined constraint, system of constraints, order constraint.

modelling: matrix, matrix model.

symmetry: symmetry, matrix symmetry, lexicographic order.