

5.201 `lex_lesseq_allperm`

| | DESCRIPTION | LINKS |
|---------------------|---|-------|
| Origin | Inspired by [148] | |
| Constraint | <code>lex_lesseq_allperm(VECTOR1, VECTOR2)</code> | |
| Synonym | <code>leximin.</code> | |
| Arguments | VECTOR1 : <code>collection(var-dvar)</code> VECTOR2 : <code>collection(var-dvar)</code> | |
| Restrictions | <code>required(VECTOR1, var)</code> <code>required(VECTOR2, var)</code> <code> VECTOR1 = VECTOR2 </code> | |
| Purpose | <p>VECTOR1 is <i>lexicographically less than or equal to</i> all permutations of VECTOR2. Given two vectors, \vec{X} and \vec{Y} of n components, $\langle X_0, \dots, X_{n-1} \rangle$ and $\langle Y_0, \dots, Y_{n-1} \rangle$, \vec{X} is <i>lexicographically less than or equal to</i> \vec{Y} if and only if $n = 0$ or $X_0 < Y_0$ or $X_0 = Y_0$ and $\langle X_1, \dots, X_{n-1} \rangle$ is <i>lexicographically less than or equal to</i> $\langle Y_1, \dots, Y_{n-1} \rangle$.</p> | |
| Example | $\left(\begin{array}{c} \langle 1, 2, 3 \rangle, \\ \langle 3, 1, 2 \rangle \end{array} \right)$ <p>The <code>lex_lesseq_allperm</code> 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., $\langle 1, 2, 3 \rangle$, $\langle 1, 3, 2 \rangle$, $\langle 2, 1, 3 \rangle$, $\langle 2, 3, 1 \rangle$, $\langle 3, 1, 2 \rangle$, $\langle 3, 2, 1 \rangle$).</p> | |
| Symmetry | All occurrences of two distinct values in <code>VECTOR1.var</code> or <code>VECTOR2.var</code> can be swapped ; all occurrences of a value in <code>VECTOR1.var</code> or <code>VECTOR2.var</code> can be renamed to any unused value. | |
| Remark | The <code>lex_lesseq_allperm(VECTOR1, VECTOR2)</code> can be reformulated as the conjunction <code>sort(VECTOR2, VECTOR)</code> , <code>lex_lesseq(VECTOR1, VECTOR)</code> . | |
| Systems | <code>leximin</code> in Choco . | |
| Used in | <code>allperm</code> . | |
| See also | common keyword: <code>allperm</code> (<i>matrix symmetry, lexicographic order</i>). implies: <code>lex_lesseq</code> . system of constraints: <code>allperm</code> . | |
| Keywords | characteristic of a constraint: <code>vector</code> . constraint type: predefined constraint, order constraint. symmetry: <code>symmetry</code> , <code>matrix symmetry</code> , <code>lexicographic order</code> . | |

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