

**5.206 max\_index**

	<b>DESCRIPTION</b>	<b>LINKS</b>	<b>GRAPH</b>
<b>Origin</b>	N. Beldiceanu		
<b>Constraint</b>	<code>max_index(MAX_INDEX, VARIABLES)</code>		
<b>Arguments</b>	MAX_INDEX : <code>dvar</code> VARIABLES : <code>collection(index-int, var-dvar)</code>		
<b>Restrictions</b>	$ VARIABLES  > 0$ $MAX\_INDEX \geq 0$ $MAX\_INDEX \leq  VARIABLES $ <code>required(VARIABLES, [index, var])</code> $VARIABLES.index \geq 1$ $VARIABLES.index \leq  VARIABLES $ <code>distinct(VARIABLES, index)</code>		
<b>Purpose</b>	MAX_INDEX is the index of the variables corresponding to the maximum value of the collection of variables VARIABLES.		
<b>Example</b>	$\left( 3, \left\langle \begin{array}{l} index - 1 \quad var - 3, \\ index - 2 \quad var - 2, \\ index - 3 \quad var - 7, \\ index - 4 \quad var - 2, \\ index - 5 \quad var - 6 \end{array} \right\rangle \right)$		
	The attribute <code>var = 7</code> of the third item of the collection VARIABLES is the maximum value over values 3, 2, 7, 2, 6. Consequently, the <code>max_index</code> constraint holds since its first argument MAX_INDEX is set to 3.		
<b>Symmetries</b>	<ul style="list-style-type: none"> <li>• Items of VARIABLES are <code>permutable</code>.</li> <li>• One and the same constant can be <code>added</code> to the <code>var</code> attribute of all items of VARIABLES.</li> </ul>		
<b>See also</b>	<code>comparison swapped: min_index</code> .		
<b>Keywords</b>	<b>characteristic of a constraint:</b> maximum. <b>constraint type:</b> order constraint.		

<b>Arc input(s)</b>	VARIABLES
<b>Arc generator</b>	<code>CLIQUE</code> $\mapsto$ <code>collection</code> (variables1, variables2)
<b>Arc arity</b>	2
<b>Arc constraint(s)</b>	$\bigvee \left( \begin{array}{l} \text{variables1.key} = \text{variables2.key,} \\ \text{variables1.var} > \text{variables2.var} \end{array} \right)$
<b>Graph property(ies)</b>	<code>ORDER</code> (0, 0, index) = MAX_INDEX

**Graph model**

Parts (A) and (B) of Figure 5.400 respectively show the initial and final graph associated with the **Example** slot. Since we use the `ORDER` graph property, the vertex of rank 0 (without considering the loops) of the final graph is outlined with a thick circle.

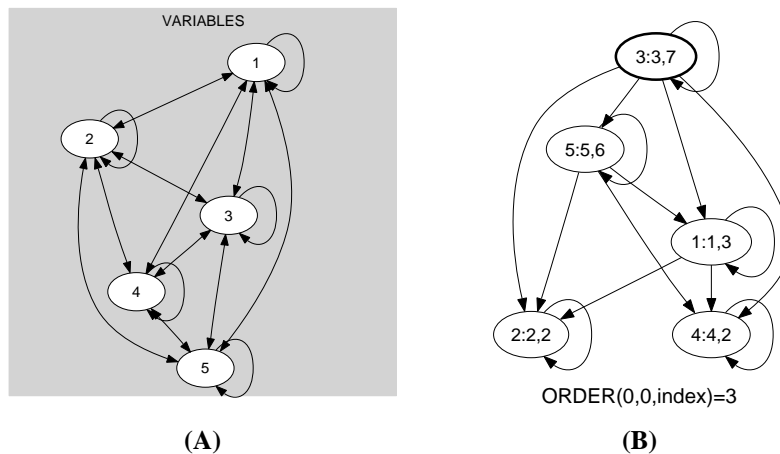


Figure 5.400: Initial and final graph of the `max_index` constraint