

### 5.3 all\_equal

	DESCRIPTION	LINKS	GRAPH
<b>Origin</b>	Derived from <code>soft_all_equal_min_ctr</code>		
<b>Constraint</b>	<code>all_equal(VARIABLES)</code>		
<b>Synonym</b>	<code>rel.</code>		
<b>Argument</b>	<code>VARIABLES : collection(var-dvar)</code>		
<b>Restrictions</b>	<code>required(VARIABLES, var)</code> <code> VARIABLES  &gt; 0</code>		
<b>Purpose</b>	Enforce all variables of the collection <code>VARIABLES</code> to take the same value.		
<b>Example</b>	<code>((5, 5, 5, 5))</code>		
	The <code>all_equal</code> constraint holds since all its variables are fixed to value 5.		
<b>Typical</b>	<code> VARIABLES  &gt; 2</code>		
<b>Symmetries</b>	<ul style="list-style-type: none"> <li>• Items of <code>VARIABLES</code> are <a href="#">permutable</a>.</li> <li>• All occurrences of a value of <code>VARIABLES.var</code> can be <a href="#">renamed</a> to any unused value.</li> </ul>		
<b>Systems</b>	<code>atMostNValue</code> in <b>Choco</b> , <code>rel</code> in <b>Gecode</b> .		
<b>See also</b>	<p><b>generalisation:</b> <code>nvalue</code> (a variable counting the number of distinct values is introduced).</p> <p><b>implies:</b> <code>consecutive_values</code>, <code>decreasing</code>, <code>increasing</code>.</p> <p><b>negation:</b> <code>not_all_equal</code>.</p> <p><b>soft variant:</b> <code>soft_all_equal_max_var</code>, <code>soft_all_equal_min_ctr</code> (decomposition-based violation measure), <code>soft_all_equal_min_var</code> (variable-based violation measure).</p> <p><b>specialisation:</b> <code>eq</code> (equality between just two variables).</p>		
<b>Keywords</b>	<b>constraint type:</b> value constraint.		

<b>Arc input(s)</b>	VARIABLES
<b>Arc generator</b>	<i>PATH</i> $\mapsto$ collection(variables1, variables2)
<b>Arc arity</b>	2
<b>Arc constraint(s)</b>	variables1.var = variables2.var
<b>Graph property(ies)</b>	<b>NARC</b> =  VARIABLES  - 1

**Graph model**

We use the arc generator *PATH* in order to link consecutive variables of the collection VARIABLES by a binary equality constraint.

Parts (A) and (B) of Figure 5.2 respectively show the initial and final graph of the **Example** slot. Since we use the **NARC** graph property, the arcs of the final graph are stressed in bold.

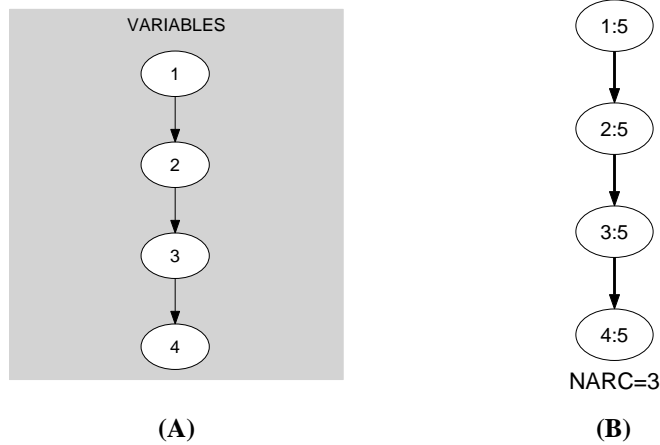


Figure 5.2: Initial and final graph of the all\_equal constraint