

5.22 among_var

	DESCRIPTION	LINKS	GRAPH
Origin	Generalisation of among		
Constraint	<code>among_var(NVAR, VARIABLES, VALUES)</code>		
Arguments	NVAR : <code>dvar</code> VARIABLES : <code>collection(var-dvar)</code> VALUES : <code>collection(val-dvar)</code>		
Restrictions	$NVAR \geq 0$ $NVAR \leq VARIABLES $ required (VARIABLES, var) required (VALUES, val)		
Purpose	<div style="border: 1px solid pink; padding: 5px;"> NVAR is the number of variables of the collection VARIABLES that are equal to one of the variables of the collection VALUES. </div>		
Example	<div style="border: 1px solid blue; padding: 5px; display: inline-block;"> $\left(\begin{array}{c} 3, \langle 4, 5, 5, 4, 1 \rangle, \\ \langle 1, 5, 8, 1 \rangle \end{array} \right)$ </div> <p>The <code>among_var</code> constraint holds since exactly 3 values of the collection of variables $\langle 4, 5, 5, 4, 1 \rangle$ occurs within the collection $\langle 1, 5, 8, 1 \rangle$.</p>		
Typical	$ VARIABLES > 1$ $ VALUES > 1$ $ VARIABLES > VALUES $		
Symmetries	<ul style="list-style-type: none"> • Items of VARIABLES are permutable. • Items of VALUES are permutable. • All occurrences of two distinct values in VARIABLES.var or VALUES.val can be swapped; all occurrences of a value in VARIABLES.var or VALUES.val can be renamed to any unused value. • An occurrence of a value of VARIABLES.var that belongs to VALUES.val (resp. does not belong to VALUES.val) can be replaced by any other value in VALUES.val (resp. not in VALUES.val). 		
Systems	among in Choco , <code>amongvar</code> in JaCoP .		
See also	implied by : among . related : common . specialisation : among (variable replaced by constant within list of values VALUES). uses in its reformulation : min_n .		
Keywords	constraint type : counting constraint. final graph structure : acyclic, bipartite, no loop.		

Arc input(s)	VARIABLES VALUES
Arc generator	<i>PRODUCT</i> \mapsto <i>collection</i> (variables, values)
Arc arity	2
Arc constraint(s)	variables.var = values.val
Graph property(ies)	NSOURCE = NVAR
Graph class	<ul style="list-style-type: none"> • ACYCLIC • BIPARTITE • NO_LOOP

Graph model

Parts (A) and (B) of Figure 5.39 respectively show the initial and final graph associated with the **Example** slot. Since we use the **NSOURCE** graph property, the source vertices of the final graph are stressed with a double circle. Since the final graph has only 3 sources the variables NVAR is fixed to 3.

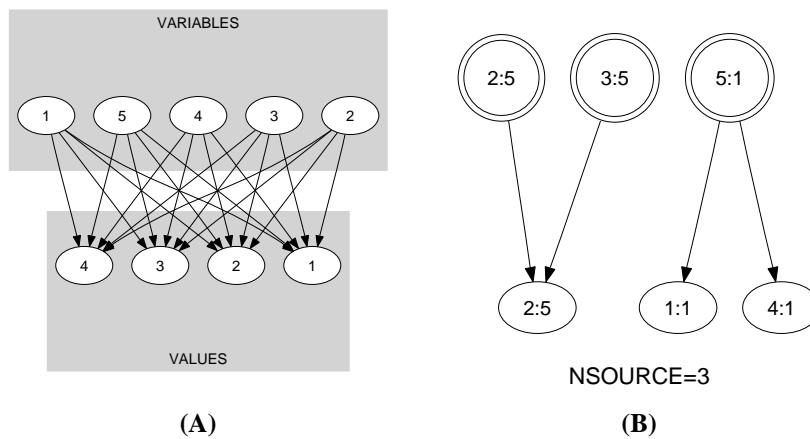


Figure 5.39: Initial and final graph of the **among_var** constraint