

5.283 not_in

	DESCRIPTION	LINKS	GRAPH	AUTOMATON
Origin	Derived from in .			
Constraint	<code>not_in(VAR, VALUES)</code>			
Arguments	<pre>VAR : dvar VALUES : collection(val-int)</pre>			
Restrictions	<pre>required(VALUES, val) distinct(VALUES, val)</pre>			
Purpose	Enforce VAR to be assigned a value different from the values of the VALUES collection.			
Example	<code>(2, <1, 3>)</code>			
	The constraint <code>not_in</code> holds since the value of its first argument <code>VAR = 2</code> does not occur within the collection <code><1, 3></code> .			
Typical	<code> VALUES > 1</code>			
Symmetries	<ul style="list-style-type: none"> Items of VALUES are permutable. One and the same constant can be added to VAR as well as to the <code>val</code> attribute of all items of VALUES. 			
Arg. properties	Contractible wrt. VALUES.			
Remark	Entailment occurs immediately after posting this constraint and removing all values in VALUES from VAR.			
Systems	notMember in Choco , rel in Gecode .			
Used in	group .			
See also	negation : in .			
Keywords	<p>characteristic of a constraint: disequality, automaton, automaton without counters, reified automaton constraint, derived collection.</p> <p>constraint arguments: unary constraint.</p> <p>constraint network structure: centered cyclic(1) constraint network(1).</p> <p>constraint type: value constraint.</p> <p>filtering: arc-consistency, entailment.</p> <p>modelling: excluded, domain definition.</p>			

Derived Collection	$\text{col}(\text{VARIABLES} - \text{collection}(\text{var} - \text{dvar}), [\text{item}(\text{var} - \text{VAR})])$
Arc input(s)	VARIABLES VALUES
Arc generator	$\text{PRODUCT} \mapsto \text{collection}(\text{variables}, \text{values})$
Arc arity	2
Arc constraint(s)	$\text{variables.var} = \text{values.val}$
Graph property(ies)	$\text{NARC} = 0$

Graph model

Figure 5.592 shows the initial graph associated with the **Example** slot. Since we use the $\text{NARC} = 0$ graph property the corresponding final graph is empty.

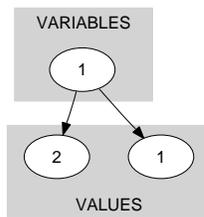


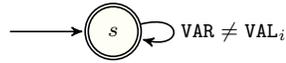
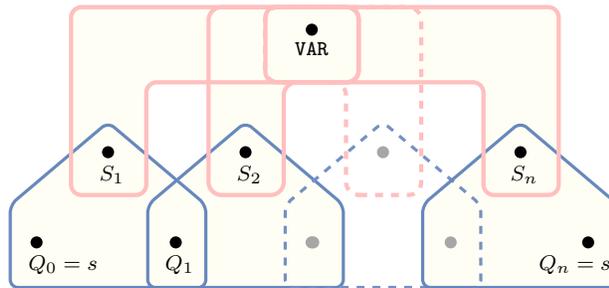
Figure 5.592: Initial graph of the `not_in` constraint (the final graph is empty)

Signature

Since 0 is the smallest number of arcs of the final graph we can rewrite $\text{NARC} = 0$ to $\text{NARC} \leq 0$. This leads to simplify NARC to NARC .

Automaton

Figure 5.593 depicts the automaton associated with the `not_in` constraint. Let VAL_i be the `val` attribute of the i^{th} item of the `VALUES` collection. To each pair (VAR, VAL_i) corresponds a 0-1 signature variable S_i as well as the following signature constraint: $VAR = VAL_i \Leftrightarrow S_i$.

Figure 5.593: Automaton of the `not_in` constraintFigure 5.594: Hypergraph of the reformulation corresponding to the automaton of the `not_in` constraint

20030820

1815