

5.204 ith_pos_different_from_0

	DESCRIPTION	LINKS	AUTOMATON
Origin	N. Beldiceanu		
Constraint	ith_pos_different_from_0(ITH, POS, VARIABLES)		
Arguments	ITH : int POS : dvar VARIABLES : collection(var—dvar)		
Restrictions	ITH ≥ 1 ITH ≤ VARIABLES POS ≥ ITH POS ≤ VARIABLES required (VARIABLES, var)		
Purpose	POS is the position of the ITH th non-zero item of the sequence of variables VARIABLES.		
Example	(2, 4, ⟨3, 0, 0, 8, 6⟩)		
	The <code>ith_pos_different_from_0</code> constraint holds since 4 corresponds to the position of the 2 th non-zero item of the sequence 3 0 0 8 6.		
Typical	VARIABLES > 1 range (VARIABLES.var) > 1 atleast (1, VARIABLES, 0)		
Symmetry	An occurrence of a value of <code>VARIABLES.var</code> that is different from 0 can be replaced by any other value that is also different from 0.		
Arg. properties	Suffix-extensible wrt. VARIABLES.		
Keywords	characteristic of a constraint: joker value , automaton , automaton with counters . constraint network structure: alpha-acyclic constraint network(3) . constraint type: data constraint . modelling: table .		

Automaton

Figure 5.472 depicts the automaton associated with the `ith_pos_different_from_0` constraint. To each variable VAR_i of the collection `VARIABLES` corresponds a 0-1 signature variable S_i . The following signature constraint links VAR_i and S_i : $\text{VAR}_i = 0 \Leftrightarrow S_i$.

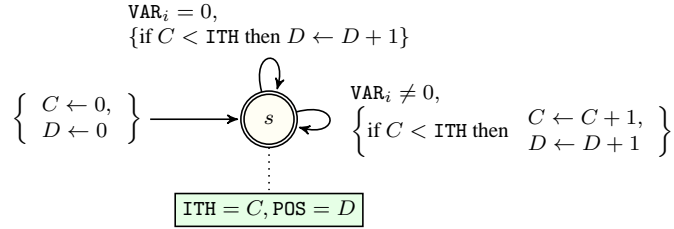


Figure 5.472: Automaton of the `ith_pos_different_from_0` constraint

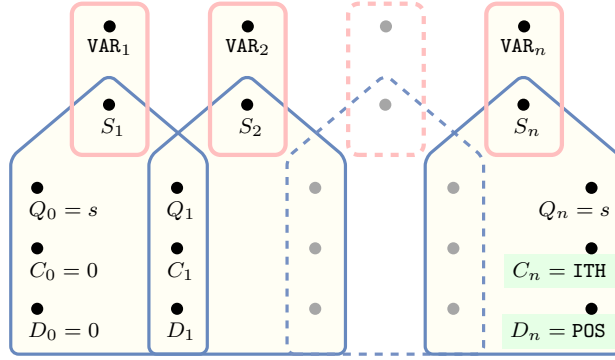


Figure 5.473: Hypergraph of the reformulation corresponding to the automaton of the `ith_pos_different_from_0` constraint