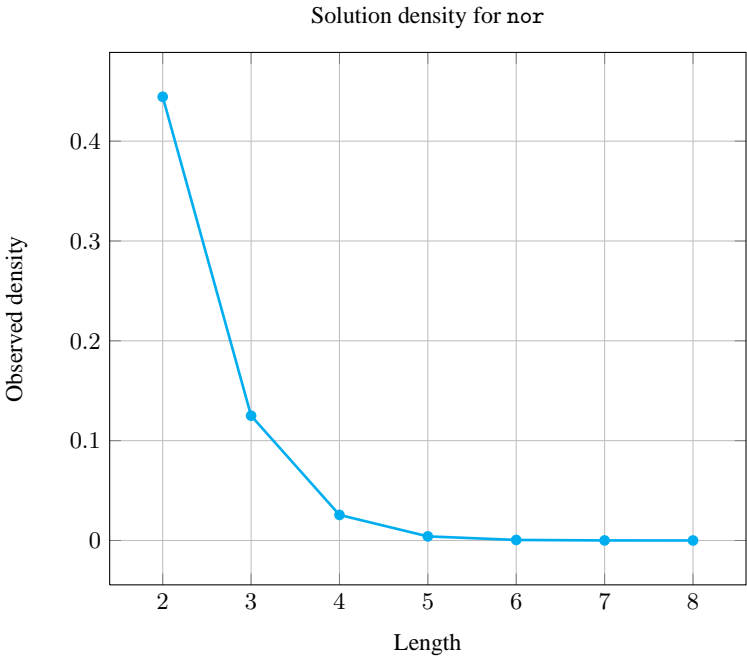
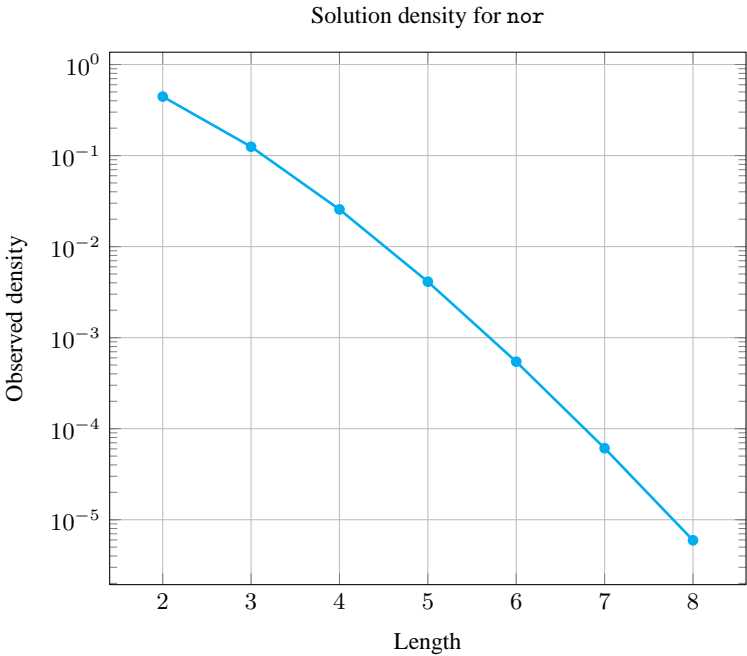


5.282 **nor**

	DESCRIPTION	LINKS	AUTOMATON
Origin	Logic		
Constraint	nor(VAR, VARIABLES)		
Synonym	clause.		
Arguments	VAR : dvar VARIABLES : collection(var−dvar)		
Restrictions	VAR ≥ 0 VAR ≤ 1 VARIABLES ≥ 2 required(VARIABLES, var) VARIABLES.var ≥ 0 VARIABLES.var ≤ 1		
Purpose	Let VARIABLES be a collection of 0-1 variables VAR ₁ , VAR ₂ , . . . , VAR _n (n ≥ 2). Enforce VAR = ¬(VAR ₁ ∨ VAR ₂ ∨ . . . ∨ VAR _n).		
Example	(1, ⟨0, 0⟩) (0, ⟨0, 1⟩) (0, ⟨1, 0⟩) (0, ⟨1, 1⟩) (0, ⟨1, 0, 1⟩)		
Symmetry	Items of VARIABLES are permutable.		
Arg. properties	<ul style="list-style-type: none">Functional dependency: VAR determined by VARIABLES.Contractible wrt. VARIABLES when VAR = 1.Extensible wrt. VARIABLES when VAR = 0.Aggregate: VAR(∧), VARIABLES(union).		
Counting			

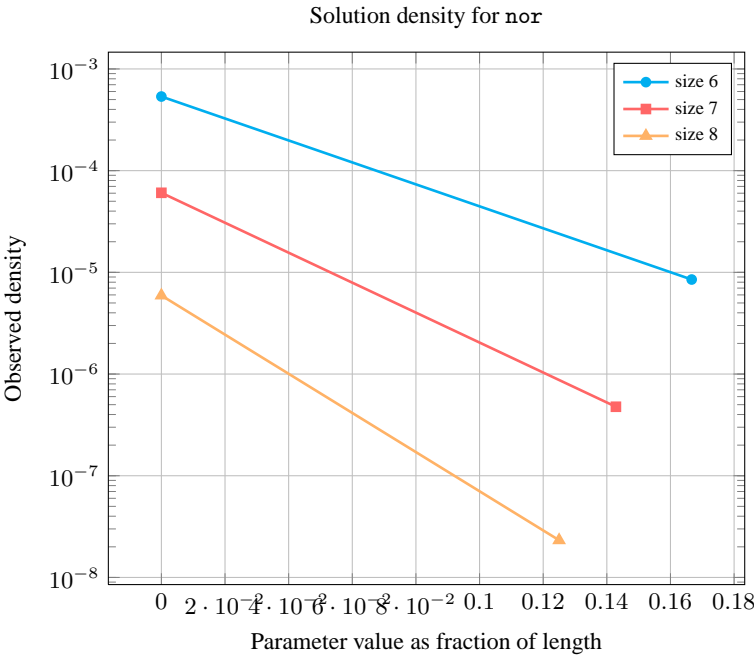
Length (n)	2	3	4	5	6	7	8
Solutions	4	8	16	32	64	128	256

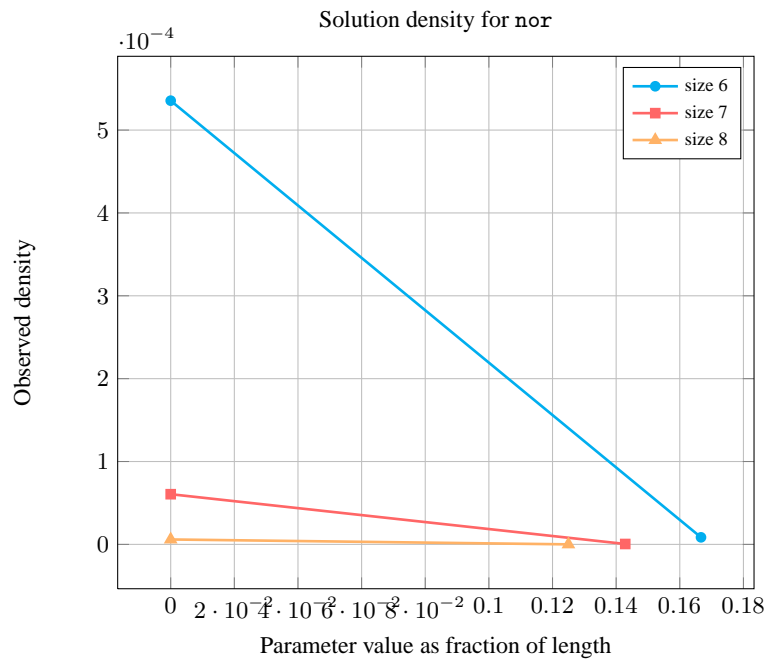
Number of solutions for nor: domains 0..n



Length (n)		2	3	4	5	6	7	8
Total		4	8	16	32	64	128	256
Parameter value	0	3	7	15	31	63	127	255
	1	1	1	1	1	1	1	1

Solution count for nor: domains 0.. n



**Systems**

`reifiedXnor` in **Choco**, `clause` in **Gecode**, `#\` in **SICStus**.

See also

common keyword: `and`, `equivalent`, `imply`, `nand`, `or`, `xor` (*Boolean constraint*).
implies: `atleast_nvalue`, `soft_all_equal_min_ctr`.

Keywords

characteristic of a constraint: `automaton`, `automaton without counters`, `reified automaton constraint`.
constraint arguments: `pure functional dependency`.
constraint network structure: `Berge-acyclic constraint network`.
constraint type: `Boolean constraint`.
filtering: `arc-consistency`.
modelling: `functional dependency`.

Cond. implications

`nor(VAR, VARIABLES)`
 with $|VARIABLES| > 2$
implies `some_equal(VARIABLES)`.

Automaton

Figure 5.606 depicts the automaton associated with the nor constraint. To the first argument VAR of the nor constraint corresponds the first signature variable. To each variable VAR_i of the second argument VARIABLES of the nor constraint corresponds the next signature variable. There is no signature constraint.

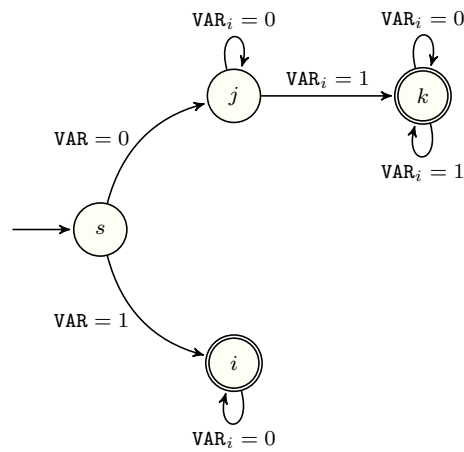


Figure 5.606: Automaton of the nor constraint

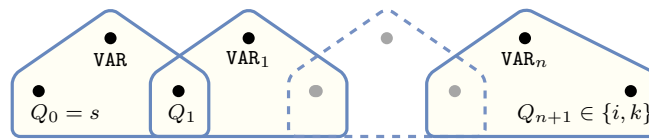


Figure 5.607: Hypergraph of the reformulation corresponding to the automaton of the nor constraint

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