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The red text below highlights fixes we had to apply to the two families of formulas introduced in **The Blow-Up in Translating LTL to Deterministic Automata** (by Orna Kupferman and Adin Rosenberg, in Mochart'10) when implementing them in Spot. Those families of LTL formulas will be supported by the `genltl` tool in Spot version 2.3.1.

1 The quasilinear formula

$$\# \wedge \mathsf{X}(\varphi_{n,1} \vee \$) \tag{1}$$

$$\wedge\, \mathsf{G}(\bigwedge_{i=1}^{n-1} (\varphi_{n,i} \rightarrow \mathsf{X}^k((a \vee b) \wedge \mathsf{X}\,\varphi_{n,i+1}))) \tag{2}$$

$$\wedge\, \mathsf{G}(\varphi_{n,n} \rightarrow \mathsf{X}^k((a \vee b) \wedge \mathsf{X}(\# \wedge \mathsf{X}(\varphi_{n,1} \vee \$ \vee \mathsf{G}\,\#)))) \tag{3}$$

$$\wedge\, (\neg\$)\,\mathsf{U}\,(\$ \wedge \mathsf{X}(\varphi_{n,1} \wedge \mathsf{X}^{n(k+1)}\,\mathsf{G}\,\#)) \tag{4}$$

$$\wedge\, \mathsf{F}(\# \wedge \mathsf{X}(\neg\# \wedge (\bigwedge_{i=1}^{n} \varphi_{n,i} \rightarrow \mathsf{X}^k \bigvee_{\sigma\in\{a,b\}} (\sigma \wedge \mathsf{F}(\$ \wedge \mathsf{F}(\varphi_{n,i} \wedge \mathsf{X}^k\,\sigma))))\,\mathsf{U}\,\#)) \tag{5}$$

$$\wedge\, \mathsf{G}(\bigwedge_{\substack{(x,y)\in\{a,b,\#,\$\}^2\\ x\neq y}} \neg(x \wedge y)) \tag{6}$$

The fixes on lines (2)–(3) are obvious typos. The fixes on lines (1) and (4) are necessary so that lines (1)–(4) match the language S_n given in the paper.

Finally, without the fix on line (5), the constraint of the form $\mathsf{F}(\# \wedge (\ldots \mathsf{U}\,\#))$ is equivalent to $\mathsf{F}(\#)$ and is therefore trivially satisfied by the other constraints. Note that changing it to $\mathsf{F}(\# \wedge \mathsf{X}(\ldots \mathsf{U}\,\#))$ is not enough, as that would be satisfied by two $\#$ in a row, and hence by the suffix of $\#^\omega$ introduced on line (3).

2 The linear formula

$$\# \wedge \mathsf{X}(a_1 \vee b_1 \vee \$) \tag{7}$$

$$\wedge\, \mathsf{G}(\bigwedge_{i=1}^{n-1} ((a_i \vee b_i) \rightarrow \mathsf{X}(a_{i+1} \vee b_{i+1}))) \tag{8}$$

$$\wedge\, \mathsf{G}((a_n \vee b_n) \rightarrow \mathsf{X}(\# \wedge \mathsf{X}(a_1 \vee b_1 \vee \$ \vee \mathsf{G}\,\#))) \tag{9}$$

$$\wedge\, (\neg\$)\,\mathsf{U}\,(\$ \wedge \mathsf{X}((a_1 \vee b_1) \wedge \mathsf{X}^k\,\mathsf{G}\,\#)) \tag{10}$$

$$\wedge\, \mathsf{F}(\# \wedge \mathsf{X}(\neg\# \wedge (\bigvee_{i=1}^{n} ((a_i \wedge \mathsf{F}(\$ \wedge \mathsf{F}\,a_i)) \vee (b_i \wedge \mathsf{F}(\$ \wedge \mathsf{F}\,b_i))))\,\mathsf{U}\,\#)) \tag{11}$$

$$\wedge\, \mathsf{G}((\# \vee \$) \rightarrow \neg \bigvee_{i=1}^{n} (a_i \vee b_i)) \wedge \mathsf{G}(\# \rightarrow \neg\$) \wedge \mathsf{G}(\bigwedge_{i=1}^{n} (a_i \rightarrow \neg b_i)) \tag{12}$$

Without the $\neg\#$ on line (11), that constraint would be satisfied by two consecutive $\#$, as discussed for (5). The use of $\bigwedge$ instead of $\bigvee$ seems to be just a typo.

3 Actual minimal DBA sizes

Let ψ_n, α_n, and β_n denote the three families of LTL formulas described in that paper, with α_n and β_n corresponding to the above two. As all these formulas are obligation properties (in the temporal hierarchy of Manna & Pnueli) we can use the technique of Dax et al. (ATVA'09) to construct Minimal Weak DBAs (MWDBA) for them.

This table gives the number of states of these minimal DBAs, as computed with `ltl2tgba --det --low`.

n	MWDBA for ψ_n		MWDBA for α_n		MWDBA for β_n	
	states	time	states	time	states	time
1	15	0.003s	19	0.006s	12	0.003s
2	106	0.037s	147	0.08s	82	0.018s
3	3057	11.7s	6206	55.0s	2240	2.3s
4	out of mem.		out of mem.		out of mem.	