

## Errata (October, 2009)

found in “Real-Time Systems” (E.-R. Olderog and H. Dierks)

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Page	Error
48-49	<b>Wrong:</b> Ctrl (seven times) <b>Correct:</b> Ctrl
66	<b>Wrong:</b> $FA^2(P) \iff \begin{array}{l} \square \vee [P] \vee [\neg P] \\ [P] ; [\neg P] \vee [\neg P] ; [P] , \end{array}$ $FA^3(P) \iff \begin{array}{l} \square \vee [P] \vee [\neg P] \\ [P] ; [\neg P] \vee [\neg P] ; [P] \vee \\ [P] ; [\neg P] ; [P] \vee [\neg P] ; [P] ; [\neg P] . \end{array}$ <b>Correct:</b> $FA^2(P) \iff \begin{array}{l} \square \vee [P] \vee [\neg P] \vee \\ [P] ; [\neg P] \vee [\neg P] ; [P] , \end{array}$ $FA^3(P) \iff \begin{array}{l} \square \vee [P] \vee [\neg P] \vee \\ [P] ; [\neg P] \vee [\neg P] ; [P] \vee \\ [P] ; [\neg P] ; [P] \vee [\neg P] ; [P] ; [\neg P] . \end{array}$
75	<b>Wrong:</b> (a) Draw the interpretation of the following state assertion: $\mathcal{I}[\text{Light} = \text{green} \wedge \neg(\text{Button} = \text{release})]$ on the interval $[0, 7]$ . <b>Correct:</b> (a) Draw the interpretation of the following state assertion: $\text{Light} = \text{green} \wedge \neg(\text{Button} = \text{release})$ on the interval $[0, 7]$ .

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78

**Wrong:**

(a)  $\models \square \implies \int P = 0,$

(b)  $\models \square [\neg P] \implies \int P = 0,$

(c)  $\models \square \implies \int P = 0.$

**Correct:**

(a)  $\models \square \implies \int P = 0,$

(b)  $\models \square [\neg P] \implies \int P = 0,$

93

**Wrong:**

$$\forall d \bullet \square ([q]^1 ; [B]^d ; (\ell = 0 \vee [C_1] ; [\neg X]) [X]^1 ; [B \vee C_2]^1 ; \ell = 4 \\ \implies \ell = 4 ; [q']^1 ; ([B] ; [C_1] ; [B] \wedge \ell = d) ; \text{true}).$$

**Correct:**

$$\forall d \bullet \square ([q]^1 ; [B]^d ; (\ell = 0 \vee [C_1] ; [\neg X]) ; [X]^1 ; [B \vee C_2]^1 ; \ell = 4 \\ \implies \ell = 4 ; [q']^1 ; ([B] ; [C_1] ; [B] \wedge \ell = d) ; \text{true}).$$

93

**Wrong:** In the illustration of (ii):  $[C_1] \ [\neg X]$ **Correct:**  $[C_1] ; [\neg X]$ 

93

**Wrong:** In the illustration of (ii):  $[B] ; [C] ; [B]$ **Correct:**  $[B] ; [C_1] ; [B]$ 

94

**Wrong:**

$$\text{copy}([q_{\text{fin}}]^1 ; [B \vee C_1]^1 ; [X]^1 ; [B \vee C_2]^1, \{q_{\text{fin}}, B, X, C_1, C_2\}).$$

**Correct:**

$$\text{copy}([q_{\text{fin}}]^1 ; [B \vee C_1]^1 ; [X]^1 ; [B \vee C_2]^1, \{q_{\text{fin}}, B, X, C_1, C_2\}).$$

98

**Wrong:**

$$\forall x \bullet \square ((F \wedge \ell = x) ; \ell > 0) \implies \\ (F \wedge \ell = x) ; [P] ; \text{true}).$$

**Correct:**

$$\forall x \bullet \square ((F \wedge \ell = x) ; \ell > 0) \implies \\ (F \wedge \ell = x) ; [P] ; \text{true}.$$

105

**Wrong:** Consider an interpretation  $\mathcal{I}$ , a valuation  $\mathcal{V}$ , and an interval  $[b, e]$  with  $\mathcal{I}, \mathcal{V}, [c, d] \models$  GB-Ctrl.**Correct:** Consider an interpretation  $\mathcal{I}$ , a valuation  $\mathcal{V}$ , and an interval  $[c, d]$  with  $\mathcal{I}, \mathcal{V}, [c, d] \models$  GB-Ctrl.

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137

**Wrong:**

- $E \subseteq L \times B_{?!} \times \Phi(\mathbb{X}) \times \mathcal{P}(\mathbb{X}) \times L$  is the set of directed *edges*.

**Correct:**

- $E \subseteq L \times B_{?!} \times \Phi(\mathbb{X}) \times \mathcal{P}(\mathbb{X}) \times L$  is the finite set of directed *edges*.
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172

**Wrong:**

Extended timed automata specialise to pure timed automata if  $C = U = V = \emptyset$  and if all clock resets are of the form  $x := 0$ . Then a list of such resets can be replaced by a set of resets as used in Definition 4.3.

**Correct:**

Extended timed automata specialise to pure timed automata if  $C = U = V = \emptyset$ . In this case the list of reset operations can be replaced by a set of clock resets as used in Definition 4.3.

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173

**Wrong:**

For extended timed automata  $\mathcal{A}_e = (L_i, C_i, B_i, U_i, \mathbb{X}_i, V_i, I_i, E_i, \ell_{\text{ini},i})$  with ...

**Correct:**

For extended timed automata  $\mathcal{A}_i = (L_i, C_i, B_i, U_i, \mathbb{X}_i, V_i, I_i, E_i, \ell_{\text{ini},i})$  with ...

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174

**Wrong:**

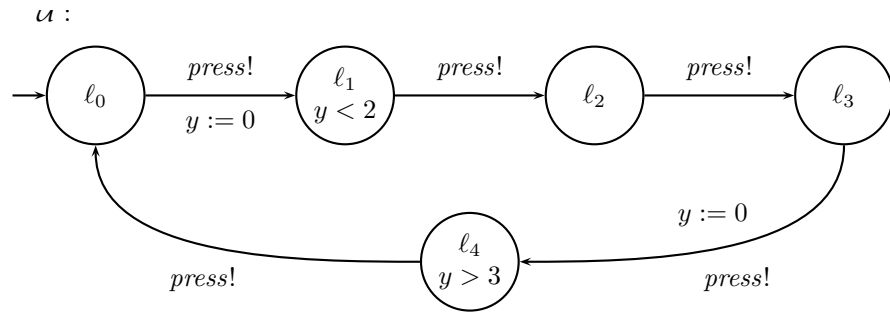
- ( $\clubsuit$ ) there are *no*  $i, j \in \{1, \dots, n\}$  and  $b \in U$  with  $(\ell_i, b!, \varphi_i, \vec{r}_i, \ell'_i) \in E_i$  and  $(\ell_j, b?, \varphi_j, \vec{r}_j, \ell'_j) \in E_j$ , i.e. there is no urgent action enabled,

**Correct:**

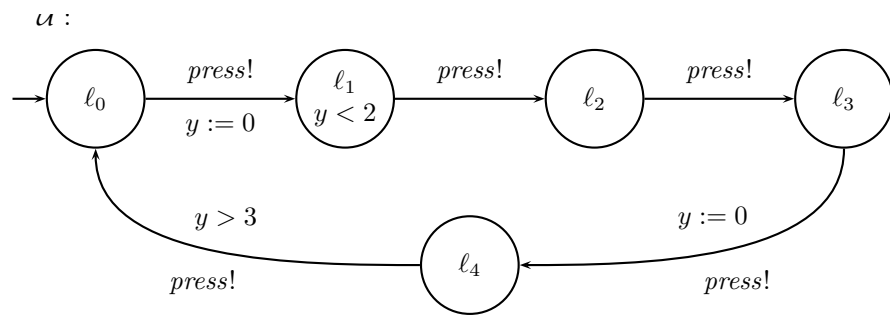
- ( $\clubsuit$ ) there are *no*  $i \neq j \in \{1, \dots, n\}$  and  $b \in U$  with  $(\ell_i, b!, \varphi_i, \vec{r}_i, \ell'_i) \in E_i$  and  $(\ell_j, b?, \varphi_j, \vec{r}_j, \ell'_j) \in E_j$ , i.e. there is no urgent action enabled,
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181 **Wrong:**



**Correct:**



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181 **Wrong:**

$$\xrightarrow{\tau} \langle (off, q0), x = y = 11.9 \rangle \dots$$

**Correct:**

$$\xrightarrow{\tau} \langle (off, l_0), x = y = 11.9 \rangle \dots$$

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210 **Wrong:**

$$c = \varepsilon + \max(\{0\} \cup \{s(\pi, \{\text{Error}\}) \mid \pi \in \{\mathbf{N}, \mathbf{T}\} \setminus \{\mathbf{N}, \mathbf{T}\}\})$$

**Correct:**

$$c = \varepsilon + \max(\{0\} \cup \{s(\pi, \{\text{no\_tr}, \text{tr}\}) \mid \pi \in \{\mathbf{N}, \mathbf{T}\} \setminus \{\mathbf{N}, \mathbf{T}\}\})$$

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**Thanks to the following readers for spotting the errors:**

Stefan Hallerstede,  
Mani Swaminathan,  
Bernd Westphal