

Errata of the Book "Modeling in Event-B"

(Version 4 - August 2011)

This document contains the list of errata discovered in the book "Modeling in Event-B".

Page 75. Discovered by John Pinto.

The top right inference rule:

$$\frac{H, P \vdash \neg Q}{H, \neg P \vdash Q}$$

is wrong. It should be (as on page 311)

$$\frac{H, \neg Q \vdash P}{H, \neg P \vdash Q}$$

Page 83. Discovered by Ogawa Kiyoshi.

4th line from the bottom

ilpass should be *il_pass*

Page 98. Discovered by John Pinto.

Various actions in events `ML_in_dep`, `IL_in_dep`, and `IL_out_dep` have their assignment symbol being wrongly written "=" instead of ":=".

These actions should be:

$$\begin{aligned} C &:= C - 1 \\ A &:= A - 1 \\ B &:= B + 1 \\ B &:= B - 1 \\ C &:= C + 1 \end{aligned}$$

Page 191. Discovered by Matthias Schmalz (August 2010)

In the proof obligation rule INV on top of the page, the following assumption must be added:

"witness predicates for parameters"

Page 324. Discovered by Jean-Raymond Abrial.

In the first table, the first operator is wrongly named "Generalized intersection".

It should be "Generalized union".

Page 330. Discovered by Matthias Schmalz (August 2010)

The following rule should be added at the end of section 9.5.6

$$\forall x \cdot s \in S \times T \Rightarrow x = \text{prj}_1(x) \mapsto \text{prj}_2(x)$$

Page 330. Discovered by Matthias Schmalz (August 2010)

The following rule should be added at the end of section 9.5.6

$$\forall x \cdot s \in S \times T \Rightarrow x = \text{prj}_1(x) \mapsto \text{prj}_2(x)$$

Page 333. Discovered by Matthias Schmalz (August 2010)

In the table, the division re-writing rule is valid if a and b are positive. When a and/or b are negative, the obvious sign rule should be applied before using the division re-writing rule.

Page 347. Discovered by Jean-Raymond Abrial (September 2010)

In the middle of the page, the section title:

The list induction rule

should be:

The tree induction rule

Page 349. Discovered by Jean-Raymond Abrial (November 2010)

The Axioms at the bottom of the page should be the following:

$\text{axm_1} : t \in V$
$\text{axm_2} : L \subseteq V$
$\text{axm_3} : p \in V \setminus \{t\} \mapsto V \setminus L$
$\text{axm_4} : \forall S \cdot S \subseteq p^{-1}[S] \Rightarrow S = \emptyset$
$\text{axm_5} : \forall S \cdot S \subseteq p[S] \Rightarrow S = \emptyset$

Axioms **axm_5** has been added.

Page 350. Discovered by Jean-Raymond Abrial (November 2010)

The list of theorems in the middle of the page should be corrected as follows:

$$\mathbf{thm_1} : \forall T \cdot t \in T \wedge p^{-1}[T] \subseteq T \Rightarrow V \subseteq T$$

$$\mathbf{thm_2} : \forall T \cdot L \subseteq T \wedge p[T] \subseteq T \Rightarrow V \subseteq T$$

$$\mathbf{thm_3} : \text{cl}(p^{-1})[\{t\}] \cup \{t\} = V$$

$$\mathbf{thm_4} : \text{cl}(p)[L] \cup L = V$$

Page 386. Discovered by Ogawa Kiyoshi (August 2010).

Invariants **inv4_3** and **inv4_4** should be corrected as follows:

$$\mathbf{inv4_3} : \forall n \cdot n \in \mathbb{N} \Rightarrow p(n) = \text{parity}(c(n))$$

$$\mathbf{inv4_4} : \forall n \cdot n \in \mathbb{N} \Rightarrow q(n) = \text{parity}(d(n))$$

Page 535. Discovered by Ogawa Kiyoshi (August 2010)

In the event route-reservation (line 7), the following assignment

$$\mathit{rertbl} := \mathit{rsrtbl} \cup \mathit{rtbl} \triangleright \{r\}$$

should be

$$\mathit{rertbl} := \mathit{rsrtbl} \cup (\mathit{rtbl} \triangleright \{r\})$$

Page 539. Discovered by Ogawa Kiyoshi (Aug. 2010)

In the invariant **inv_8** (line 3), the following assignment

$$a = \mathit{next}(\mathit{rsrtbl}(b))^{-1}(b)$$

should be

$$a = (\mathit{next}(\mathit{rsrtbl}(b)))^{-1}(b)$$

Page 574. Discovered by Jean-Raymond Abrial.

The definition of $\mathit{fix}(f)$ in box (9) is wrong.

It should be:

$$\mathit{fix}(f) = \text{inter}(\{s \mid f(s) \subseteq s\})$$

Page 575. Discovered by Jean-Raymond Abrial.

The definition of $FLX(f)$ in box (14) is wrong.

It should be:

$$FLX(f) = \text{union}(\{s \mid s \subseteq f(s)\})$$
