last updated 2015 September 12

Errata

in the book

The Language of Mathematics: Utilizing Math in Practice

by

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published by

John Wiley & Co., Inc., Hoboken, New Jersey

September 2011

Note: Wherever “the book”, “this book”, etc. appears
in the errata below,
“book” refers to and means the book

The Language of Mathematics: Utilizing Math in Practice.

Part 1: Logically and Semantically Significant Corrections

1. In the next to last paragraph in Section 3.4.8 near the top of page 72:

The expression	should be
$\text{true}\wedge x=x$	$(\text{true}\wedge x)=x$
$\text{false}\vee x=x$	$(\text{false}\vee x)=x$

2. In expression [3.5.2-1] on page 80 the term $z\in\mathbb{B}$ should be $z\in\mathbb{R}$.

3. In section 5.1, Tables 5.1-1 and 5.1-2 on page 137 should be:

TABLE 5.1-1 Identities for Sums and Products

Sum	Product	Comments
$x+y = y+x$	$x*y = y*x$	+ and $*$ are commutative
$(x+y)+z = x+(y+z)$	$(x*y)*z = x*(y*z)$	+ and $*$ are associative
—	$x*(y+z) = (x*y)+(x*z)$	+ does **not** distribute over $*$ $*$ distributes over +

TABLE 5.1-2 Identities for the Logical Or and the Logical And

Logical Or	Logical And	Comments
$(x\vee y) = (y\vee x)$	$(x\wedge y) = (y\wedge x)$	$\vee$ and $\wedge$ are commutative
$((x\vee y)\vee z) = (x\vee(y\vee z))$	$((x\wedge y)\wedge z) = (x\wedge(y\wedge z))$	$\vee$ and $\wedge$ are associative
$(x\vee(y\wedge z)) = ((x\vee y) \wedge (x\vee z))$	$(x\wedge(y\vee z)) = ((x\wedge y) \vee (x\wedge z))$	each distributes over the other

4. In section 5.2.3 near the bottom of page 144:

The expression	should be
$\neg(A\wedge B)=(\neg A \vee \neg B)$	$(\neg(A\wedge B))=(\neg A \vee \neg B)$
$\neg(A\vee B)=(\neg A \wedge \neg B)$	$(\neg(A\vee B))=(\neg A \wedge \neg B)$

in order to be consistent with the binding orders as defined in Table 3.4.2-1 on page 45. If the binding order of the unary function negation (¬) were defined to be higher in the table, e.g. together with the arithmetic unary functions (+, – as signs of a number) in binding order 2, the extra parentheses in the column "should be" above would be unnecessary (but still correct).

The original expressions in the left column above are not incorrect, but they do not express directly the intended meanings, which the expressions in the right column above do express. However, the two expressions in each line are equal to each other because they are a special case of the more general identity

$$[\neg(X = Y)] \;=\; [(\neg X) = Y]$$

the truth of which can be easily shown by constructing a truth table for all Boolean values of X and Y.

5. Throughout Section 8.3 on pages 256-264, the names of the Boolean array variables GameBoardInitialized and PlayerInitialized have been abbreviated by omitting the verb. The names GameBoardIsInitialized and PlayerIsInitialized respectively would be better, thereby clearly indicating that these array variables have Boolean values.

Part 2: Minor and Insignificant Corrections

M1. In Section 1.2 in the second from last line on page 5, the period following “Section 1.1” should be deleted.

M2. In Appendix F on page 394 in the third line from the bottom, the word “is” should be “are”.

Errata: *The Language of Mathematics: Utilizing Math in Practice*

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The expression	should be
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