# Errata in the 7'th Edition (December 9, 2003)

**Exercise 1.4.1:** The dot below capital a is a misprint.

**Page 106, 2nd line below the 1st table:** 'variable, then..'.
 **Read:** 'variable or number, then..'.

**Section 1.20, line 12:** '..constructs that form statements as *directives*'.
 **Read:** '..constructs that may form statements without values as *directives*'.
 **Reason:** Statements may be true, false or without a value.
 In the latter case they contain at least one directive and are no terms.

**Page 133, line 12:** '$[\mathcal{A} \equiv \bot]\dot{}$ if..'. **Read:**'If $[\mathcal{A} \equiv \bot]\dot{}$ then..'.
 **Reason:** If *some* information about $\mathcal{A}$ is revealed during the infinite
 computation then $\mathcal{A}$ is *not* equal to $\bot$.

**Page 145, lines 6 and 12:** '= (9.81+ $\not{0}$.311)@3'. **Read:**'= (9.81+0.311)@3'.

**Section 3.8, line 4:** '$\equiv$ 0.333F $]^o$'. **Read:**'$\equiv$ $\not{0}$.333F $]^o$'

**Section 3.9, line 15:** '..integer division with round to $[-\infty]\dot{}$.'
 **Read:** '..division with rounding to $[-\infty]\dot{}$.'

**Page 148, last line, and Page 609, last line before the type table:**
 '(d) [x = 10]$\dot{}$..'. **Read:** '(d) [x $\equiv$ 10]$\dot{}$..'.
 **Reason:** Otherwise, (d) and (c) will make contradictory statements about terms like $10.0F^2$.

**Section 4.11, line 6:** '..a definition of for..'. **Read:** '..a definition of form..'.

**Section 4.12, line 8:** '..term reduction of the root of a syntax tree..'.
 **Read:** '..term reduction of the root of a parse tree..'.
 **Reason:** As long as term (or macro) reductions are possible, the tree is no syntax tree.

**Exercise 5.3.1:** '..parse trees..'. **Read:** '..syntax trees..'.
 **Reason:** The macro definition (x) $\doteq$ x is to be used for reducing the parse trees.

**Page 182, line 5 from below, and page 183, line 1:** '..(x + y)..' **Read:** '..(x :: y)..'.

**Page 188, The line before Mac rule HeadPair:** 'The syntax tree of'.
 **Read:** 'The parse tree of'. **Reason:** The tree contains directives and macros.

**Page 189, last line:** (same misprint as on page 188).

**Page 190, line 3:** '$\boxed{\text{Lem}}$'. **Read:** '$\boxed{\text{Lemma}}$'.

**Page 190, last line:** '..merelly'. **Read:** '..merely..'.

**Page 192, line 4:** '..tail :: y..'. **Read:** '..tail $\equiv$ y..'.

**Page 192, line 6:** '..the third line..'. **Read:** '..the second line..'.

**Page 192, line 14:** 'is a replacement..'. **Read:** '..is a reverse replacement..'.

**Page 192, 5th line from below:** 'v::(x::y) tail $\equiv$ v::(x::y) tail'. **Read:** 'v::(x::y) tail'.

**Page 194, 2nd and 3rd line from below:** '..lemmas and proofs..'.
 **Read:** '..the terms in lemmas and proofs..'.

**Mac lemma L6.14.4, p.198:** Remove the dot in the lemma.

**Page 213 lines 14 and 16, Page 220 line 17, Page 530 last line in the 'Mac rules' section,**
 **Page 315 the last line, the first two lines in Section 8.16, Page 316 line 1,**
 **Page 354 line 8 from below, and Page 355 line 13:**
 '..bound variables..'. **Read:** '..binding (and corresponding bound) variables..'.

**Page 217, line 11:** '..be replacing all free..'. **Read:** '..by replacing all free..'.

**Page 220, line 16:** '..substitutuions..'. **Read:** '..substitutions..'.

**Page 307, line 10:** '..a variables..'. **Read:** '..a variable..'.

**Pages 313&522, Mac rule SubLambdaXYFreeFor:** '..freefor($\lambda$x.$\mathcal{A}$,y,$\mathcal{S}$)..' **Read:** '..freefor($\lambda$y.$\mathcal{A}$,x,$\mathcal{S}$)..'.

**Section 10.9, line 1:** '..set of lists'. **Read:** '..set of finite lists'.

**Page 353, line 7:** '(2 :: 1) tail $\triangleright$..'. **Read:** '(2 :: 1) tail $\equiv$ 1 $\triangleright$..'.  (Continued)

**Page 354, line 4 in Section 11.7:** '.. how-'. **Read:** '.. How-'.

**Exercise 11.8.1 (b):** '..case(x,b,c)..'. **Read:** '..case(x,b,d)..'.

**Section 11.9:** The word 'formula' appears several places in chapters 11 and 12. It is synonymous with the word 'equation'.

**Page 358, the type table:** The entries corresponding to one variable in $\mathbf{Z}^+$ and the other in $\mathbf{N}$ should be $\mathbf{Z}^+$ instead of $\mathbf{N}$ (cf. the table in A.80).

**Page 363, lines 2 and 3 from below:** '..nlist(1+1)..'. **Read:** '..nlist(1-1)..'.

**Page 363, line 1 in Section 11.20:** '..defintions..'. **Read:** '..definitions..'.

**Exercise 11.23.2 and page 388 line L07:** '..f($\neg$x)..'. **Read:** '..f$_9$($\neg$x)..'.

**Page 366, line 5:** '..Axioms..'. **Read:** '..(Derivation) Rules..'.

**Page 366, The Table:** Add the constructs [x $\equiv$ y]˙, [x **rule** y:z]˙, [x $\vdash$ y]˙ and [(x)]˙.

**Page 389, Mac proof of L13.5.3:** 'L4: TailPair..'. **Read:** 'L4: Replace $\triangleright$ TailPair..'.
  **Reason:** Contrary to the rule in line L5, TailPair is only used to reduce *a part of* the expression.

**Mac lemma L14.1.1:** The expression x$\vee\neg$x$\in\mathbf{T}$ occurs 4 times in the lemma and its proof. The expression should read (x$\vee\neg$x) $\in\mathbf{T}$. Due to the relatively high priority of $\in$ these expressions are not equivalent.

**Page 395, line 9 from below:** 'L07: Reverse'$\triangleright$ L1 $\triangleright$ L6..'. **Read:** 'L07: Reverse'$\triangleright$ L6 $\triangleright$ L1..'.

**Page 408, line 9:** '..which I present later.'.
  **Read:** 'which I, however, do not show in this edition of the lecture notes.'.

**Page 410, line 10:** '..$\equiv$ y..$\equiv$ y..'. **Read:** '..$\equiv$ x..$\equiv$ x..'.

**Page 410, lines 12 to 24:** 0.1F should read $\emptyset$.1F.

**Page 410, line 13:** 'x + y - y $\equiv$ 1F' should read 'x + y - y $\equiv$ 0F'.

**Page 410, lines 18 to 20:** '= 1' should read '= 0F'.

**Answer 16.1.5:** The three lemmas should be marked (b), (a) and (c) (in that order!)

**Answer 16.3.2:** '(b) [x $\equiv$ 0]˙' should read '(b) [n $\equiv$ 0]˙'.

**Exercise 17.14.3, line 2:** 'f$_{10}\doteq$..' should read 'f$_{10}(x)\doteq$..'

**Page 432, line 9:** 'L2: MonotonicityHead..'. **Read:** 'L2: MonotonicityTail..'.

**Page 433, the proofs of L17.16.4 and L17.16.5:** 'L14: TUnequalF $\triangleright$ ..'.
  **Read:** 'L14: TUnequalF $\triangleright$ L13 $\triangleright$ ..'.

**Section 18.3, line 2:** '..then [$\mathcal{A}$]˙ is true..' should read '..then [< $\mathcal{A}$ |x:=$\mathcal{B}$ >]˙ is true..'.

**Page 438, the two proofs of L18.5.1:** In the lines L05 'x·y' should be read as 'x·x'.

**Mac proof of L18.8.1, line L07:** 'Type$\mathbf{Z}$+$\mathbf{Z}$' should be read as 'Type$\mathbf{Z}$·$\mathbf{Z}$'

**Mac proof of L18.8.1, line L10:** '..2·(x + 1 = z) ;' should read '..2·(x + 1) = z ;'

**Mac proof of L18.2.2, line L5:** 'Type$\mathbf{D}^{\cdot}_{\infty}$+$\mathbf{D}^{\cdot}_{\infty}$ $\triangleright$ ..'. **Read:** 'Type$\mathbf{D}^{\cdot}_{\infty}$+$\mathbf{D}^{\cdot}_{\infty}$ $\triangleright$ L3 $\triangleright$ L4 $\triangleright$ ..'.

**Mac proof of L18.3.3, line L07:** 'Type$\mathbf{Z}$+$\mathbf{Z}$ $\triangleright$ ..'. **Read:** 'Type$\mathbf{Z}$+$\mathbf{Z}$ $\triangleright$ L5 $\triangleright$ L6 $\triangleright$ ..'.

**A.3, page 503, and E.1, page 679:** The last ')' in '(x $\triangleright$ y) $\triangleright$ z )' should be deleted.

**A.4 (p.504), A.7 (p.507) and A.12 (p.512):** The last $\mathcal{A}$ in the rules **EqualAll**, **EqualChoice** and **EqualExists** should read $\mathcal{B}$.

**A.22, page 524:** The last $\mathbf{D}^{-\infty}_{\infty}$ in the last row of the type tables should read $\mathbf{D}^{\infty}_{\infty}$.

**A.28, page 530:** The first two occurences of < $\mathcal{A}$|x := $\mathcal{B}$ > should read < x|y := z >.

**A.47, in the Description:** '..the function..'. **Read:** '..the term..'.

**A.61, page 582:** In the type table 'x!' should read 'x?'.

**A.86, page 616, the line after the heading Sort:** '[**Mac rule** x:y]˙ is...'.**Read:** '[x **rule** y:z]˙ is...'.

**A.91, in the Description:** '..the first element..'. **Read:** '..the last element..'.

**Type table, page 626:** The two 'x tail's should read 'x$^+$'.

**E.2, last line:** Add '$\overset{\vee}{>}$ x$\doteq$y $\overset{\vee}{>}$ x$\overset{\vee}{>}$y' just before ']'.