

Errata 1th edition

for the book

Digital Signal Processing with Field Programmable Gate Arrays

by

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Preface 1:

Page VIII 3th line from top:

Replace “although are some VHDL examples” with “although some VHDL examples”

Chapter 1:

Page 9 third bullet point: Replace “again” with “against”

Page 15 first line in sec. 1.4.1: Replace “seemed” with “seem”

Page 19 second line before Timing Estimates section: replace “rows” with “columns”

Page 20 Example 1.2, 6 line from the end: Replace t_{cici} with $7 \times t_{cici}$

Page 21 Figure 1.14 low part of 74LS175: Replace “6 x FF” with “2 x FF” twice

Chapter 2:

Page 29 line 10: Replace “with to the” with “with the”

Page 30 second line: Replace “preferably” with “preferably”

Page 31 One’s Complement: Replace “same representation except” with “bit-by-bit complement representations including”

Page 33 Example 2.1: Replace “ $16_{10}-1_{10} = 10\bar{1}100_{SD}$ ” with “ $16_{10}-1_{10} = 1000\bar{1}_{SD}$ ”

Page 33 Example 2.1: Replace “ $16_{10}-4_{10}+3_{10} = 10\bar{1}10_{SD}$ ” with “ $16_{10}-4_{10}+2_{10}+1_{10} = 10\bar{1}11_{SD}$ ”

Page 33 first sentence after Example 2.1: Replace “nonezero” with “nonzero”

Page 39: last line before table: Replace “C=r” with “C=2”

Page 45 Table 2.4 last line:

Replace “Range $2^{138} \sim 3.8 \cdot 10^{38}$ $2^{1024} \sim 9 \cdot 10^{307}$,” with “Range $2^{128} \sim 3.8 \cdot 10^{38}$ $2^{1024} \sim 1.8 \cdot 10^{308}$,”

Page 47 first line in sec. 2.3.1: Replace “due the” with “due to the”

Page 58 Eq. (2.29): Replace “ $X_2 2^N + Y_1$ ” with “ $X_2 2^N + X_1$ ”

Page 58 Eq. (2.29): Replace “ $Y_2 Y_2$ ” with “ $X_2 Y_2$ ”

Page 61 Equation (2.34): Replace “ $x_b[k]$ ” with “ $x_b[n]$ ”

Page 63 Table second line: Replace “ 001_2 ” with “ 010_2 ”

Page 64 Eq. (2.36) and (2.37): Replace “ -2^b ” with “ -2^B ”

Page 64 Example 2.18: Replace “N=4-bit” with “B=4-bit”

Page 65 Equation (2.39): Replace “ $Ll+n$ ” with “ $Nl+n$ ” twice

Page 68 for \sqrt{W} : Replace “ $m=1$ ” with “ $m=-1$ ”

Page 68 Table 2.10, $m=1$: Replace “ $Y_K=K_1 (X_0 \cos(Z_0)+Y_0 \sin(Z_0))$ ” with “ $Y_K=K_1 (Y_0 \cos(Z_0)+X_0 \sin(Z_0))$ ”

Page 68 Table 2.10, $m=-1$: Replace “ $X_K=K_{-1} \sqrt{X_0^2 + Y_0^2}$ ” with “ $X_K=K_{-1} \sqrt{X_0^2 - Y_0^2}$ ”

Replace “ $Y_K=K_{-1} (X_0 \cosh(Z_0)+Y_0 \sinh(Z_0))$ ” with “ $Y_K=K_{-1} (Y_0 \cosh(Z_0)+X_0 \sinh(Z_0))$ ”

Page 71 Fig. 2.24 Three times bottom assignments: Exchange “-/+” and “+/-”

Page 75 Exercise 2.1 5th line: Replace “total total” with “total”

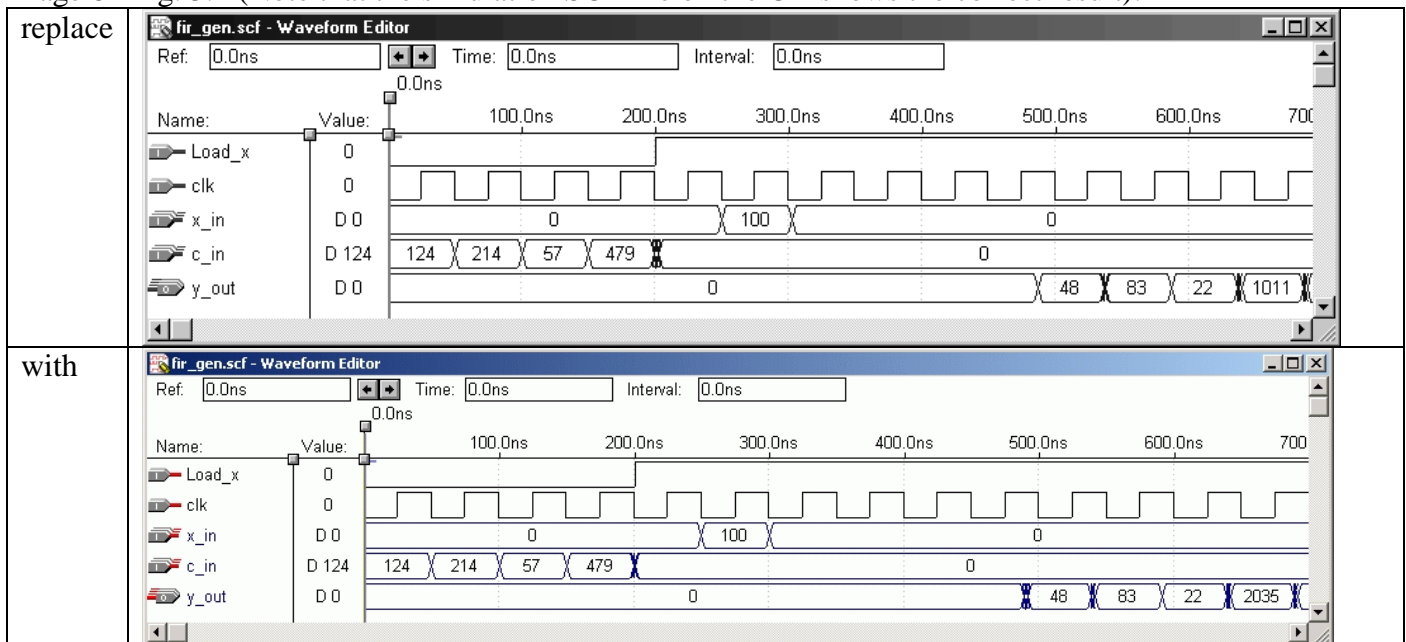
Page 77 Exercise 2.7(a): Replace “stage” with “state”

Page 77 Exercise 2.9 3th line: Replace “ $j(ad+bd)$ ” with “ $j(ad+bc)$ ”

Chapter 3:

Page 80 next to Eq. (3.4): Replace “ L^{th} -order” with “length- L ”

Page 84 Fig. 3.4 (Note that the simulation SCF file on the CD shows the correct result):



Page 84 first line: Replace “ $z^{-2} + 33/256z^{-3}$ ” with “ $z^{-2} - 33/256z^{-3}$ ”

Page 85 Eq. (3.8): Replace “ $d\Phi(\omega)$ ” with “ $-d\Phi(\omega)$ ”

Page 85 Eq. (3.10): Add “ $k>0$ ” to sum sign

Page 91 Fig. 3.8a: Replace “ $f_s/2$ ” with “ f_n ”

Page 93 before Eq. (3.17): Replace “ L^{th} -order” with “length- L ”

Page 105 Example 3.8 first sentence: Replace “da3.mif” with “darom3.mif”

Page 112 first sentence after Example 3.10: Replace “archived” with “achieved”

Page 113 Exercise 3.3 2th line: Replace “ $f[0] = 521$ ” with “ $f[0] = 512$ ”

Page 114 Exercise 3.4 Equation (3.20):

Replace “ $y[n]=256h[n]-32h[n]-16h[n-1]+h[n-1].$ ” with “ $y[n]=256h[n]-16h[n]-32h[n-1]+h[n-1].$ ”

Page 114 Exercise 3.5 2th line: Replace “1046” with “1406”

Chapter 4:

Page 118 Eq. (4.3): Replace “ $y[n-k]$ ” with “ $y[n-l]$ ”

Page 120 item 4): Replace “unit circle” with “real axis”

Page 121 first sentence after Eq. (4.6): Replace “ $|F(\omega)|^2$ ” with “ $|F(\omega)|^2$ ”

Page 127 Example 4.2, coefficients A,B incorrect: Remove “We will get ... B=0.0001,... A=1.000...”

Page 128 Fig. 4.13 caption: Replace “(b) phase, and (c) group delay response” with “(b) group delay response, and (c) Pole/zero plot.”

Page 129 section 4.3.2: Replace “desire” with “desired”

Page 129 Table 4.2: Replace “11 x 9” with “1 x 9”

Page 133 line 3: Replace “attendant” with “attained”

Page 134 Text before Eq. (4.16): Replace “0.25” with “0.75” and “1/4” with “3/4”

Page 135 Last Eq. in Example 4.5: Add “ $72z^{-4}$ ” to numerator

Page 140 Exercise 4.6 line l=1 (third column): Replace “ $1 \cdot 2^{-1} \cdot 2^{-1} - 1 - 2^{-4} \cdot 1 - 2^{-2}$ ” with “ $1 \cdot 2^{-1} \cdot 1 - 1 - 2^{-4} \cdot 1 - 2^{-2}$ ”

Page 140 Exercise 4.6 line l=3 (last column): Replace “ $2^{-1} - 2^{-6}$ ” with “ $2^{-1} - 2^{-5}$ ”

Chapter 5:

Page 144 first section: Replace “Fig. 5.5” with “Fig. 5.5b”

Page 150 VHDL comments: Replace “m[0]=127” with “m[0]=124” and “g[0]=127” with “g[0]=124”

Page 153 Figure lower signal path: Replace “ $F_1(z)$ ” with “ $F_0(z)$ ”

Page 153 sentence after Eq. (5.17): Replace “addition” with “delay”

Page 153 Eq. (5.19): Replace “ z^{-1} ” with “ $-z^{-1}$ ”

Page 159 Fig. 5.17 caption: Add Fig. 5.17. MATLAB Simulation of ...

Page 160 VHDL code: Replace “unsigned” with “signed”

Page 165 Fig. 5.22: Switch “D=1” and “D=2”

Page 165 Eq. (5.28): Replace “2N” with “2S”

Page 165 Eq. (5.31): Replace “0,5” with “0.5”

Page 166 Eq. (5.32): Replace “j=2N+1” with “k=2S+1”

Page 166 Eq. (5.33): Replace “m=0” with “n=0”

Page 167 VHDL code: Replace twice “2**14” with “2**13”; “2**13” with “2**12”; “2**12” with “2**11”; “unsigned” with “signed”

Page 171 Fig. 5.26 third input: Replace “ x_2 ” with “ x_3 ”

Page 172 Table 5.3 line for F7: Replace “521” with “512”

Page 187 Eq. (5.61): Use

$$G(z)\hat{G}(z) + H(z)\hat{H}(z) = F(z) - \hat{G}(-z)G(-z) = F(z) - F(-z)$$

Page 191 Equation (5.65): Replace “ $H'(z) = H(z) + G(-z)S(z^2)$ ” with “ $G'(z) = G(z) + G^{\wedge}(-z)S(z^2)$ ”

Page 191 Equation (5.66): Replace “ $G'(z) = G(z) + H(-z)T(z^2)$ ” with “ $G^{\wedge}(z) = G^{\wedge}(z) + G(-z)T(z^2)$ ”

Page 191 Example 5.17 last equation: Replace “ $h_1[n]$ ” with “ $h_2[n]$ ”

Page 194 VHDL code: Replace “unsigned” with “signed”

Page 197 Equation (5.77): Replace “ $-1 + 3z^{-1} + 3z^{-2} + 1z^{-3}$ ” with “ $-1 + 3z^{-1} + 3z^{-2} - 1z^{-3}$ ”

Page 197 Equation (5.79): Replace “ $-(1+a[0]) - a[0]z^{-1} + a[0]z^{-2} + (1+a[0])z^{-3}$ ” with “ $-(1+a[0]) + a[0]z^{-1} + a[0]z^{-2} - (1+a[0])z^{-3}$ ”

Page 197 Equation (5.80): Replace “s=-2 a[0]=-1,5 ” with “ s=-1/2 a[0]=-1.5 ”

Page 200 Eq. (5.83) replace “ $k^2/2$ ” with “ $-k^2/2$ ”

Page 201 Fig. 5.52: Replace “analyse” with “analysis”

Page 206 Exercise 5.5: Replace “ $F_2(z) = 1 + z^{-1} + z^{-2}$ ” with “ $F_2(z) = 1 + 2z^{-1} + z^{-2}$ ”

Chapter 6:

Page 209 Fig. 6.1: Replace “Tuckey” with “Tukey”

Page 212 Eq. (6.6): Use

$$\mathbf{x}^* = \frac{1}{N} (\mathbf{W}^* \mathbf{W})^* = \frac{1}{N} \mathbf{W} \mathbf{x}^*$$

Page 213 Table 6.1 second column: Replace “n=0” with “k=0” also “x([n]” with “x[n]”

Page 217 Eq. (6.8): Add 3 times subscript “N” to \mathbf{W}

Page 218 Fig. 6.7 text: Replace “n = 1,2,..., 16” with “n = 1,2,..., 14”

Page 219 Fig. 6.8 title: “2...” with “4...”

Page 220 Last equation: Replace

20
30
40
50
60
70

with

20
40
30
70
50
60

Page 222 VHDL code: Replace “unsigned” with “signed”

Page 226 Example 6.7:

X[0]
X[1]
X[2]
X[3]
X[4]

with

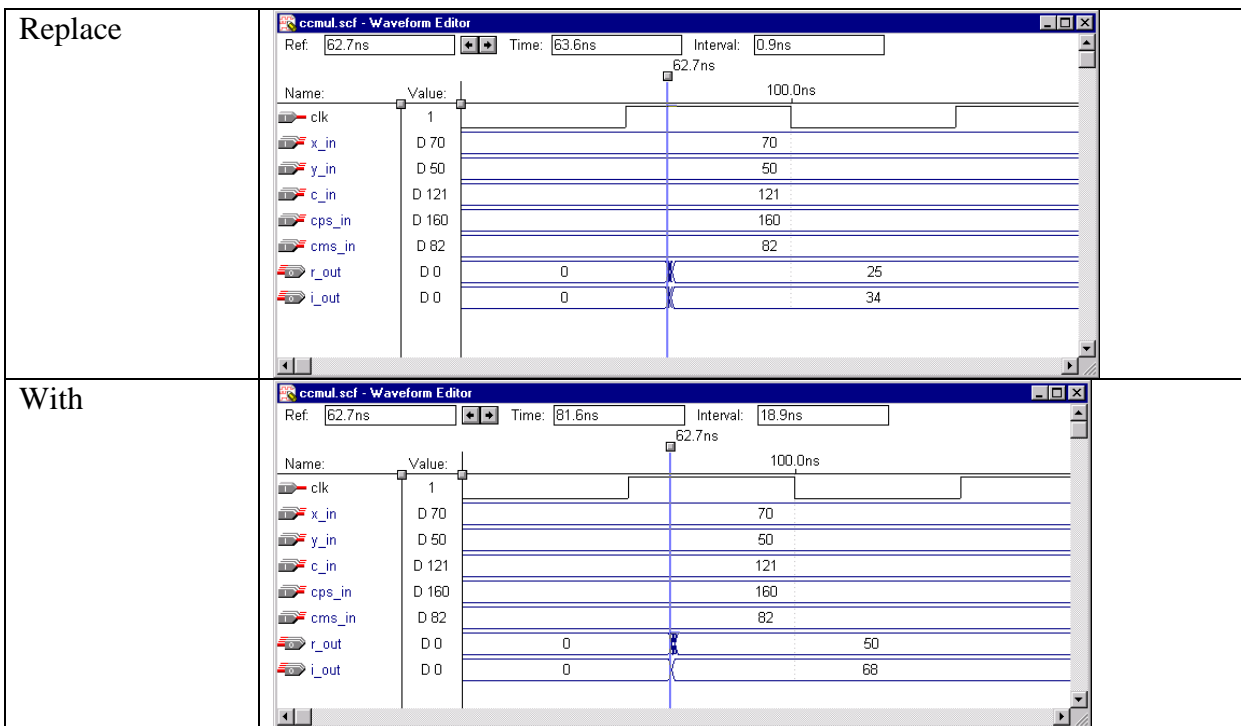
X[0]
X[4]
X[3]
X[2]
X[1]

Page 230 third line: Replace “3 additions” with “6 additions”

Page 233 Example 6.11: Replace “256” with “128” three times

Replace “25 + j34” with “50 + j68”

Page 235 Figure 6.14: (Note that the simulation SCF file on the CD shows the correct result)

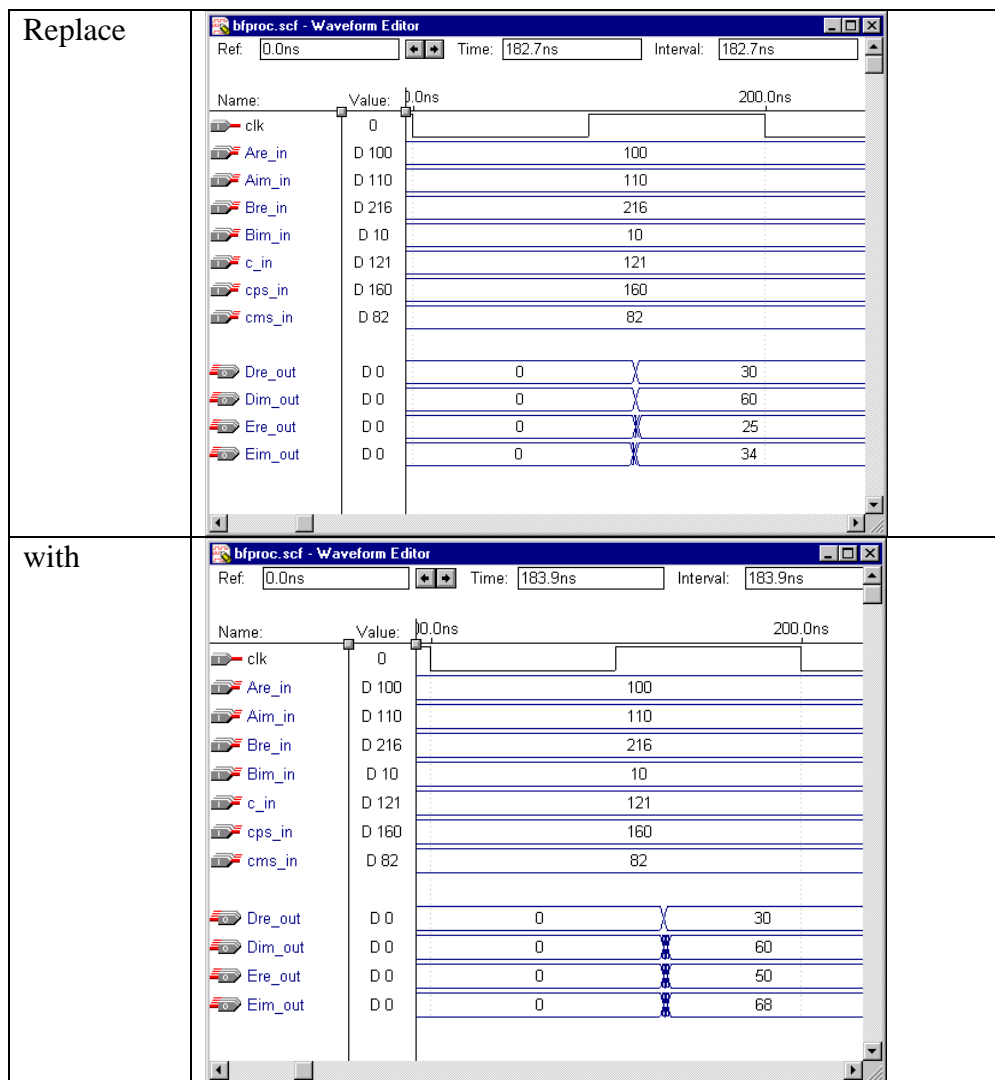


Page 235 comment sub_2 vhdl code: Replace “(c-s) *x” with “(c+s) *x”

Page 235 comment add_1 vhdl code: Replace “(c+s) *y” with “(c-s) *y”

Page 237 VHDL code: Replace “unsigned” with “signed”

Page 238 Figure 6.15 (Note that the simulation SCF file on the CD shows the correct result)



Page 248 for DCT-II: Replace “ $c[n]$ ” with “ $c[k]$ ”

Page 248 for DCT-III: Replace “ $c[k]$ ” with “ $c[n]$ ”

Page 254 Exercise 6.17: Replace “ $y = [x(1:2:N); x(N:-2:2)]$ ” with “ $y = [x(1:2:N), x(N:-2:2)]$ ”

Page 254 Exercise 6.19 Equation (6.83): Replace “ $c[n_1]c[n_2]/2$ ” with “ $c[n_1]c[n_2]/4$ ”

Chapter 7:

Page 276 section 7.2.1: Replace “efficient a to” with “efficient to”

Page 296 first line: Replace “fulfils” with “fulfills”

Page 319 line 7 from bottom: Replace “It possible” with “It is possible”

Page 320 Table 7.19: Replace “1,5” with “1.5” and “1,0” with “1.0”

Page 320 4 line: Replace “Hilbert that” with “Hilbert transformer”

Page 326 Table 7.21: Replace “Stage” with “State”

Page 330 Exercise 7.4: Replace “vetor.” with “vectors.”

References:

Page 333 reference 2: Replace “(Prentice Hall, Englewood Cliffs, New Jersey, 1999)” with “(McGraw Hill, New York, 1999)”

Page 336 reference 71: Replace “1995” with “1975”

Appendix :

Page 356 line 4 from button: Replace “[W3-1:0] y_out” with “[W4-1:0] y_out”