Errata 1th edition

for the book

Embedded Microprocessor System Design using FPGAs

by

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Preface 1:

Page viii 7th line from top: Remove “only”
Page ix 11th line from top: Replace “TRIC2” with “TRISC2”

Chapter 1:

Page 11 second line from end: Replace “`STR`” with “`str`”
Page 12 11th line from top: Replace “`LDBU`” with “`lbdu`”
Page 13 last line: Replace “`DAT4`” with “`DAT5`”
Page 28 enumerated listing: switch item 5 and 6
Page 28 enumeration item 7: replace “high price range devices have two $$” with “medium price range devices have two $$, and high price range devices have three $$$”

Chapter 2:

Page 49 second line: Replace “E2PROM” with “E^2PROM”
Page 56 replace Fig. 2.9 label **a** and **b** with (a) and (b)
Page 64 9th line from top: Replace “highest” with “physical height”
Page 64 second line 2 and 4th line page 67 replace JTEG with JTAG
Page 69 7th line replace “Quartus” with “FPGA design tools”
Page 70 replace 18th line replace URSIC with URISC
Page 72 Program 2.2 16th line replace `X"2180"` with `X"1280"`
Page 75 second bullet point: Replace “two-source” with “second-source”
Page 86: Listing 2.7 replace with

```
1  initial  // Data read alternative via readmemh
2   begin
3    $readmemh("urisc.hex", rom);
4   end
```

Page 92 Exercise 2.29: “MHZ” with “MHz”
Page 93 Exercise 2.43: Replace “Cyclone V DE1 SoC” with “ZyBo-Z7-20”

Chapter 3:

Page 102 line 8 from end: Replace “-2^{31}-1…” with “$-(2^{31}$-1)…”
Page 113 7th line from top: Replace “`-- reset pc`” with “`-- always start with fetch state`”
Page 118 Exercise 3.22: Replace “two” with “two’s”
Page 119 Exercise 3.41: Same line “LIBRARY ieee; // Using” and “predefinded packages”
Page 120 Exercise 3.42: Same line “LIBRARY ieee; // Using predefinded” and “packages”
Page 121 Exercise 3.45: Replace “gray” with “Gray”

Chapter 4:

Page 129 4th line from top: Replace “parenthesis” with “bracket”
Page 133 first line from top: Replace “form” with “from”
Page 134 6th line from top: Replace “`4B'000`” with “`4'B0000`”
Page 134 4th line from end: Remove “A”
Page 136 4th line from end: Replace “where `Sum8` is are 8-bit word and `Sum` and `Sum9` are 9-bit words” with “where `Sum8` and `Sum` are 8-bit words and `Sum9` is a 9-bit word”
Page 138 last line: Replace “use” with “us”
Page 144 7th line in Verilog code: Replace “`// all set register to -1`” with “`// always start with fetch state`”
Page 152 Exercise 4.45: Remove “code”
Page 121 Exercise 4.47: Replace “gray” with “Gray”

Chapter 5:

Page 129 20th line from top: Replace “parenthesis” with “bracket”
Page 165 7th line from end: Replace “$0…2^{B-1}$” with “$0…2^{B}$ -1”
Page 166 12th line from end: Replace “coding Example 5.4” with “Example Program 5.1”
Page 168 first line: Replace “increasing” with “decreasing”
Page 171 6th line from top: Replace “`-,x,/`” with “`-,*,/`”
Page 183 7th line from end: Replace “Drystone” with “Dhrystone”
Page 183 3th line from end: Replace “MWIPS” with “WMIPS”
Page 192 1th line: Replace “ASCI” with “ASCII”

Chapter 6:

Page 201 last line: Replace “`[^a-b]`” with “`[^a-c]`”
Page 214 6th line from end: Replace “code 6.5” with “code 6.3”
Page 217 8th line from end: Replace “=6” with “=-6”
Page 218 first line: Replace “complier” with “compiler”

Chapter 7:

Page 228 5th line: Replace “It important” with “It’s important”
Page 240 5th line before Fig. 7.6: Replace “in in” with “in”
Page 241 Fig. 7.7. caption: Replace “(a)” with “(left)”, “(b)” with “(center)”, “(c)” with “(right)”

Chapter 8:

Page 270-1 Exercise 8.37-8.40: Replace “PCC” with “PCCOMP”

Chapter 9:

Page 273 Keyword: Replace “JTEG” with “JTAG”
Page 273 14th line from end: Replace “Fig. 1.8a” with “Fig. 1.7a”
Page 274 4th line: Replace “Fig. 1.8b” with “Fig. 1.7b”
Page 275 5th line from end: Replace “Table 5.19” with “Table 5.7”
Page 277 6th line from end: Replace “Fig. 2.7” with “Fig. 2.4”
Page 278 5th line: Replace “HDTV” with “SXGA”
Page 278 5th line: Replace “Table 2.8” with “Table 2.4”
Page 282 Table 9.5: Replace “`0x04000_0800`” with “`0x0400_0800`”
Page 291 first line after bullet list: Replace “IEEE standard, 754” with “IEEE 754 standard”
Page 293 last line: Replace “9.41” with “9.65”
Page 296 11th line from end: Replace “get would” with “would”
Page 328 Exercise 9.15-9.22: Replace “operation” with “instruction”
Page 331 Exercise 9.51: Replace “exercise” with “trouble”
Page 331 Exercise 9.53 and Fig. 9.25: Replace “Douday” with “Douady”
Page 335 Exercise 9.66: Replace “listing 9.37” with “listing 9.5”
Page 335 Exercise 9.67: Replace “JTEG” with “JTAG”

Chapter 10:

Page 356 8th line from end: Replace “3.56 GB” with “3.96 Gbits/s”
Page 370 18th line from top: Remove “test_MY_SWAP-> scrc->”
Page 374 11th line from end: Replace “Not all instructions” with “If all instructions”
Page 375 4th line from top: Replace “R-type” with “A-type”
Page 391 replace the duplicated lines 145-192 code with the code from lines 193-240:

```
193     load  <= ld AND (dma <= DRAMAX4); -- DRAM load
194     write <= st AND (dma  > DRAMAX4); -- I/O write
195     read  <= ld AND (dma  > DRAMAX4); -- I/O read
196     mem_ena <= '1' WHEN store ELSE '0';  -- Active for store only
197     not_clk <= NOT clk;
198       ram: PROCESS (reset, dma, not_clk) -- Use one BRAM: 4096x32
199     VARIABLE idma : U12 := 0;
200     BEGIN
201       idma := CONV_INTEGER('0' & dma(18 TO 29));--force uns/skip 2 LSBs
202       IF reset = '0' THEN       -- Asynchronous clear
203         dmd <= (OTHERS => '0');
204       ELSIF rising_edge(not_clk) THEN
205         IF mem_ena = '1' THEN
206           dram(idma) <= rD;  -- Write to RAM at falling clk edge
207         END IF;
208         dmd <= dram(idma);  -- Read from RAM at falling clk edge
209       END IF;
210     END PROCESS;
211
212     ALU: PROCESS (rAsxt,rBsxt,in_port,dmd,reset,clk,load,read,C,
213                                       rDsxt,aai,aac,ooi,xxi,cmp,U,rA,rB)
214     VARIABLE res: STD_LOGIC_VECTOR(0 TO 32);
215     BEGIN
216       res := rDsxt; -- keep old/default
217       IF aai THEN res := rAsxt + rBsxt; END IF;
218       IF aac THEN res := rAsxt + rBsxt + C; END IF;
219       IF ooi THEN res := rAsxt OR rBsxt; END IF;
220       IF xxi THEN res := rAsxt XOR rBsxt; END IF;
221       IF cmp THEN res := rBsxt - rAsxt; -- ok for signed
222                 IF U THEN -- unsigned speial case
223                   IF ('0' & rA) > ('0' & rB) THEN res(1) := '1';
224                   ELSE                           res(1) := '0';
225                   END IF;
226                 END IF;
227               END IF;
228       IF load THEN res := '0' & dmd; END IF;
229       IF read THEN res := "0" & X"000000" & in_port; END IF;
230   -- Update flags and registers ------------------------------
231       IF reset = '0' THEN          -- Asynchronous clear
232         LI <= false;  C <= '0'; rI <= (OTHERS => '0');
233         out_port <= (OTHERS => '0');
234         FOR k IN 0 TO NR LOOP -- reset to zero
235           r(k)  <= conv_std_logic_vector(k,32); --X"00000000";
236         END LOOP;
237       ELSIF rising_edge(clk) THEN
238         IF NOT K THEN -- Compute new C flag for add if Keep=false
239           IF res(0) = '1' AND (aai OR aac) THEN
240                C <= '1';
```

Page 397-8 Exercise 10.17-10.24: Replace “operation” with “instruction”
Page 400 Exercise 10.52: Replace “Exercise” with “trouble”
Page 400 Exercise 10.53: Replace “Exercise” with “trouble”
Page 400 Exercise 10.54 and Fig. 10.25: Replace “Douday” with “Douady”
Page 405 Exercise 10.70: Replace “JTEG” with “JTAG”
Page 405 Exercise 10.73: Replace “you” with “your”

Chapter 11:

Update the comments is Program 11.6 as follows:

```
1       .text                       /* ARM executable code follows */
2      .global     _start
3  _start:
4          mov   r1, #0          // r1=red LED base address
5          movt  r1, #65312      // r1 + 64 = switches base address
6          ldr   r2, [r1,#64]    // load switches value
7  flash:  str   r2, [r1]        // write to red LEDs
8          movw  r3, #30784      //=25_000_000
9          movt  r3, #381
10 loop:   subs  r3, r3, #1      // delay counter
11         bne   loop
12         mvn   r2, r2          // toggle/bit inverse
13         b     flash
```

Page 447 2th line: Replace “`pc`,” with “`pc, ir,`”
Page 447 3th line: Replace “`I, jc`, and `me_ena`” with “`jc`, `store`, and `load`”
Page 447 4th line: Replace “bits” with “bytes”
Page 454 Exercise 11.55 and Fig. 11.18: Replace “Douday” with “Douady”
Page 459 Exercise 11.72: Replace “JTEG” with “JTAG”
Page 460 Exercise 11.73: Replace “JTEG” with “JTAG”

Appendix B: Glossary:

Page 503 3th line: Replace “(cooperation)” with “(corporation)”
Page 504 2th line: Replace “(cooperation)” with “(corporation)”