

Problem 1: [40 points] Drill problem
Filename: hw3.sv

```
1 module TB();
2
3 logic [7:0] in;
4 logic clock, resetN, done, error;
5 logic [1:0] TErrorSelect;
6
7 loadMem loadmem(.*);
8
9 initial begin
10     clock = 0;
11     forever #1 clock = ~clock;
12 end
13
14 class packet;
15     rand bit [7:0] count;
16     rand bit [7:0] address;
17     rand bit [7:0] data[];
18
19     constraint A {count inside {[0:19]}};
20     constraint B {address inside {[0:255]}};
21     constraint C {data.size == count;}
22     constraint D { foreach (data[i]){
23         data[i] inside {[0:255]};
24     }}
25 endclass
26
27
28 logic [7:0] checksum;
29 packet pkt = new;
30 packet pkt2 = new;
31 packet pkt3 = new;
32
33 task sendPkt;
34 //sending packets to in 8 bits at a time
35 //start->count->address->data->(negative)checksum
36     checksum = 0;
37     if(!pkt.randomize()) $display(0, "Packet randomization failed");
38     @(posedge clock);
39     in <= 8'h01;
40     @(posedge clock);
41     in <= pkt.count;
42     checksum += pkt.count;
43     @(posedge clock);
44     in <= pkt.address;
45     checksum += pkt.address;
46     for (int i = 0; i < pkt.count; i++) begin
47         @(posedge clock);
48         in <= pkt.data[i];
49         checksum += pkt.data[i];
50     end
51     @(posedge clock);
52     in <= (~checksum) + 8'h1;
53 endtask
54
55 task sendPktWrongChecksum;
56 //sending packets to in 8 bits at a time
57 //start->count->address->data->0
58     checksum = 0;
59     if(!pkt3.randomize()) $display(0, "Packet randomization failed");
60     @(posedge clock);
61     in <= 8'h01;
62     @(posedge clock);
63     in <= pkt3.count;
64     checksum += pkt3.count;
65     @(posedge clock);
66     in <= pkt3.address;
67     checksum += pkt3.address;
68     for (int i = 0; i < pkt3.count; i++) begin
69         @(posedge clock);
70         in <= pkt3.data[i];
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71     checksum += pkt3.data[i];
72 end
73 @(posedge clock);
74 in <= (~checksum);
75 endtask
76
77 function void checkError;
78 //checking for incorrect error assertion
79 if(error && (((checksum + (~checksum) + 8'h1)%'d256) == 8'h0)) begin
80     $display("Error unexpectedly asserted");
81 end else if (!error && (((checksum + (~checksum) + 8'h1)%'d256) != 8'h0))begin
82     $display("Error not asserted");
83 end else if (error && !done) begin
84     $display("Error asserted before done");
85 end
86 endfunction
87
88 function void checkWrongError;
89 //checking for incorrect error assertion with wrong checksum
90 if(error && (((checksum + (~checksum))%'d256) == 8'h0)) begin
91     $display("Error unexpectedly asserted");
92 end else if (!error && (((checksum + (~checksum))%'d256) != 8'h0))begin
93     $display("Error not asserted");
94 end else if (error && !done) begin
95     $display("Error asserted before done");
96 end
97 endfunction
98
99 function void checkMemory
100 (input logic whichPkt);
101 //checking for incorrect writes to memory
102 if (whichPkt) begin
103     for (int i = 0; i < pkt.count; i++) begin
104         if(loadmem.M.M[pkt.address + i] != pkt.data[i]) begin
105             $display("Memory mismatch at %h, %h at memory, expecting %h",
106                 pkt.address + i, loadmem.M.M[pkt.address + i], pkt.data[i]);
107         end
108     end
109 end else begin
110     for (int i = 0; i < pkt3.count; i++) begin
111         if(loadmem.M.M[pkt3.address + i] != pkt3.data[i]) begin
112             $display("Memory mismatch at %h, %h at memory, expecting %h",
113                 pkt3.address + i, loadmem.M.M[pkt3.address + i],pkt3.data[i]);
114         end
115     end
116 end
117 endfunction
118
119 function void checkDone;
120 //checking for incorrect done assertion
121 if(!done) begin
122     $display("Done not asserted");
123 end
124 endfunction
125
126 initial begin
127     @(posedge clock);
128     resetN <= 0;
129     @(posedge clock);
130     resetN <= 1;
131     in <= 8'h00;
132     for(int x = 0; x < 4; x++) begin
133         //testing for all error cases
134         @(posedge clock);
135         TErrorSelect <= x;
136         $display("====TErrorSelect = %d====", x[1:0]);
137         $display("====Correct Packet====");
138         @(posedge clock);
139         for (int i = 0; i < 10; i++) begin
140             //send correct packets
141             sendPkt();

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```
142         //start checking for error once packet is sent
143         @(posedge clock);
144         checkDone();
145         checkError();
146         checkMemory('d1);
147         @(posedge clock);
148     end
149     $display("=====Wrong Checksum=====");
150     @(posedge clock);
151     for (int k = 0; k < 10; k++) begin
152         //send wrong checksum packets
153         sendPktWrongChecksum();
154         @(posedge clock);
155         checkDone();
156         checkWrongError();
157         checkMemory('d0);
158     end
159     $display("=====");
160 end
161 @(posedge clock);
162 $finish;
163 end
164
165 endmodule: TB
```

Problem 2: [20 points] Drill problem
Filename: hw3.sim

```
1 Chronologic VCS simulator copyright 1991-2022
2 Contains Synopsys proprietary information.
3 Compiler version T-2022.06_Full64; Runtime version T-2022.06_Full64; Oct 11 ...
Line length of 87 (max is 80)
4 =====TBerrorSelect = 0=====
5 =====Correct Packet=====
6 Memory wrote 7a to addr=1b at time= 17
7 Memory wrote 6a to addr=1c at time= 19
8 Memory wrote 7f to addr=1d at time= 21
9 Memory wrote 9e to addr=1e at time= 23
10 Memory wrote ca to addr=1f at time= 25
11 Memory wrote c2 to addr=20 at time= 27
12 Memory wrote c1 to addr=21 at time= 29
13 Memory wrote c6 to addr=22 at time= 31
14 Memory wrote 46 to addr=23 at time= 33
15 Memory wrote c5 to addr=24 at time= 35
16 Memory wrote 56 to addr=ee at time= 49
17 Memory wrote e9 to addr=ef at time= 51
18 Memory wrote 48 to addr=f0 at time= 53
19 Memory wrote fe to addr=f1 at time= 55
20 Memory wrote 4c to addr=f2 at time= 57
21 Memory wrote 23 to addr=f3 at time= 59
22 Memory wrote e8 to addr=f4 at time= 61
23 Memory wrote 43 to addr=f5 at time= 63
24 Memory wrote be to addr=f6 at time= 65
25 Memory wrote 07 to addr=f7 at time= 67
26 Memory wrote 59 to addr=5b at time= 81
27 Memory wrote cf to addr=5c at time= 83
28 Memory wrote a2 to addr=5d at time= 85
29 Memory wrote 7c to addr=20 at time= 99
30 Memory wrote 9b to addr=21 at time= 101
31 Memory wrote e9 to addr=22 at time= 103
32 Memory wrote 4f to addr=23 at time= 105
33 Memory wrote c0 to addr=24 at time= 107
34 Memory wrote 97 to addr=38 at time= 133
35 Memory wrote c7 to addr=39 at time= 135
36 Memory wrote 80 to addr=c8 at time= 149
37 Memory wrote e6 to addr=c9 at time= 151
38 Memory wrote 82 to addr=ca at time= 153
39 Memory wrote 86 to addr=cb at time= 155
40 Memory wrote 55 to addr=cc at time= 157
41 Memory wrote 5f to addr=cd at time= 159
42 Memory wrote 9a to addr=ce at time= 161
43 Memory wrote fd to addr=cf at time= 163
44 Memory wrote 48 to addr=d0 at time= 165
45 Memory wrote 35 to addr=d1 at time= 167
46 Memory wrote 9b to addr=d2 at time= 169
47 Memory wrote 0b to addr=d3 at time= 171
48 Memory wrote c8 to addr=d4 at time= 173
49 Memory wrote fc to addr=d5 at time= 175
50 Memory wrote b3 to addr=d6 at time= 177
51 Memory wrote 00 to addr=d7 at time= 179
52 Memory wrote 2f to addr=d2 at time= 193
53 Memory wrote 67 to addr=d3 at time= 195
54 Memory wrote f3 to addr=d4 at time= 197
55 Memory wrote 2f to addr=d5 at time= 199
56 Memory wrote d1 to addr=d6 at time= 201
57 Memory wrote b5 to addr=d7 at time= 203
58 Memory wrote 54 to addr=d8 at time= 205
59 Memory wrote d1 to addr=d9 at time= 207
60 Memory wrote b3 to addr=da at time= 209
61 Memory wrote 6d to addr=db at time= 211
62 Memory wrote 5f to addr=dc at time= 213
63 Memory wrote 06 to addr=dd at time= 215
64 Memory wrote a7 to addr=de at time= 217
65 Memory wrote 47 to addr=df at time= 219
66 Memory wrote d1 to addr=e0 at time= 221
67 Memory wrote a2 to addr=1e at time= 235
68 Memory wrote 42 to addr=1f at time= 237
69 Memory wrote 3e to addr=20 at time= 239
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70 Memory wrote b4 to addr=21 at time= 241
71 Memory wrote 26 to addr=22 at time= 243
72 Memory wrote 7c to addr=23 at time= 245
73 Memory wrote 74 to addr=24 at time= 247
74 Memory wrote ee to addr=25 at time= 249
75 Memory wrote 3d to addr=26 at time= 251
76 Memory wrote 2a to addr=27 at time= 253
77 Memory wrote 1a to addr=28 at time= 255
78 Memory wrote 1c to addr=29 at time= 257
79 Memory wrote 5a to addr=2a at time= 259
80 Memory wrote e8 to addr=6b at time= 273
81 Memory wrote 52 to addr=6c at time= 275
82 Memory wrote 8e to addr=6d at time= 277
83 Memory wrote 23 to addr=6e at time= 279
84 Memory wrote 23 to addr=6f at time= 281
85 =====Wrong Checksum=====
86 Memory wrote 1b to addr=b1 at time= 297
87 Memory wrote 56 to addr=b2 at time= 299
88 Memory wrote 48 to addr=e9 at time= 311
89 Memory wrote 09 to addr=ea at time= 313
90 Memory wrote 08 to addr=eb at time= 315
91 Memory wrote 70 to addr=3b at time= 327
92 Memory wrote ef to addr=3c at time= 329
93 Memory wrote 98 to addr=3d at time= 331
94 Memory wrote 41 to addr=3e at time= 333
95 Memory wrote a3 to addr=3f at time= 335
96 Memory wrote dc to addr=40 at time= 337
97 Memory wrote f6 to addr=41 at time= 339
98 Memory wrote a0 to addr=da at time= 351
99 Memory wrote ef to addr=db at time= 353
100 Memory wrote d2 to addr=dc at time= 355
101 Memory wrote a7 to addr=dd at time= 357
102 Memory wrote 45 to addr=de at time= 359
103 Memory wrote 56 to addr=df at time= 361
104 Memory wrote 7e to addr=e0 at time= 363
105 Memory wrote 50 to addr=e1 at time= 365
106 Memory wrote 36 to addr=e2 at time= 367
107 Memory wrote 8b to addr=e3 at time= 369
108 Memory wrote 69 to addr=e4 at time= 371
109 Memory wrote 1c to addr=e5 at time= 373
110 Memory wrote be to addr=7b at time= 395
111 Memory wrote 79 to addr=7c at time= 397
112 Memory wrote 71 to addr=7d at time= 399
113 Memory wrote 95 to addr=35 at time= 411
114 Memory wrote f6 to addr=36 at time= 413
115 Memory wrote b8 to addr=37 at time= 415
116 Memory wrote d2 to addr=38 at time= 417
117 Memory wrote c4 to addr=39 at time= 419
118 Memory wrote e3 to addr=3a at time= 421
119 Memory wrote 86 to addr=3b at time= 423
120 Memory wrote cb to addr=3c at time= 425
121 Memory wrote c2 to addr=3d at time= 427
122 Memory wrote 2e to addr=3e at time= 429
123 Memory wrote 12 to addr=3f at time= 431
124 Memory wrote e5 to addr=44 at time= 443
125 Memory wrote 3e to addr=45 at time= 445
126 Memory wrote d2 to addr=46 at time= 447
127 Memory wrote 5b to addr=47 at time= 449
128 Memory wrote 83 to addr=48 at time= 451
129 Memory wrote ac to addr=49 at time= 453
130 Memory wrote c9 to addr=4a at time= 455
131 Memory wrote 59 to addr=4b at time= 457
132 Memory wrote 28 to addr=4c at time= 459
133 Memory wrote 6d to addr=4d at time= 461
134 Memory wrote f0 to addr=4e at time= 463
135 Memory wrote 55 to addr=4f at time= 465
136 Memory wrote 45 to addr=50 at time= 467
137 Memory wrote 29 to addr=51 at time= 469
138 Memory wrote e5 to addr=52 at time= 471
139 Memory wrote 78 to addr=53 at time= 473
140 Memory wrote 63 to addr=54 at time= 475
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141 Memory wrote 62 to addr=55 at time= 477
142 Memory wrote ca to addr=56 at time= 479
143 Memory wrote ba to addr=42 at time= 491
144 Memory wrote 1b to addr=43 at time= 493
145 Memory wrote 58 to addr=44 at time= 495
146 Memory wrote 43 to addr=45 at time= 497
147 Memory wrote 3f to addr=46 at time= 499
148 Memory wrote 51 to addr=47 at time= 501
149 Memory wrote 72 to addr=ac at time= 513
150 Memory wrote 18 to addr=ad at time= 515
151 Memory wrote 5f to addr=ae at time= 517
152 Memory wrote 28 to addr=af at time= 519
153 Memory wrote fa to addr=b0 at time= 521
154 Memory wrote 4e to addr=b1 at time= 523
155 Memory wrote 35 to addr=b2 at time= 525
156 Memory wrote 29 to addr=b3 at time= 527
157 Memory wrote e6 to addr=b4 at time= 529
158 Memory wrote 92 to addr=b5 at time= 531
159 Memory wrote 75 to addr=b6 at time= 533
160 =====
161 =====TBErrorSelect = 1=====
162 =====Correct Packet=====
163 Memory wrote cf to addr=fd at time= 549
164 Memory wrote 45 to addr=fe at time= 551
165 Memory wrote 81 to addr=ff at time= 553
166 Memory wrote 09 to addr=00 at time= 555
167 Memory wrote fb to addr=01 at time= 557
168 Memory wrote 29 to addr=02 at time= 559
169 Memory wrote 99 to addr=03 at time= 561
170 Memory wrote 45 to addr=04 at time= 563
171 Memory wrote 6d to addr=05 at time= 565
172 Memory wrote 81 to addr=06 at time= 567
173 Error unexpectedly asserted
174 Memory wrote b7 to addr=54 at time= 581
175 Memory wrote f0 to addr=55 at time= 583
176 Memory wrote cf to addr=56 at time= 585
177 Memory wrote ec to addr=57 at time= 587
178 Memory wrote 5c to addr=58 at time= 589
179 Memory wrote 32 to addr=59 at time= 591
180 Memory wrote 8e to addr=5a at time= 593
181 Memory wrote 6c to addr=5b at time= 595
182 Memory wrote 9b to addr=5c at time= 597
183 Memory wrote 1c to addr=5d at time= 599
184 Memory wrote 98 to addr=5e at time= 601
185 Memory wrote 52 to addr=5f at time= 603
186 Memory wrote 8c to addr=60 at time= 605
187 Memory wrote cb to addr=61 at time= 607
188 Memory wrote 18 to addr=62 at time= 609
189 Memory wrote d3 to addr=63 at time= 611
190 Memory wrote bf to addr=64 at time= 613
191 Memory wrote e1 to addr=65 at time= 615
192 Error unexpectedly asserted
193 Memory wrote ef to addr=42 at time= 629
194 Memory wrote fb to addr=43 at time= 631
195 Memory wrote 45 to addr=44 at time= 633
196 Memory wrote 08 to addr=45 at time= 635
197 Memory wrote 34 to addr=46 at time= 637
198 Memory wrote 14 to addr=47 at time= 639
199 Memory wrote 9c to addr=48 at time= 641
200 Memory wrote 3e to addr=49 at time= 643
201 Memory wrote 45 to addr=4a at time= 645
202 Memory wrote 50 to addr=4b at time= 647
203 Memory wrote 80 to addr=4c at time= 649
204 Memory wrote f5 to addr=4d at time= 651
205 Memory wrote 94 to addr=4e at time= 653
206 Memory wrote f5 to addr=4f at time= 655
207 Memory wrote f4 to addr=50 at time= 657
208 Memory wrote 1a to addr=51 at time= 659
209 Memory wrote 77 to addr=52 at time= 661
210 Error unexpectedly asserted
211 Memory wrote 71 to addr=97 at time= 675
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212 Memory wrote d2 to addr=98 at time= 677
213 Memory wrote 25 to addr=99 at time= 679
214 Memory wrote ed to addr=9a at time= 681
215 Error unexpectedly asserted
216 Memory wrote 97 to addr=82 at time= 695
217 Memory wrote 20 to addr=83 at time= 697
218 Memory wrote 6f to addr=84 at time= 699
219 Memory wrote 9d to addr=85 at time= 701
220 Memory wrote 84 to addr=86 at time= 703
221 Error unexpectedly asserted
222 Memory wrote 76 to addr=9a at time= 717
223 Memory wrote 3a to addr=9b at time= 719
224 Memory wrote 9e to addr=9c at time= 721
225 Memory wrote 21 to addr=9d at time= 723
226 Memory wrote 45 to addr=9e at time= 725
227 Memory wrote a0 to addr=9f at time= 727
228 Memory wrote 41 to addr=a0 at time= 729
229 Memory wrote 04 to addr=a1 at time= 731
230 Memory wrote 43 to addr=a2 at time= 733
231 Memory wrote 1d to addr=a3 at time= 735
232 Memory wrote 5f to addr=a4 at time= 737
233 Memory wrote be to addr=a5 at time= 739
234 Memory wrote 25 to addr=a6 at time= 741
235 Error unexpectedly asserted
236 Memory wrote 9a to addr=52 at time= 755
237 Memory wrote c0 to addr=53 at time= 757
238 Memory wrote 76 to addr=54 at time= 759
239 Memory wrote aa to addr=55 at time= 761
240 Memory wrote 7d to addr=56 at time= 763
241 Memory wrote 69 to addr=57 at time= 765
242 Memory wrote c8 to addr=58 at time= 767
243 Memory wrote ce to addr=59 at time= 769
244 Memory wrote 2b to addr=5a at time= 771
245 Memory wrote 7d to addr=5b at time= 773
246 Memory wrote 06 to addr=5c at time= 775
247 Memory wrote 20 to addr=5d at time= 777
248 Memory wrote 00 to addr=5e at time= 779
249 Memory wrote c4 to addr=5f at time= 781
250 Error unexpectedly asserted
251 Memory wrote b1 to addr=46 at time= 795
252 Memory wrote 01 to addr=47 at time= 797
253 Memory wrote 0f to addr=48 at time= 799
254 Memory wrote fe to addr=49 at time= 801
255 Memory wrote 61 to addr=4a at time= 803
256 Memory wrote 3d to addr=4b at time= 805
257 Memory wrote 5f to addr=4c at time= 807
258 Memory wrote 1e to addr=4d at time= 809
259 Memory wrote 2e to addr=4e at time= 811
260 Memory wrote af to addr=4f at time= 813
261 Memory wrote f3 to addr=50 at time= 815
262 Memory wrote 45 to addr=51 at time= 817
263 Memory wrote 42 to addr=52 at time= 819
264 Memory wrote 40 to addr=53 at time= 821
265 Memory wrote d4 to addr=54 at time= 823
266 Error unexpectedly asserted
267 Error unexpectedly asserted
268 Memory wrote ca to addr=03 at time= 849
269 Memory wrote b0 to addr=04 at time= 851
270 Memory wrote 33 to addr=05 at time= 853
271 Memory wrote 51 to addr=06 at time= 855
272 Memory wrote dd to addr=07 at time= 857
273 Memory wrote 17 to addr=08 at time= 859
274 Memory wrote 1b to addr=09 at time= 861
275 Memory wrote 17 to addr=0a at time= 863
276 Memory wrote 29 to addr=0b at time= 865
277 Memory wrote 14 to addr=0c at time= 867
278 Memory wrote c0 to addr=0d at time= 869
279 Memory wrote 73 to addr=0e at time= 871
280 Memory wrote 9d to addr=0f at time= 873
281 Memory wrote a7 to addr=10 at time= 875
282 Memory wrote 3e to addr=11 at time= 877
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283 Memory wrote 1c to addr=12 at time= 879
284 Memory wrote b8 to addr=13 at time= 881
285 Memory wrote dd to addr=14 at time= 883
286 Memory wrote da to addr=15 at time= 885
287 Error unexpectedly asserted
288 =====Wrong Checksum=====
289 Memory wrote 9c to addr=5a at time= 901
290 Memory wrote 9e to addr=5b at time= 903
291 Memory wrote dc to addr=5a at time= 915
292 Memory wrote b9 to addr=5b at time= 917
293 Memory wrote 51 to addr=5c at time= 919
294 Memory wrote 73 to addr=5d at time= 921
295 Memory wrote 5d to addr=5e at time= 923
296 Memory wrote 99 to addr=5f at time= 925
297 Memory wrote 81 to addr=60 at time= 927
298 Memory wrote 28 to addr=61 at time= 929
299 Memory wrote e7 to addr=62 at time= 931
300 Memory wrote 58 to addr=63 at time= 933
301 Memory wrote b6 to addr=64 at time= 935
302 Memory wrote f9 to addr=8b at time= 947
303 Memory wrote 30 to addr=92 at time= 959
304 Memory wrote e8 to addr=93 at time= 961
305 Memory wrote 4e to addr=94 at time= 963
306 Memory wrote c5 to addr=95 at time= 965
307 Memory wrote 77 to addr=96 at time= 967
308 Memory wrote 3d to addr=97 at time= 969
309 Memory wrote f3 to addr=98 at time= 971
310 Memory wrote 8e to addr=99 at time= 973
311 Memory wrote ec to addr=9a at time= 975
312 Memory wrote 22 to addr=91 at time= 987
313 Memory wrote 2e to addr=92 at time= 989
314 Memory wrote 67 to addr=93 at time= 991
315 Memory wrote b9 to addr=94 at time= 993
316 Memory wrote 1e to addr=95 at time= 995
317 Memory wrote 04 to addr=96 at time= 997
318 Memory wrote 41 to addr=97 at time= 999
319 Memory wrote 21 to addr=98 at time=1001
320 Memory wrote f5 to addr=99 at time=1003
321 Memory wrote 6c to addr=9a at time=1005
322 Memory wrote b0 to addr=9b at time=1007
323 Memory wrote 50 to addr=9c at time=1009
324 Memory wrote 7d to addr=9d at time=1011
325 Memory wrote b3 to addr=9e at time=1013
326 Memory wrote d4 to addr=9f at time=1015
327 Memory wrote dc to addr=a0 at time=1017
328 Memory wrote 71 to addr=ff at time=1029
329 Memory wrote 38 to addr=00 at time=1031
330 Memory wrote c3 to addr=01 at time=1033
331 Memory wrote e5 to addr=d2 at time=1045
332 Memory wrote d3 to addr=d3 at time=1047
333 Memory wrote 10 to addr=d4 at time=1049
334 Memory wrote aa to addr=d5 at time=1051
335 Memory wrote b9 to addr=d6 at time=1053
336 Memory wrote 3e to addr=d7 at time=1055
337 Memory wrote 83 to addr=d8 at time=1057
338 Memory wrote fa to addr=d9 at time=1059
339 Memory wrote 32 to addr=da at time=1061
340 Memory wrote bb to addr=db at time=1063
341 Memory wrote ce to addr=dc at time=1065
342 Memory wrote 54 to addr=dd at time=1067
343 Memory wrote ef to addr=b5 at time=1079
344 Memory wrote 5b to addr=b6 at time=1081
345 Memory wrote 48 to addr=b7 at time=1083
346 Memory wrote 8b to addr=b8 at time=1085
347 Memory wrote b3 to addr=b9 at time=1087
348 Memory wrote 5d to addr=ba at time=1089
349 Memory wrote 4f to addr=bb at time=1091
350 Memory wrote 93 to addr=bc at time=1093
351 Memory wrote 76 to addr=bd at time=1095
352 Memory wrote fd to addr=be at time=1097
353 Memory wrote 88 to addr=bf at time=1099
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354 Memory wrote 66 to addr=c0 at time=1101
355 Memory wrote 94 to addr=c1 at time=1103
356 Memory wrote e6 to addr=c2 at time=1105
357 Memory wrote d2 to addr=c3 at time=1107
358 Memory wrote 7a to addr=c4 at time=1109
359 Memory wrote 17 to addr=c5 at time=1111
360 Memory wrote 6e to addr=c6 at time=1113
361 Memory wrote e3 to addr=f7 at time=1125
362 Memory wrote 63 to addr=f8 at time=1127
363 Memory wrote 15 to addr=f9 at time=1129
364 Memory wrote d4 to addr=fa at time=1131
365 Memory wrote fe to addr=fb at time=1133
366 Memory wrote 6f to addr=6b at time=1145
367 Memory wrote 6d to addr=6c at time=1147
368 Memory wrote 41 to addr=6d at time=1149
369 Memory wrote b9 to addr=6e at time=1151
370 Memory wrote 04 to addr=6f at time=1153
371 Memory wrote 4d to addr=70 at time=1155
372 Memory wrote dc to addr=71 at time=1157
373 Memory wrote fc to addr=72 at time=1159
374 Memory wrote ab to addr=73 at time=1161
375 Memory wrote 83 to addr=74 at time=1163
376 =====
377 =====TErrorSelect = 2=====
378 =====Correct Packet=====
379 Done not asserted
380 Memory mismatch at 000000e6, 00 at memory, expecting a3
381 Memory mismatch at 000000e7, 00 at memory, expecting 56
382 Memory mismatch at 000000e8, 00 at memory, expecting 99
383 Memory mismatch at 000000e9, 48 at memory, expecting bd
384 Memory mismatch at 000000ea, 09 at memory, expecting fc
385 Memory mismatch at 000000eb, 08 at memory, expecting 45
386 Memory mismatch at 000000ec, 00 at memory, expecting 56
387 Memory mismatch at 000000ed, 00 at memory, expecting 41
388 Memory mismatch at 000000ee, 56 at memory, expecting 61
389 Done not asserted
390 Memory mismatch at 0000009e, b3 at memory, expecting eb
391 Memory mismatch at 0000009f, d4 at memory, expecting 31
392 Memory mismatch at 000000a0, dc at memory, expecting 95
393 Memory mismatch at 000000a1, 04 at memory, expecting fe
394 Memory mismatch at 000000a2, 43 at memory, expecting 84
395 Memory mismatch at 000000a3, 1d at memory, expecting 01
396 Memory mismatch at 000000a4, 5f at memory, expecting f8
397 Memory mismatch at 000000a5, be at memory, expecting 60
398 Done not asserted
399 Memory mismatch at 000000ff, 71 at memory, expecting 19
400 Done not asserted
401 Memory mismatch at 000000d3, d3 at memory, expecting 43
402 Memory mismatch at 000000d4, 10 at memory, expecting d9
403 Memory mismatch at 000000d5, aa at memory, expecting da
404 Memory mismatch at 000000d6, b9 at memory, expecting f4
405 Memory mismatch at 000000d7, 3e at memory, expecting f8
406 Done not asserted
407 Done not asserted
408 Memory mismatch at 0000007a, 00 at memory, expecting fc
409 Memory mismatch at 0000007b, be at memory, expecting 54
410 Memory mismatch at 0000007c, 79 at memory, expecting 5d
411 Memory mismatch at 0000007d, 71 at memory, expecting 62
412 Memory mismatch at 0000007e, 00 at memory, expecting 39
413 Memory mismatch at 0000007f, 00 at memory, expecting 42
414 Memory mismatch at 00000080, 00 at memory, expecting 42
415 Memory mismatch at 00000081, 00 at memory, expecting 5e
416 Memory mismatch at 00000082, 97 at memory, expecting 9f
417 Memory mismatch at 00000083, 20 at memory, expecting 3d
418 Memory mismatch at 00000084, 6f at memory, expecting 7c
419 Memory mismatch at 00000085, 9d at memory, expecting c5
420 Memory mismatch at 00000086, 84 at memory, expecting 6d
421 Memory mismatch at 00000087, 00 at memory, expecting 9e
422 Memory mismatch at 00000088, 00 at memory, expecting 8f
423 Memory mismatch at 00000089, 00 at memory, expecting a6
424 Memory mismatch at 0000008a, 00 at memory, expecting 35
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425 Memory mismatch at 0000008b, f9 at memory, expecting 95
426 Done not asserted
427 Memory mismatch at 00000096, 04 at memory, expecting 70
428 Memory mismatch at 00000097, 41 at memory, expecting 3e
429 Memory mismatch at 00000098, 21 at memory, expecting cd
430 Memory mismatch at 00000099, f5 at memory, expecting 7c
431 Memory mismatch at 0000009a, 6c at memory, expecting bc
432 Memory mismatch at 0000009b, b0 at memory, expecting 8a
433 Memory mismatch at 0000009c, 50 at memory, expecting d9
434 Memory mismatch at 0000009d, 7d at memory, expecting 49
435 Memory mismatch at 0000009e, b3 at memory, expecting 89
436 Memory mismatch at 0000009f, d4 at memory, expecting 7d
437 Memory mismatch at 000000a0, dc at memory, expecting 05
438 Memory mismatch at 000000a1, 04 at memory, expecting 2f
439 Memory mismatch at 000000a2, 43 at memory, expecting 7f
440 Memory mismatch at 000000a3, 1d at memory, expecting 2a
441 Memory mismatch at 000000a4, 5f at memory, expecting 33
442 Memory mismatch at 000000a5, be at memory, expecting 36
443 Memory mismatch at 000000a6, 25 at memory, expecting a4
444 Memory mismatch at 000000a7, 00 at memory, expecting 1e
445 Memory mismatch at 000000a8, 00 at memory, expecting d9
446 Memory wrote 01 to addr=11 at time=1387
447 Memory wrote 07 to addr=12 at time=1389
448 Memory wrote 07 to addr=13 at time=1391
449 Memory wrote f6 to addr=14 at time=1393
450 Memory wrote 41 to addr=15 at time=1395
451 Memory wrote 99 to addr=16 at time=1397
452 Memory wrote 7d to addr=17 at time=1399
453 Memory wrote 32 to addr=18 at time=1401
454 Memory wrote f1 to addr=19 at time=1403
455 Memory wrote 03 to addr=1a at time=1405
456 Done not asserted
457 Memory mismatch at 00000007, dd at memory, expecting f6
458 Memory mismatch at 00000008, 17 at memory, expecting 41
459 Memory mismatch at 00000009, 1b at memory, expecting 99
460 Memory mismatch at 0000000a, 17 at memory, expecting 7d
461 Memory mismatch at 0000000b, 29 at memory, expecting 32
462 Memory mismatch at 0000000c, 14 at memory, expecting f1
463 Memory mismatch at 0000000d, c0 at memory, expecting 03
464 Memory wrote 7f to addr=1b at time=1407
465 Memory wrote 7f to addr=1c at time=1409
466 Memory wrote 7f to addr=1d at time=1411
467 Memory wrote 01 to addr=1e at time=1413
468 Memory wrote 03 to addr=1f at time=1415
469 Memory wrote 31 to addr=20 at time=1417
470 Memory wrote 7d to addr=21 at time=1419
471 Done not asserted
472 Memory mismatch at 00000031, 00 at memory, expecting 7d
473 Memory mismatch at 00000032, 00 at memory, expecting 2a
474 Memory mismatch at 00000033, 00 at memory, expecting 4e
475 Done not asserted
476 Memory mismatch at 00000005, 33 at memory, expecting e3
477 Memory mismatch at 00000006, 51 at memory, expecting 25
478 Memory mismatch at 00000007, dd at memory, expecting 6d
479 Memory mismatch at 00000008, 17 at memory, expecting 28
480 Memory mismatch at 00000009, 1b at memory, expecting cd
481 Memory mismatch at 0000000b, 29 at memory, expecting 71
482 Memory mismatch at 0000000c, 14 at memory, expecting 68
483 Memory mismatch at 0000000d, c0 at memory, expecting be
484 Memory mismatch at 0000000e, 73 at memory, expecting e8
485 Memory mismatch at 0000000f, 9d at memory, expecting 87
486 Memory mismatch at 00000010, a7 at memory, expecting f5
487 Memory mismatch at 00000011, 01 at memory, expecting 87
488 Memory mismatch at 00000012, 07 at memory, expecting b3
489 Memory mismatch at 00000013, 07 at memory, expecting b0
490 Memory mismatch at 00000014, f6 at memory, expecting 01
491 Memory mismatch at 00000015, 41 at memory, expecting 00
492 Memory mismatch at 00000016, 99 at memory, expecting 89
493 Memory mismatch at 00000017, 7d at memory, expecting b2
494 =====Wrong Checksum=====
495 Done not asserted
```

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496 Error not asserted
497 Done not asserted
498 Error not asserted
499 Memory mismatch at 000000d5, aa at memory, expecting d8
500 Memory mismatch at 000000d6, b9 at memory, expecting 49
501 Memory mismatch at 000000d7, 3e at memory, expecting cf
502 Memory mismatch at 000000d8, 83 at memory, expecting 38
503 Memory mismatch at 000000d9, fa at memory, expecting 99
504 Memory mismatch at 000000da, 32 at memory, expecting d2
505 Memory mismatch at 000000db, bb at memory, expecting a1
506 Memory mismatch at 000000dc, ce at memory, expecting a7
507 Memory mismatch at 000000dd, 54 at memory, expecting 68
508 Memory mismatch at 000000de, 45 at memory, expecting e6
509 Memory mismatch at 000000df, 56 at memory, expecting 0a
510 Memory mismatch at 000000e0, 7e at memory, expecting 72
511 Done not asserted
512 Error not asserted
513 Memory mismatch at 000000b6, 5b at memory, expecting 14
514 Memory mismatch at 000000b7, 48 at memory, expecting c3
515 Memory mismatch at 000000b8, 8b at memory, expecting ef
516 Memory mismatch at 000000b9, b3 at memory, expecting 45
517 Memory mismatch at 000000ba, 5d at memory, expecting b8
518 Memory mismatch at 000000bb, 4f at memory, expecting 8f
519 Memory mismatch at 000000bc, 93 at memory, expecting fe
520 Memory mismatch at 000000bd, 76 at memory, expecting 27
521 Memory mismatch at 000000be, fd at memory, expecting d8
522 Memory mismatch at 000000bf, 88 at memory, expecting a4
523 Memory mismatch at 000000c0, 66 at memory, expecting a4
524 Memory mismatch at 000000c1, 94 at memory, expecting 8f
525 Memory mismatch at 000000c2, e6 at memory, expecting 9c
526 Done not asserted
527 Error not asserted
528 Memory mismatch at 00000058, c8 at memory, expecting a5
529 Memory mismatch at 00000059, ce at memory, expecting b8
530 Memory mismatch at 0000005a, dc at memory, expecting a8
531 Memory mismatch at 0000005b, b9 at memory, expecting 12
532 Memory mismatch at 0000005c, 51 at memory, expecting a1
533 Memory mismatch at 0000005d, 73 at memory, expecting e6
534 Memory mismatch at 0000005e, 5d at memory, expecting 30
535 Memory mismatch at 0000005f, 99 at memory, expecting 5e
536 Memory mismatch at 00000060, 81 at memory, expecting ed
537 Memory mismatch at 00000061, 28 at memory, expecting da
538 Memory mismatch at 00000062, e7 at memory, expecting 26
539 Memory mismatch at 00000063, 58 at memory, expecting 83
540 Memory mismatch at 00000064, b6 at memory, expecting 5d
541 Done not asserted
542 Error not asserted
543 Memory mismatch at 000000e3, 8b at memory, expecting 8a
544 Memory mismatch at 000000e4, 69 at memory, expecting d6
545 Memory mismatch at 000000e5, 1c at memory, expecting 74
546 Memory mismatch at 000000e6, 00 at memory, expecting 9d
547 Memory mismatch at 000000e7, 00 at memory, expecting b2
548 Memory mismatch at 000000e8, 00 at memory, expecting 91
549 Memory mismatch at 000000e9, 48 at memory, expecting 6d
550 Memory mismatch at 000000ea, 09 at memory, expecting db
551 Memory mismatch at 000000eb, 08 at memory, expecting fb
552 Memory mismatch at 000000ec, 00 at memory, expecting 86
553 Memory mismatch at 000000ed, 00 at memory, expecting 15
554 Memory mismatch at 000000ee, 56 at memory, expecting 62
555 Memory mismatch at 000000ef, e9 at memory, expecting 2b
556 Done not asserted
557 Error not asserted
558 Memory mismatch at 000000e7, 00 at memory, expecting da
559 Memory mismatch at 000000e8, 00 at memory, expecting 75
560 Memory mismatch at 000000e9, 48 at memory, expecting e3
561 Memory mismatch at 000000ea, 09 at memory, expecting a3
562 Memory mismatch at 000000eb, 08 at memory, expecting 1d
563 Memory mismatch at 000000ec, 00 at memory, expecting fe
564 Done not asserted
565 Error not asserted
566 Memory mismatch at 00000098, 21 at memory, expecting d4
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567 Memory mismatch at 00000099, f5 at memory, expecting 1f
568 Memory mismatch at 0000009a, 6c at memory, expecting bf
569 Memory mismatch at 0000009b, b0 at memory, expecting c5
570 Memory mismatch at 0000009c, 50 at memory, expecting 5a
571 Memory mismatch at 0000009d, 7d at memory, expecting 50
572 Memory mismatch at 0000009e, b3 at memory, expecting fe
573 Memory mismatch at 0000009f, d4 at memory, expecting 47
574 Memory mismatch at 000000a0, dc at memory, expecting 88
575 Memory mismatch at 000000a1, 04 at memory, expecting 8a
576 Memory mismatch at 000000a2, 43 at memory, expecting f8
577 Done not asserted
578 Error not asserted
579 Memory mismatch at 00000034, 00 at memory, expecting 8d
580 Memory mismatch at 00000035, 95 at memory, expecting a4
581 Memory mismatch at 00000036, f6 at memory, expecting d2
582 Memory mismatch at 00000037, b8 at memory, expecting 05
583 Memory mismatch at 00000038, d2 at memory, expecting 5f
584 Memory mismatch at 00000039, c4 at memory, expecting f4
585 Memory mismatch at 0000003a, e3 at memory, expecting 97
586 Memory mismatch at 0000003b, 86 at memory, expecting b8
587 Memory mismatch at 0000003c, cb at memory, expecting 15
588 Memory mismatch at 0000003d, c2 at memory, expecting fb
589 Memory mismatch at 0000003e, 2e at memory, expecting 7e
590 Memory mismatch at 0000003f, 12 at memory, expecting f5
591 Done not asserted
592 Error not asserted
593 Memory mismatch at 00000072, fc at memory, expecting 3e
594 Memory mismatch at 00000073, ab at memory, expecting c9
595 Memory mismatch at 00000074, 83 at memory, expecting c1
596 Memory mismatch at 00000075, 00 at memory, expecting 32
597 Memory mismatch at 00000076, 00 at memory, expecting ec
598 Memory mismatch at 00000077, 00 at memory, expecting 30
599 Memory mismatch at 00000078, 00 at memory, expecting ce
600 Memory mismatch at 00000079, 00 at memory, expecting bf
601 Memory mismatch at 0000007a, 00 at memory, expecting 24
602 Memory mismatch at 0000007b, be at memory, expecting bb
603 Memory mismatch at 0000007c, 79 at memory, expecting 3d
604 Memory mismatch at 0000007d, 71 at memory, expecting bb
605 Memory mismatch at 0000007e, 00 at memory, expecting 22
606 Memory mismatch at 0000007f, 00 at memory, expecting 72
607 Done not asserted
608 Error not asserted
609 Memory mismatch at 0000001a, 03 at memory, expecting ad
610 Memory mismatch at 0000001b, 7f at memory, expecting 8d
611 Memory mismatch at 0000001c, 7f at memory, expecting 98
612 Memory mismatch at 0000001d, 7f at memory, expecting e1
613 Memory mismatch at 0000001e, 01 at memory, expecting 1b
614 Memory mismatch at 0000001f, 03 at memory, expecting 82
615 Memory mismatch at 00000020, 31 at memory, expecting 07
616 Memory mismatch at 00000021, 7d at memory, expecting 89
617 Memory mismatch at 00000022, 26 at memory, expecting b2
618 Memory mismatch at 00000023, 7c at memory, expecting 38
619 Memory mismatch at 00000024, 74 at memory, expecting 01
620 Memory mismatch at 00000025, ee at memory, expecting 0c
621 Memory mismatch at 00000026, 3d at memory, expecting 2f
622 Memory mismatch at 00000027, 2a at memory, expecting 7e
623 Memory mismatch at 00000028, 1a at memory, expecting 36
624 =====
625 =====TErrorSelect = 3=====
626 =====Correct Packet=====
627 Memory wrote 08 to addr=dd at time=1811
628 Memory wrote ab to addr=03 at time=1813
629 Memory wrote a4 to addr=03 at time=1815
630 Memory wrote ef to addr=03 at time=1817
631 Memory wrote d8 to addr=03 at time=1819
632 Memory wrote 83 to addr=03 at time=1821
633 Memory wrote 0b to addr=03 at time=1823
634 Memory wrote c9 to addr=03 at time=1825
635 Memory wrote 4e to addr=03 at time=1827
636 Memory wrote e9 to addr=03 at time=1829
637 Memory wrote 3a to addr=03 at time=1831
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638 Memory wrote 11 to addr=03 at time=1833
639 Memory wrote 66 to addr=03 at time=1835
640 Memory wrote bf to addr=03 at time=1837
641 Memory wrote 4a to addr=03 at time=1839
642 Memory wrote 33 to addr=03 at time=1841
643 Memory wrote 41 to addr=03 at time=1843
644 Memory wrote 3a to addr=03 at time=1845
645 Memory wrote f8 to addr=03 at time=1847
646 Memory mismatch at 000000de, 45 at memory, expecting ab
647 Memory mismatch at 000000df, 56 at memory, expecting a4
648 Memory mismatch at 000000e0, 7e at memory, expecting ef
649 Memory mismatch at 000000e1, 50 at memory, expecting d8
650 Memory mismatch at 000000e2, 36 at memory, expecting 83
651 Memory mismatch at 000000e3, 8b at memory, expecting 0b
652 Memory mismatch at 000000e4, 69 at memory, expecting c9
653 Memory mismatch at 000000e5, 1c at memory, expecting 4e
654 Memory mismatch at 000000e6, 00 at memory, expecting e9
655 Memory mismatch at 000000e7, 00 at memory, expecting 3a
656 Memory mismatch at 000000e8, 00 at memory, expecting 11
657 Memory mismatch at 000000e9, 48 at memory, expecting 66
658 Memory mismatch at 000000ea, 09 at memory, expecting bf
659 Memory mismatch at 000000eb, 08 at memory, expecting 4a
660 Memory mismatch at 000000ec, 00 at memory, expecting 33
661 Memory mismatch at 000000ed, 00 at memory, expecting 41
662 Memory mismatch at 000000ee, 56 at memory, expecting 3a
663 Memory mismatch at 000000ef, e9 at memory, expecting f8
664 Memory wrote 0c to addr=21 at time=1861
665 Memory wrote 7f to addr=03 at time=1863
666 Memory wrote 1a to addr=03 at time=1865
667 Memory wrote 82 to addr=03 at time=1867
668 Memory wrote a7 to addr=03 at time=1869
669 Memory wrote 04 to addr=03 at time=1871
670 Memory wrote 1f to addr=03 at time=1873
671 Memory wrote ea to addr=03 at time=1875
672 Memory wrote 2e to addr=03 at time=1877
673 Memory wrote 99 to addr=03 at time=1879
674 Memory mismatch at 00000022, 26 at memory, expecting 7f
675 Memory mismatch at 00000023, 7c at memory, expecting 1a
676 Memory mismatch at 00000024, 74 at memory, expecting 82
677 Memory mismatch at 00000025, ee at memory, expecting a7
678 Memory mismatch at 00000026, 3d at memory, expecting 04
679 Memory mismatch at 00000027, 2a at memory, expecting 1f
680 Memory mismatch at 00000028, 1a at memory, expecting ea
681 Memory mismatch at 00000029, 1c at memory, expecting 2e
682 Memory mismatch at 0000002a, 5a at memory, expecting 99
683 Memory wrote 5b to addr=16 at time=1905
684 Memory wrote 37 to addr=03 at time=1907
685 Memory wrote e5 to addr=03 at time=1909
686 Memory wrote 14 to addr=03 at time=1911
687 Memory wrote f0 to addr=03 at time=1913
688 Memory wrote 81 to addr=03 at time=1915
689 Memory wrote 77 to addr=03 at time=1917
690 Memory wrote c7 to addr=03 at time=1919
691 Memory wrote 4d to addr=03 at time=1921
692 Memory wrote 60 to addr=03 at time=1923
693 Memory wrote 06 to addr=03 at time=1925
694 Memory wrote 1a to addr=03 at time=1927
695 Memory wrote b7 to addr=03 at time=1929
696 Memory wrote 56 to addr=03 at time=1931
697 Memory mismatch at 00000017, 7d at memory, expecting 37
698 Memory mismatch at 00000018, 32 at memory, expecting e5
699 Memory mismatch at 00000019, f1 at memory, expecting 14
700 Memory mismatch at 0000001a, 03 at memory, expecting f0
701 Memory mismatch at 0000001b, 7f at memory, expecting 81
702 Memory mismatch at 0000001c, 7f at memory, expecting 77
703 Memory mismatch at 0000001d, 7f at memory, expecting c7
704 Memory mismatch at 0000001e, 01 at memory, expecting 4d
705 Memory mismatch at 0000001f, 03 at memory, expecting 60
706 Memory mismatch at 00000020, 31 at memory, expecting 06
707 Memory mismatch at 00000021, 0c at memory, expecting 1a
708 Memory mismatch at 00000022, 26 at memory, expecting b7
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709 Memory mismatch at 00000023, 7c at memory, expecting 56
710 Memory wrote 66 to addr=a3 at time=1945
711 Memory wrote e2 to addr=f9 at time=1959
712 Memory wrote 2f to addr=03 at time=1961
713 Memory wrote bb to addr=03 at time=1963
714 Memory wrote 19 to addr=03 at time=1965
715 Memory wrote 85 to addr=03 at time=1967
716 Memory wrote d8 to addr=03 at time=1969
717 Memory wrote 56 to addr=03 at time=1971
718 Memory wrote 8d to addr=03 at time=1973
719 Memory wrote ba to addr=03 at time=1975
720 Memory wrote b2 to addr=03 at time=1977
721 Memory mismatch at 000000fa, d4 at memory, expecting 2f
722 Memory mismatch at 000000fb, fe at memory, expecting bb
723 Memory mismatch at 000000fc, 00 at memory, expecting 19
724 Memory mismatch at 000000fd, cf at memory, expecting 85
725 Memory mismatch at 000000fe, 45 at memory, expecting d8
726 Memory mismatch at 000000ff, 71 at memory, expecting 56
727 Memory wrote e4 to addr=ce at time=1991
728 Memory wrote 83 to addr=03 at time=1993
729 Memory wrote c7 to addr=03 at time=1995
730 Memory wrote 44 to addr=03 at time=1997
731 Memory wrote 4b to addr=03 at time=1999
732 Memory wrote 5f to addr=03 at time=2001
733 Memory wrote 71 to addr=03 at time=2003
734 Memory wrote c2 to addr=03 at time=2005
735 Memory wrote 8f to addr=03 at time=2007
736 Memory wrote f4 to addr=03 at time=2009
737 Memory wrote ac to addr=03 at time=2011
738 Memory wrote 58 to addr=03 at time=2013
739 Memory wrote f8 to addr=03 at time=2015
740 Memory wrote ed to addr=03 at time=2017
741 Memory wrote 73 to addr=03 at time=2019
742 Memory wrote 9e to addr=03 at time=2021
743 Memory wrote 22 to addr=03 at time=2023
744 Memory wrote 2d to addr=03 at time=2025
745 Memory mismatch at 000000cf, fd at memory, expecting 83
746 Memory mismatch at 000000d0, 48 at memory, expecting c7
747 Memory mismatch at 000000d1, 35 at memory, expecting 44
748 Memory mismatch at 000000d2, e5 at memory, expecting 4b
749 Memory mismatch at 000000d3, d3 at memory, expecting 5f
750 Memory mismatch at 000000d4, 10 at memory, expecting 71
751 Memory mismatch at 000000d5, aa at memory, expecting c2
752 Memory mismatch at 000000d6, b9 at memory, expecting 8f
753 Memory mismatch at 000000d7, 3e at memory, expecting f4
754 Memory mismatch at 000000d8, 83 at memory, expecting ac
755 Memory mismatch at 000000d9, fa at memory, expecting 58
756 Memory mismatch at 000000da, 32 at memory, expecting f8
757 Memory mismatch at 000000db, bb at memory, expecting ed
758 Memory mismatch at 000000dc, ce at memory, expecting 73
759 Memory mismatch at 000000dd, 08 at memory, expecting 9e
760 Memory mismatch at 000000de, 45 at memory, expecting 22
761 Memory mismatch at 000000df, 56 at memory, expecting 2d
762 Memory wrote 05 to addr=31 at time=2039
763 Memory wrote cf to addr=03 at time=2041
764 Memory wrote 5c to addr=03 at time=2043
765 Memory wrote 30 to addr=03 at time=2045
766 Memory wrote 83 to addr=03 at time=2047
767 Memory wrote fc to addr=03 at time=2049
768 Memory wrote f3 to addr=03 at time=2051
769 Memory wrote c5 to addr=03 at time=2053
770 Memory mismatch at 00000032, 00 at memory, expecting cf
771 Memory mismatch at 00000033, 00 at memory, expecting 5c
772 Memory mismatch at 00000034, 00 at memory, expecting 30
773 Memory mismatch at 00000035, 95 at memory, expecting 83
774 Memory mismatch at 00000036, f6 at memory, expecting fc
775 Memory mismatch at 00000037, b8 at memory, expecting f3
776 Memory mismatch at 00000038, d2 at memory, expecting c5
777 Memory wrote 8e to addr=1d at time=2067
778 Memory wrote 91 to addr=03 at time=2069
779 Memory wrote 3a to addr=03 at time=2071
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780 Memory wrote 22 to addr=03 at time=2073
781 Memory wrote 44 to addr=03 at time=2075
782 Memory wrote b0 to addr=03 at time=2077
783 Memory wrote 4e to addr=03 at time=2079
784 Memory wrote 95 to addr=03 at time=2081
785 Memory wrote d6 to addr=03 at time=2083
786 Memory wrote ac to addr=03 at time=2085
787 Memory wrote 8a to addr=03 at time=2087
788 Memory mismatch at 0000001e, 01 at memory, expecting 91
789 Memory mismatch at 0000001f, 03 at memory, expecting 3a
790 Memory mismatch at 00000020, 31 at memory, expecting 22
791 Memory mismatch at 00000021, 0c at memory, expecting 44
792 Memory mismatch at 00000022, 26 at memory, expecting b0
793 Memory mismatch at 00000023, 7c at memory, expecting 4e
794 Memory mismatch at 00000024, 74 at memory, expecting 95
795 Memory mismatch at 00000025, ee at memory, expecting d6
796 Memory mismatch at 00000026, 3d at memory, expecting ac
797 Memory mismatch at 00000027, 2a at memory, expecting 8a
798 Memory wrote 24 to addr=c0 at time=2101
799 Memory wrote e9 to addr=03 at time=2103
800 Memory wrote d2 to addr=03 at time=2105
801 Memory wrote 16 to addr=03 at time=2107
802 Memory wrote 55 to addr=03 at time=2109
803 Memory wrote b6 to addr=03 at time=2111
804 Memory wrote de to addr=03 at time=2113
805 Memory wrote 8c to addr=03 at time=2115
806 Memory wrote d1 to addr=03 at time=2117
807 Memory wrote d1 to addr=03 at time=2119
808 Memory wrote fd to addr=03 at time=2121
809 Memory wrote 34 to addr=03 at time=2123
810 Memory wrote 9d to addr=03 at time=2125
811 Memory wrote 7c to addr=03 at time=2127
812 Memory wrote f0 to addr=03 at time=2129
813 Memory wrote 25 to addr=03 at time=2131
814 Memory wrote 10 to addr=03 at time=2133
815 Memory wrote 84 to addr=03 at time=2135
816 Memory wrote bf to addr=03 at time=2137
817 Memory mismatch at 000000c1, 94 at memory, expecting e9
818 Memory mismatch at 000000c2, e6 at memory, expecting d2
819 Memory mismatch at 000000c3, d2 at memory, expecting 16
820 Memory mismatch at 000000c4, 7a at memory, expecting 55
821 Memory mismatch at 000000c5, 17 at memory, expecting b6
822 Memory mismatch at 000000c6, 6e at memory, expecting de
823 Memory mismatch at 000000c7, 00 at memory, expecting 8c
824 Memory mismatch at 000000c8, 80 at memory, expecting d1
825 Memory mismatch at 000000c9, e6 at memory, expecting d1
826 Memory mismatch at 000000ca, 82 at memory, expecting fd
827 Memory mismatch at 000000cb, 86 at memory, expecting 34
828 Memory mismatch at 000000cc, 55 at memory, expecting 9d
829 Memory mismatch at 000000cd, 5f at memory, expecting 7c
830 Memory mismatch at 000000ce, e4 at memory, expecting f0
831 Memory mismatch at 000000cf, fd at memory, expecting 25
832 Memory mismatch at 000000d0, 48 at memory, expecting 10
833 Memory mismatch at 000000d1, 35 at memory, expecting 84
834 Memory mismatch at 000000d2, e5 at memory, expecting bf
835 =====Wrong Checksum=====
836 Memory wrote ef to addr=58 at time=2153
837 Memory wrote ba to addr=03 at time=2155
838 Memory wrote 6d to addr=03 at time=2157
839 Memory wrote c4 to addr=03 at time=2159
840 Memory wrote 32 to addr=03 at time=2161
841 Memory wrote fa to addr=03 at time=2163
842 Memory mismatch at 00000059, ce at memory, expecting ba
843 Memory mismatch at 0000005a, dc at memory, expecting 6d
844 Memory mismatch at 0000005b, b9 at memory, expecting c4
845 Memory mismatch at 0000005c, 51 at memory, expecting 32
846 Memory mismatch at 0000005d, 73 at memory, expecting fa
847 Memory wrote b5 to addr=49 at time=2175
848 Memory wrote b8 to addr=03 at time=2177
849 Memory wrote 22 to addr=03 at time=2179
850 Memory wrote bd to addr=03 at time=2181
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851 Memory wrote 96 to addr=03 at time=2183
852 Memory wrote 59 to addr=03 at time=2185
853 Memory wrote e1 to addr=03 at time=2187
854 Memory wrote bf to addr=03 at time=2189
855 Memory mismatch at 0000004a, 61 at memory, expecting b8
856 Memory mismatch at 0000004b, 3d at memory, expecting 22
857 Memory mismatch at 0000004c, 5f at memory, expecting bd
858 Memory mismatch at 0000004d, 1e at memory, expecting 96
859 Memory mismatch at 0000004e, 2e at memory, expecting 59
860 Memory mismatch at 0000004f, af at memory, expecting e1
861 Memory mismatch at 00000050, f3 at memory, expecting bf
862 Memory wrote e8 to addr=ee at time=2201
863 Memory wrote fc to addr=03 at time=2203
864 Memory wrote 76 to addr=03 at time=2205
865 Memory mismatch at 000000ef, e9 at memory, expecting fc
866 Memory mismatch at 000000f0, 48 at memory, expecting 76
867 Memory wrote 64 to addr=18 at time=2217
868 Memory wrote 80 to addr=03 at time=2219
869 Memory wrote 57 to addr=03 at time=2221
870 Memory wrote 82 to addr=03 at time=2223
871 Memory wrote 7a to addr=03 at time=2225
872 Memory wrote df to addr=03 at time=2227
873 Memory wrote a5 to addr=03 at time=2229
874 Memory wrote 1d to addr=03 at time=2231
875 Memory wrote cb to addr=03 at time=2233
876 Memory wrote 24 to addr=03 at time=2235
877 Memory wrote f1 to addr=03 at time=2237
878 Memory wrote 13 to addr=03 at time=2239
879 Memory wrote a9 to addr=03 at time=2241
880 Memory wrote 95 to addr=03 at time=2243
881 Memory mismatch at 00000019, f1 at memory, expecting 80
882 Memory mismatch at 0000001a, 03 at memory, expecting 57
883 Memory mismatch at 0000001b, 7f at memory, expecting 82
884 Memory mismatch at 0000001c, 7f at memory, expecting 7a
885 Memory mismatch at 0000001d, 8e at memory, expecting df
886 Memory mismatch at 0000001e, 01 at memory, expecting a5
887 Memory mismatch at 0000001f, 03 at memory, expecting 1d
888 Memory mismatch at 00000020, 31 at memory, expecting cb
889 Memory mismatch at 00000021, 0c at memory, expecting 24
890 Memory mismatch at 00000022, 26 at memory, expecting f1
891 Memory mismatch at 00000023, 7c at memory, expecting 13
892 Memory mismatch at 00000024, 74 at memory, expecting a9
893 Memory mismatch at 00000025, ee at memory, expecting 95
894 Memory wrote 05 to addr=f5 at time=2255
895 Memory wrote 42 to addr=03 at time=2257
896 Memory wrote 08 to addr=03 at time=2259
897 Memory wrote 15 to addr=03 at time=2261
898 Memory wrote 90 to addr=03 at time=2263
899 Memory wrote b3 to addr=03 at time=2265
900 Memory wrote 6a to addr=03 at time=2267
901 Memory wrote dc to addr=03 at time=2269
902 Memory wrote b6 to addr=03 at time=2271
903 Memory wrote 91 to addr=03 at time=2273
904 Memory wrote 37 to addr=03 at time=2275
905 Memory wrote a2 to addr=03 at time=2277
906 Memory wrote dd to addr=03 at time=2279
907 Memory wrote 90 to addr=03 at time=2281
908 Memory wrote 2c to addr=03 at time=2283
909 Memory wrote 22 to addr=03 at time=2285
910 Memory wrote 59 to addr=03 at time=2287
911 Memory wrote 14 to addr=03 at time=2289
912 Memory wrote 75 to addr=03 at time=2291
913 Memory mismatch at 000000f6, be at memory, expecting 42
914 Memory mismatch at 000000f7, e3 at memory, expecting 08
915 Memory mismatch at 000000f8, 63 at memory, expecting 15
916 Memory mismatch at 000000f9, e2 at memory, expecting 90
917 Memory mismatch at 000000fa, d4 at memory, expecting b3
918 Memory mismatch at 000000fb, fe at memory, expecting 6a
919 Memory mismatch at 000000fc, 00 at memory, expecting dc
920 Memory mismatch at 000000fd, cf at memory, expecting b6
921 Memory mismatch at 000000fe, 45 at memory, expecting 91
```



```
922 Memory mismatch at 000000ff, 71 at memory, expecting 37
923 Memory wrote 4a to addr=d0 at time=2303
924 Memory wrote 8c to addr=03 at time=2305
925 Memory mismatch at 000000d1, 35 at memory, expecting 8c
926 Memory wrote 02 to addr=71 at time=2317
927 Memory wrote 40 to addr=03 at time=2319
928 Memory wrote be to addr=03 at time=2321
929 Memory wrote 73 to addr=03 at time=2323
930 Memory wrote af to addr=03 at time=2325
931 Memory wrote 9c to addr=03 at time=2327
932 Memory wrote f7 to addr=03 at time=2329
933 Memory wrote 3d to addr=03 at time=2331
934 Memory wrote d5 to addr=03 at time=2333
935 Memory wrote 1b to addr=03 at time=2335
936 Memory mismatch at 00000072, fc at memory, expecting 40
937 Memory mismatch at 00000073, ab at memory, expecting be
938 Memory mismatch at 00000074, 83 at memory, expecting 73
939 Memory mismatch at 00000075, 00 at memory, expecting af
940 Memory mismatch at 00000076, 00 at memory, expecting 9c
941 Memory mismatch at 00000077, 00 at memory, expecting f7
942 Memory mismatch at 00000078, 00 at memory, expecting 3d
943 Memory mismatch at 00000079, 00 at memory, expecting d5
944 Memory mismatch at 0000007a, 00 at memory, expecting 1b
945 Memory wrote ae to addr=c6 at time=2347
946 Memory wrote a4 to addr=03 at time=2349
947 Memory wrote 35 to addr=03 at time=2351
948 Memory wrote 2e to addr=03 at time=2353
949 Memory wrote 59 to addr=03 at time=2355
950 Memory wrote 70 to addr=03 at time=2357
951 Memory wrote 80 to addr=03 at time=2359
952 Memory wrote 39 to addr=03 at time=2361
953 Memory wrote 85 to addr=03 at time=2363
954 Memory wrote c4 to addr=03 at time=2365
955 Memory wrote 3b to addr=03 at time=2367
956 Memory wrote f9 to addr=03 at time=2369
957 Memory wrote 25 to addr=03 at time=2371
958 Memory wrote c4 to addr=03 at time=2373
959 Memory mismatch at 000000c7, 00 at memory, expecting a4
960 Memory mismatch at 000000c8, 80 at memory, expecting 35
961 Memory mismatch at 000000c9, e6 at memory, expecting 2e
962 Memory mismatch at 000000ca, 82 at memory, expecting 59
963 Memory mismatch at 000000cb, 86 at memory, expecting 70
964 Memory mismatch at 000000cc, 55 at memory, expecting 80
965 Memory mismatch at 000000cd, 5f at memory, expecting 39
966 Memory mismatch at 000000ce, e4 at memory, expecting 85
967 Memory mismatch at 000000cf, fd at memory, expecting c4
968 Memory mismatch at 000000d0, 4a at memory, expecting 3b
969 Memory mismatch at 000000d1, 35 at memory, expecting f9
970 Memory mismatch at 000000d2, e5 at memory, expecting 25
971 Memory mismatch at 000000d3, d3 at memory, expecting c4
972 Memory wrote 6c to addr=0e at time=2385
973 Memory wrote a3 to addr=03 at time=2387
974 Memory wrote 57 to addr=03 at time=2389
975 Memory wrote 7d to addr=03 at time=2391
976 Memory wrote 88 to addr=03 at time=2393
977 Memory wrote e0 to addr=03 at time=2395
978 Memory wrote 42 to addr=03 at time=2397
979 Memory wrote 4c to addr=03 at time=2399
980 Memory wrote 5b to addr=03 at time=2401
981 Memory wrote a1 to addr=03 at time=2403
982 Memory wrote 14 to addr=03 at time=2405
983 Memory wrote 69 to addr=03 at time=2407
984 Memory wrote 9d to addr=03 at time=2409
985 Memory wrote 32 to addr=03 at time=2411
986 Memory mismatch at 0000000f, 9d at memory, expecting a3
987 Memory mismatch at 00000010, a7 at memory, expecting 57
988 Memory mismatch at 00000011, 01 at memory, expecting 7d
989 Memory mismatch at 00000012, 07 at memory, expecting 88
990 Memory mismatch at 00000013, 07 at memory, expecting e0
991 Memory mismatch at 00000014, f6 at memory, expecting 42
992 Memory mismatch at 00000015, 41 at memory, expecting 4c
```

```
993 Memory mismatch at 00000017, 7d at memory, expecting a1
994 Memory mismatch at 00000018, 64 at memory, expecting 14
995 Memory mismatch at 00000019, f1 at memory, expecting 69
996 Memory mismatch at 0000001a, 03 at memory, expecting 9d
997 Memory mismatch at 0000001b, 7f at memory, expecting 32
998 Memory wrote 65 to addr=fa at time=2423
999 Memory wrote 7b to addr=03 at time=2425
1000 Memory wrote 19 to addr=03 at time=2427
1001 Memory wrote f8 to addr=03 at time=2429
1002 Memory wrote f0 to addr=03 at time=2431
1003 Memory wrote 06 to addr=03 at time=2433
1004 Memory wrote 0a to addr=03 at time=2435
1005 Memory wrote fc to addr=03 at time=2437
1006 Memory wrote 04 to addr=03 at time=2439
1007 Memory wrote c2 to addr=03 at time=2441
1008 Memory wrote 34 to addr=03 at time=2443
1009 Memory wrote 0b to addr=03 at time=2445
1010 Memory wrote 60 to addr=03 at time=2447
1011 Memory wrote 5b to addr=03 at time=2449
1012 Memory wrote fc to addr=03 at time=2451
1013 Memory wrote 67 to addr=03 at time=2453
1014 Memory wrote e5 to addr=03 at time=2455
1015 Memory mismatch at 000000fb, fe at memory, expecting 7b
1016 Memory mismatch at 000000fc, 00 at memory, expecting 19
1017 Memory mismatch at 000000fd, cf at memory, expecting f8
1018 Memory mismatch at 000000fe, 45 at memory, expecting f0
1019 Memory mismatch at 000000ff, 71 at memory, expecting 06
1020 =====
1021 $finish called from file "hw3.sv", line 162.
1022 $finish at simulation time 2459
1023 V C S   S i m u l a t i o n   R e p o r t
1024 Time: 2459
1025 CPU Time: 0.870 seconds; Data structure size: 0.0Mb
1026 Wed Oct 11 01:17:27 2023
```