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1   //Aaron Hong (ahong02)
2   //Stephen Macris (smacris)
3   //EE469 Lab1
4
5   //Adds two 1-bit values and a carry-in value.
6
7   //Inputs: Three 1-bits A, B (inputs to be added), cin (carry-in value).
8   //Outputs: Two 1-bits sum (sum), cout (carry-out value).
9   module fulladder (A, B, cin, sum, cout);
10
11     input logic A, B, cin;
12     output logic sum, cout;
13
14     assign sum = A ^ B ^ cin;
15     assign cout = A&B | cin & (A^B);
16
17  endmodule
18
19  //Tests module fulladder by simulating all 2^3 input bit combinations
20  module fulladder_testbench ();
21
22     logic A, B, cin, sum, cout;
23
24     fulladder dut (A, B, cin, sum, cout);
25
26
27     integer i;
28     initial begin
29
30        for(i=0; i<2**3; i++) begin
31         {A, B, cin} = i; #10;
32        end //for loop
33
34     end //initial
35
36  endmodule
37
```