```
1   // Eugene Ngo
2   // 5/3/23
3   // EE 469
4   // Lab 3
5
6   // fullAdder takes in 2 bits, a and b, as well as a possible carry in bit and adds them
    together
7   // if there is a carry out, we output that bit in cout.
8   module fullAdder (A,B,cin,sum,cout);
9      input logic A,B,cin;
10     output logic sum,cout;
11
12     assign sum = A ^ B ^ cin;
13     assign cout = A & B | cin & (A^B);
14  endmodule
15
16  module fullAdder_testbench();
17     logic A,B,cin,sum,cout;
18     fullAdder dut (A,B,cin,sum,cout);
19
20     integer i;
21     initial begin
22        for (i = 0; i < 2**3; i++) begin
23           {A,B,cin} = i; #10;
24        end
25     end
26
27  endmodule
28
```