```
// half adder module using behavorial method

module HAbh(A,B,sum,Cout);
        input A,B;
        output reg sum,Cout;
        always @(A or B) begin
                if(A != B)
                        begin
                                sum = 1'b1;
                        end
                else
                        sum = 1'b0;
                if(A == 1'b1 && B == 1'b1)
                        begin
                                Cout = 1'b1;
                        end
                else
                        Cout = 1'b0;
        end
endmodule

module HAbh_tb();
        reg a, b;
        wire sum, cout;
        HAbh half(a,b,sum,cout);
        initial begin
                a = 0; b = 0;
                #1 a = 0; b = 1;
                #1 a = 1; b = 0;
                #1 a = 1; b = 1;
        end
        initial begin
                $monitor("%t | A = %d | B = %d | Sum = %d | Carry out = %d |",$time, a,
b, sum, cout);
        end
endmodule
```