// Half Adder

// Sum = a XOR b, Cout = a AND b

module HA(a, b, Sum, Cout);

input a, b; // a and b are inputs with size 1-bit

output Sum, Cout; // Sum and Cout are outputs with size 1-bit

assign Sum = a ^ b;

assign Cout = a & b;

endmodule

//carry save adder

module csa\_dadda(A,B,Cin,Y,Cout);

input A,B,Cin;

output Y,Cout;

assign Y = A^B^Cin;

assign Cout = (A&B)|(A&Cin)|(B&Cin);

endmodule