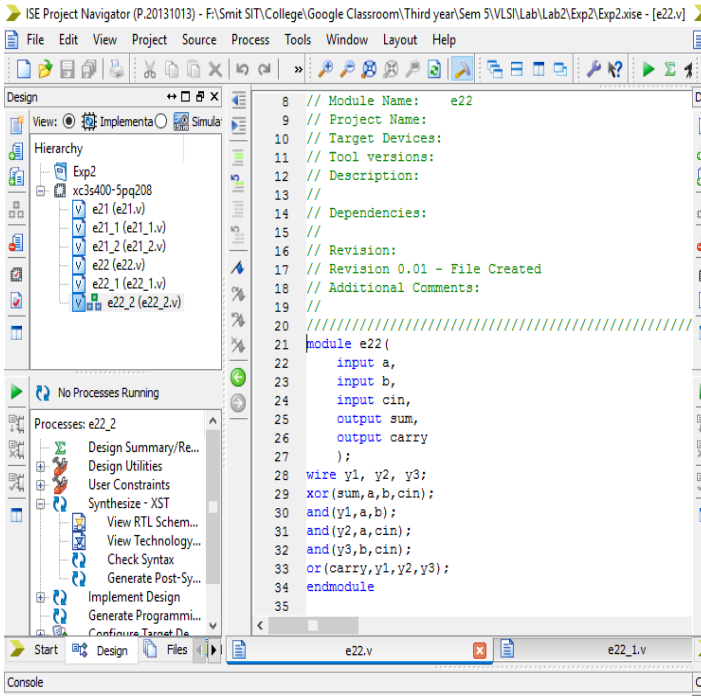
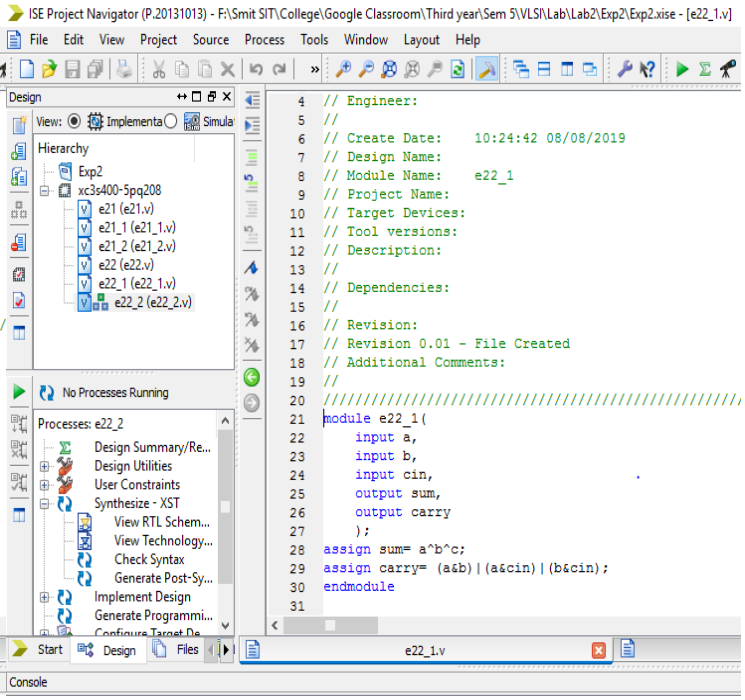
Full Adder

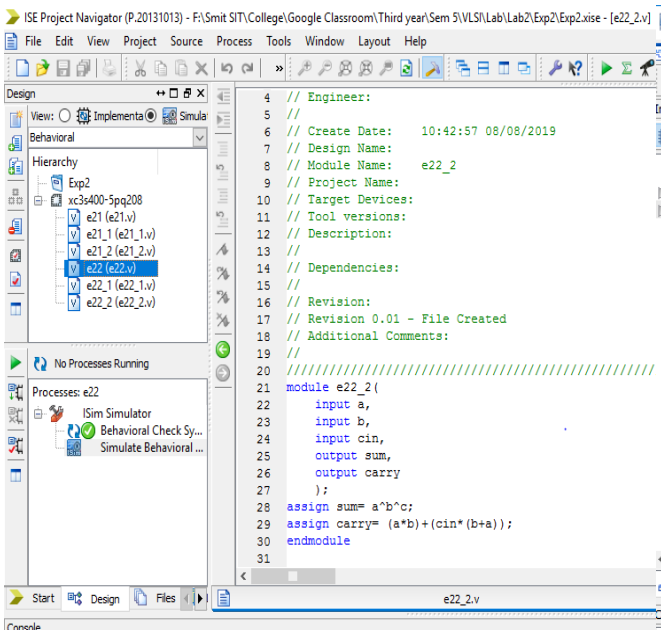
Source Code And Output



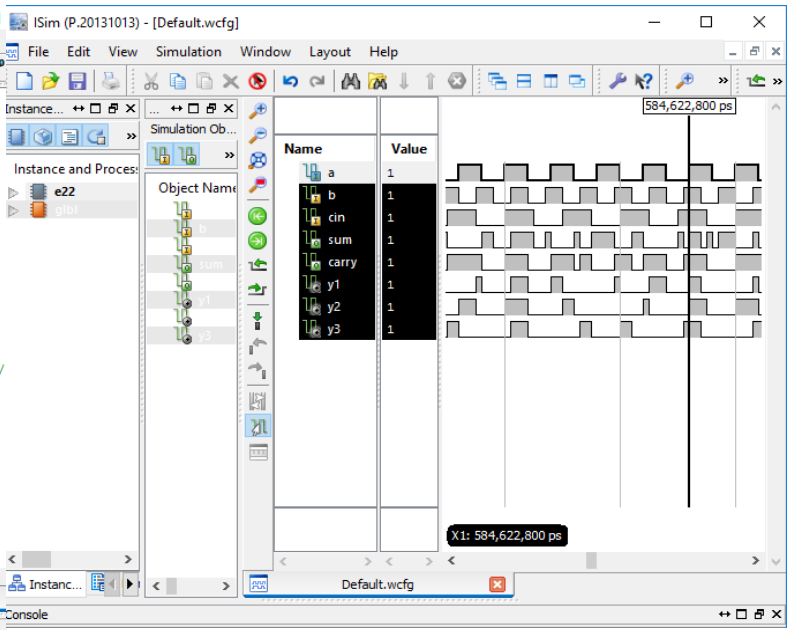
```
// Module Name:    e22
// Project Name:
// Target Devices:
// Tool versions:
// Description:
//
// Dependencies:
//
// Revision:
// Revision 0.01 - File Created
// Additional Comments:
//
//////////////////////////////////////////////////////////////////////////////////
module e22(
    input a,
    input b,
    input cin,
    output sum,
    output carry
    );
wire y1, y2, y3;
xor(sum,a,b,cin);
and(y1,a,b);
and(y2,a,cin);
and(y3,b,cin);
or(carry,y1,y2,y3);
endmodule
```



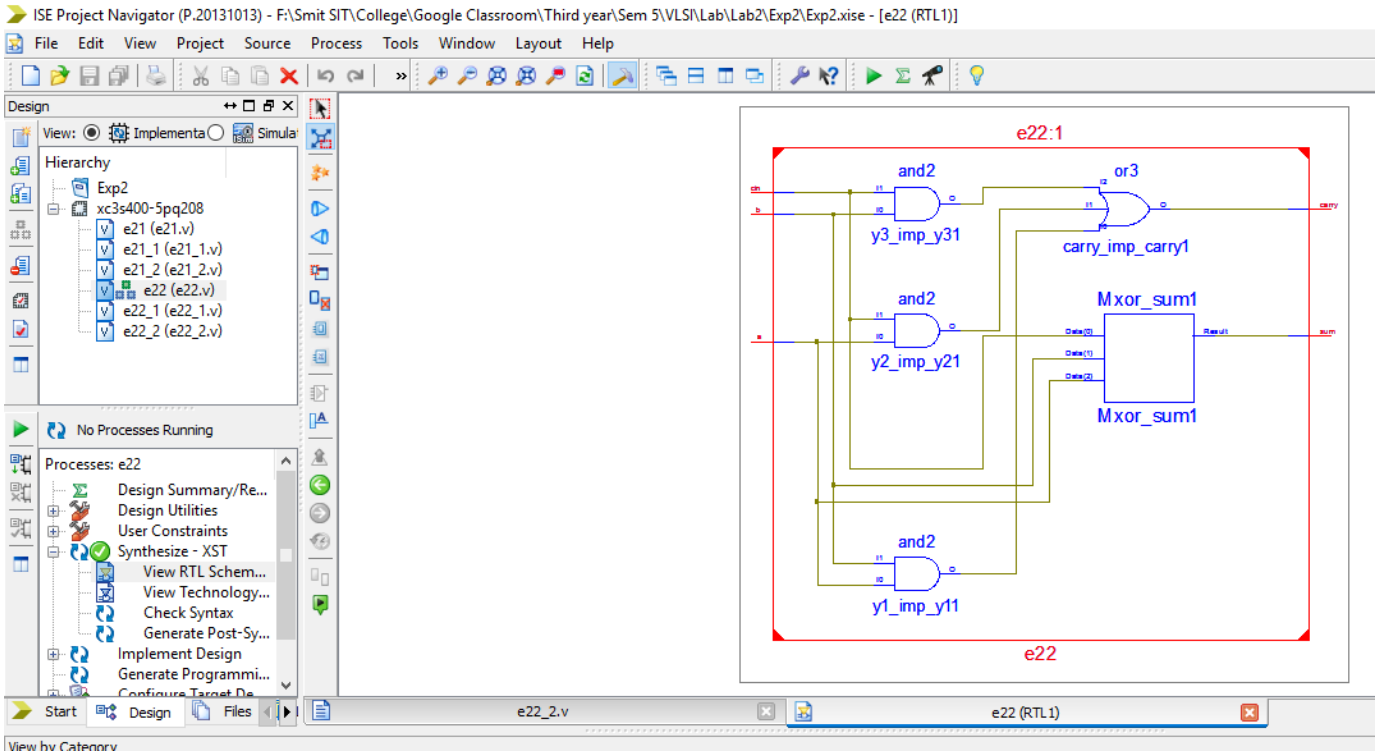
```
// Engineer:
//
// Create Date:    10:24:42 08/08/2019
// Design Name:
// Module Name:    e22_1
// Project Name:
// Target Devices:
// Tool versions:
// Description:
//
// Dependencies:
//
// Revision:
// Revision 0.01 - File Created
// Additional Comments:
//
//////////////////////////////////////////////////////////////////////////////////
module e22_1(
    input a,
    input b,
    input cin,
    output sum,
    output carry
    );
assign sum= a^b^c;
assign carry= (a&b)|(a&cin)|(b&cin);
endmodule
```



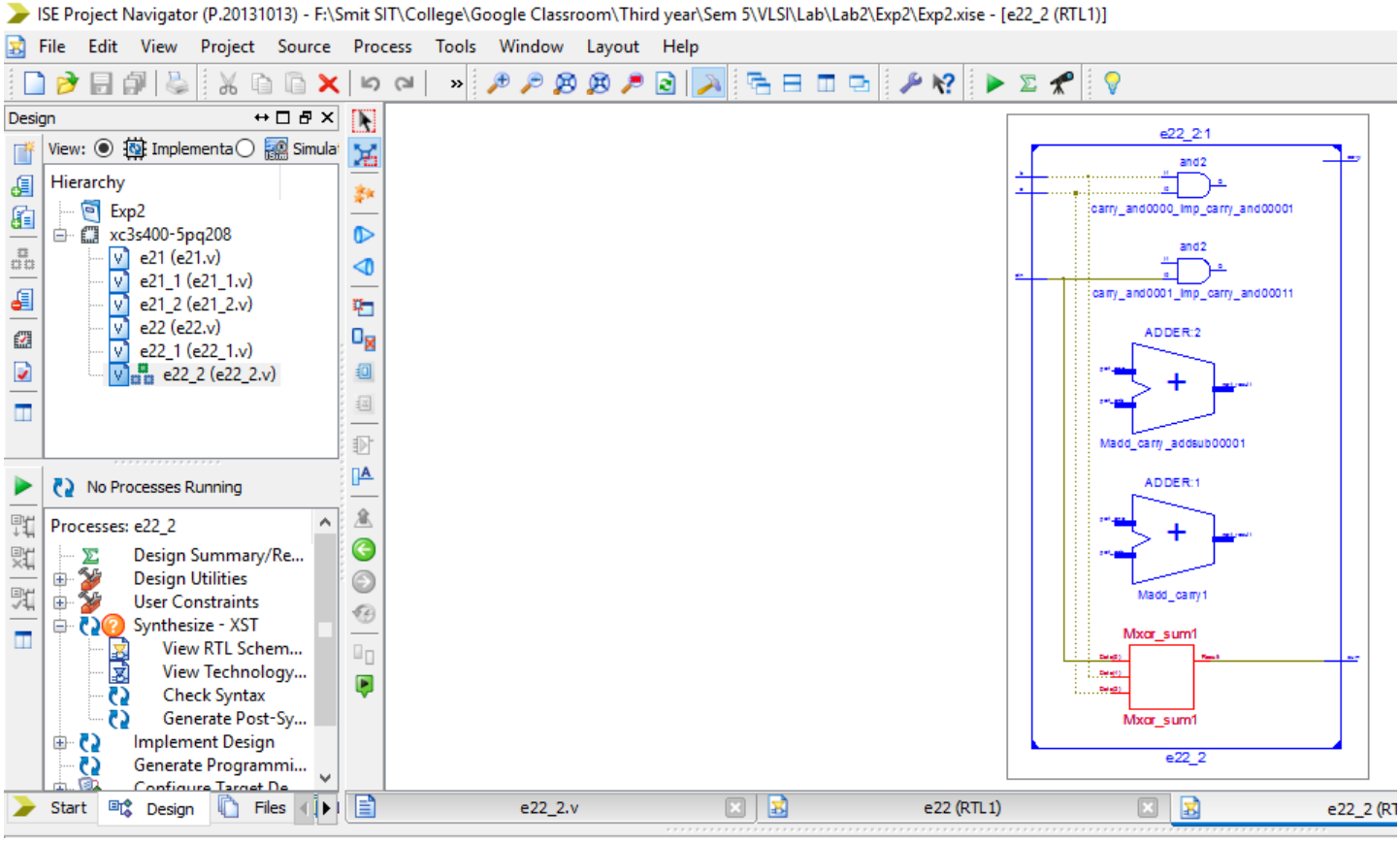
```
// Engineer:
//
// Create Date:    10:42:57 08/08/2019
// Design Name:
// Module Name:    e22_2
// Project Name:
// Target Devices:
// Tool versions:
// Description:
//
// Dependencies:
//
// Revision:
// Revision 0.01 - File Created
// Additional Comments:
//
//////////////////////////////////////////////////////////////////////////////////
module e22_2(
    input a,
    input b,
    input cin,
    output sum,
    output carry
    );
assign sum= a^b^c;
assign carry= (a*b)+(cin*(b+a));
endmodule
```



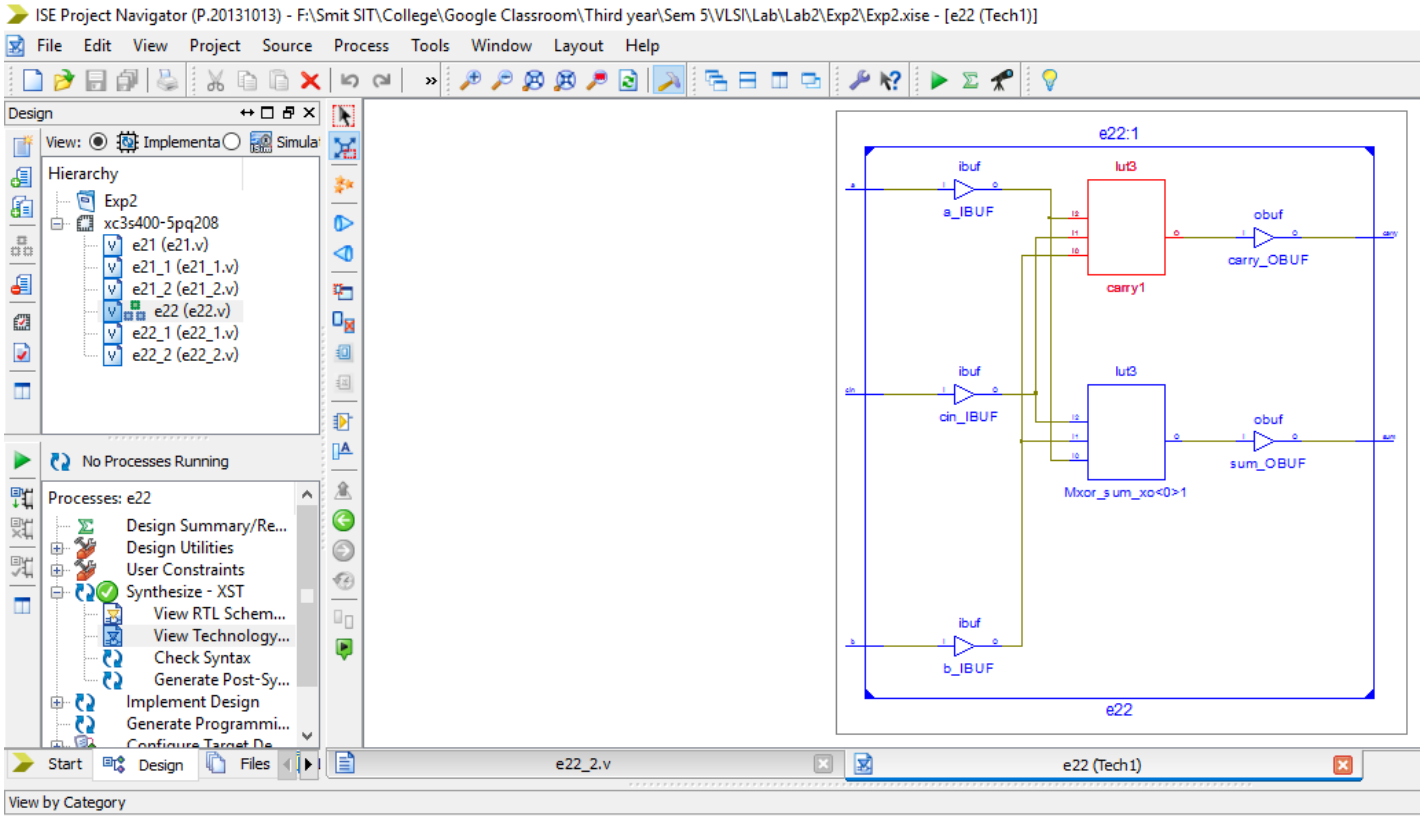
RTL Schematic without Arithmetic Operator



RTL Schematic with Arithmetic Operator



Technology Schematic without Arithmetic Operator



Technology Schematic with Arithmetic Operator