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Unit 3 Lab (Group Lab Assignment)
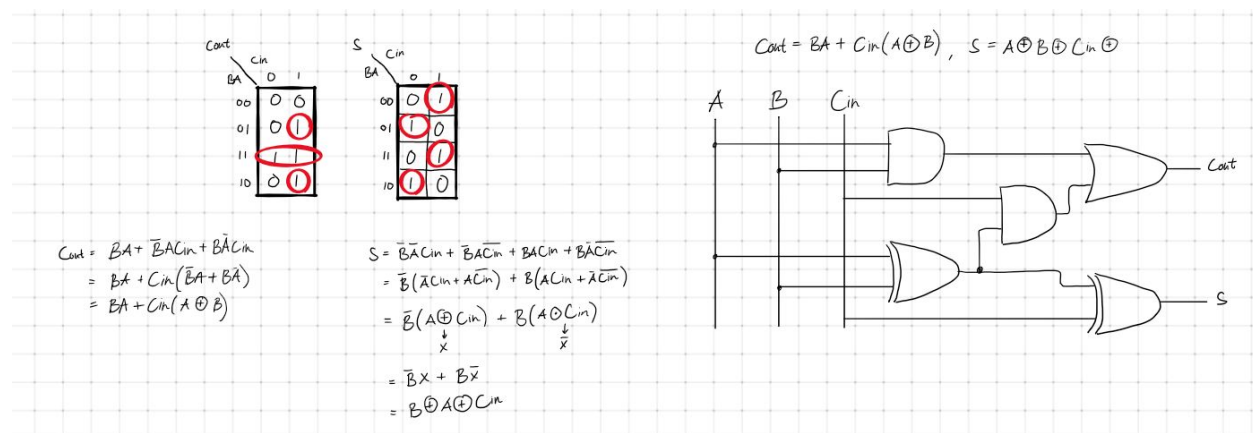
Time spent on the lab:
7 hours

Purpose of the lab:
This lab is for designing simulation of Full Adder in ModelSim. The purpose of the Full Adder is to add two 1 bit binary digits together with a carry (Cin) to make a single binary addition that produces two outputs: sum (S) and a carry (Cout). Multiple Full Adders is used to add multiple binary digits. Simple Full Adder equation: The output Sum (S) is given by inputs $A \oplus B \oplus Cin$, and output carry (Cout) is given by the inputs $AB + Cin(A \oplus B)$.

Truth table:

Inputs			Outputs	
C_{in}	B	A	C_{out}	S
0	0	0	0	0
0	0	1	0	1
0	1	0	0	1
0	1	1	1	0
1	0	0	0	1
1	0	1	1	0
1	1	0	1	0
1	1	1	1	1

Schematic:

Stimulation of the full adder: