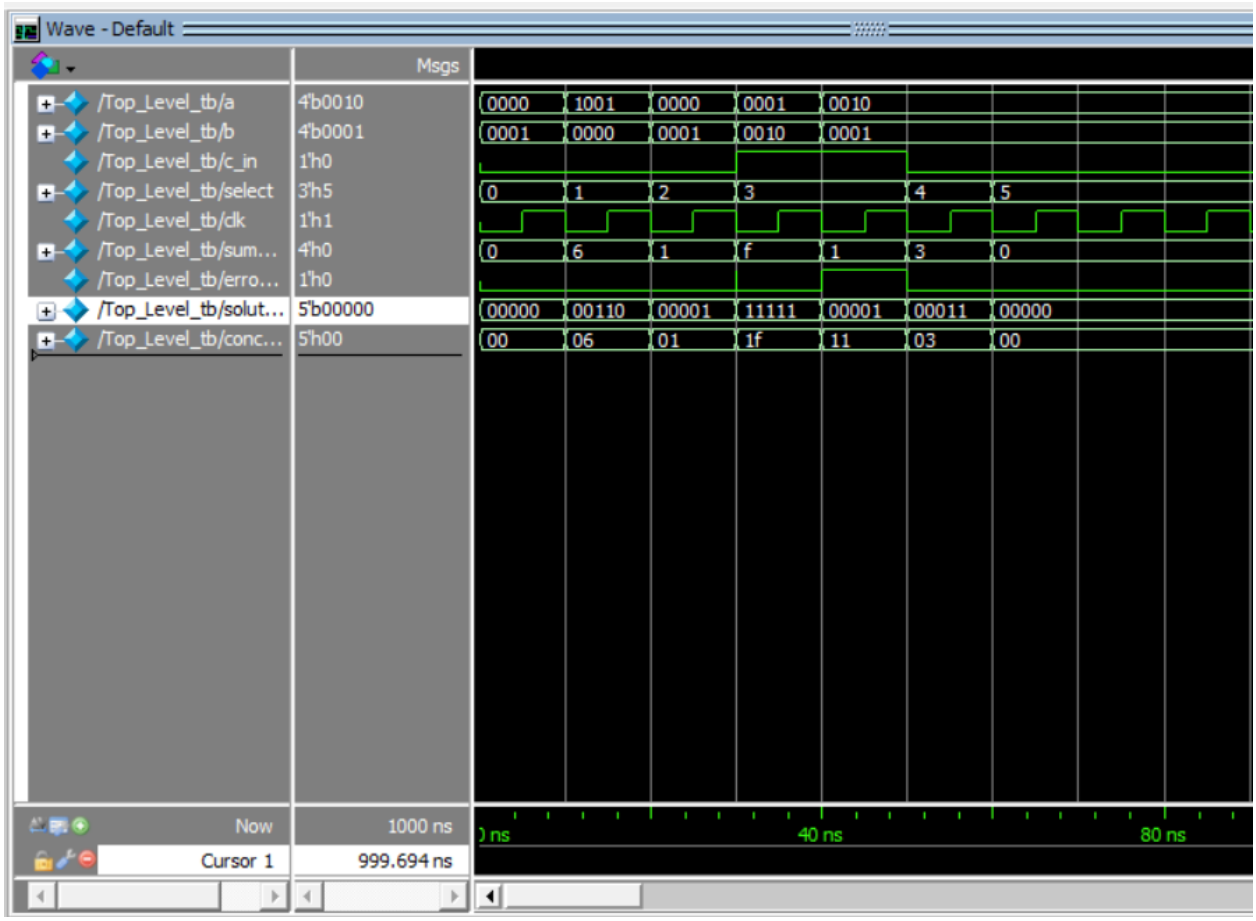
EC413

Lab4

The hierarchy of my lab is that it starts with the Top level mod, which calls my nbit ALU and stores that into a register. The nbit_ALU calls ALU1bit multiple times to get the entire answer, this is to do the processes fast. And that ALU1bit is composed of mov_bit,and_bit,or_bit,not_bit, FA_str, mux1bit, and my ALU_mux. There are the math portion of the ALU which does them all at once, and my ALU_mux chooses which answer we are looking for based on the selection bit. The mux1bit is for choosing my c_out term when I do add or sub. The addition and subtraction can be done with both using the full adder, but in subtraction you turn the b value into notb that way it's like a-b.



This is my waveform for all the commands in order. Select is what command you want, a and b is r2, and r3 in the equations and solution the variable name I had for the answer. The leftmost bit is the c_out which I concatenated into the answer so you can tell if it's negative or not. I then used the ALU that was provided to be the verification.