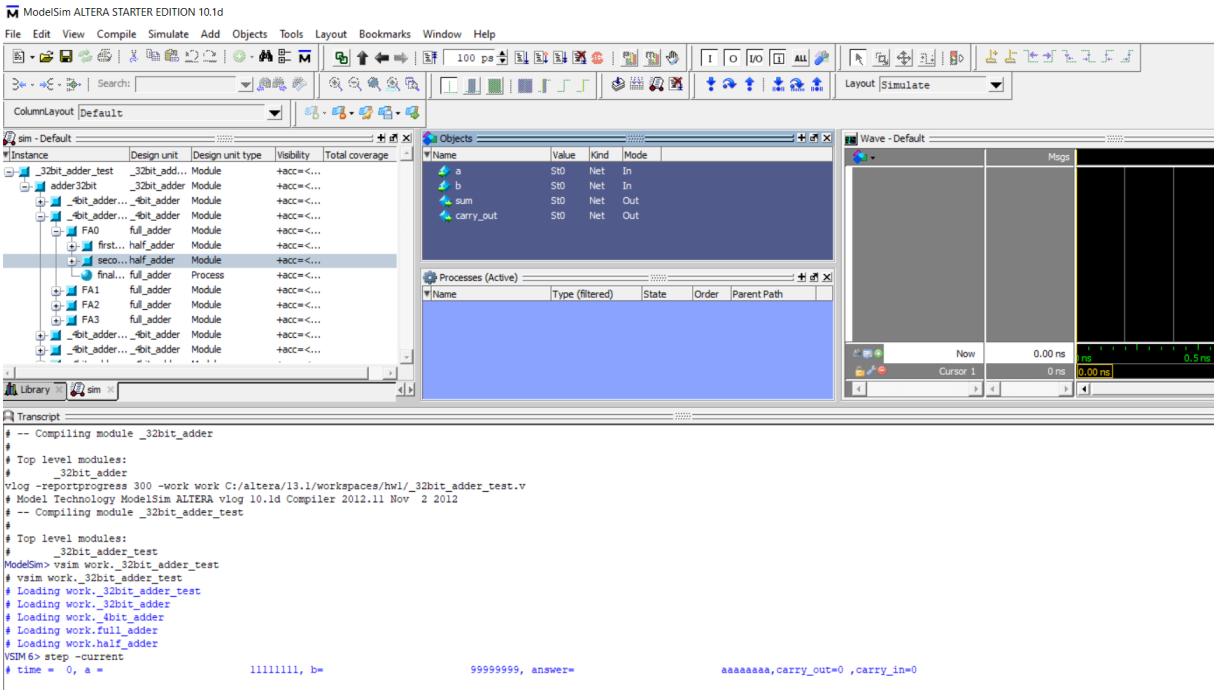
I Made up top level is 8x3Mux.

Deficiencies

It works on Alu part except mult. For Mult, control.v works in part 1, I loaded the test, I can navigate through the states, I wrote dede shift and adder functions in datapath, but I could not do the binding part, so mult also does not work.

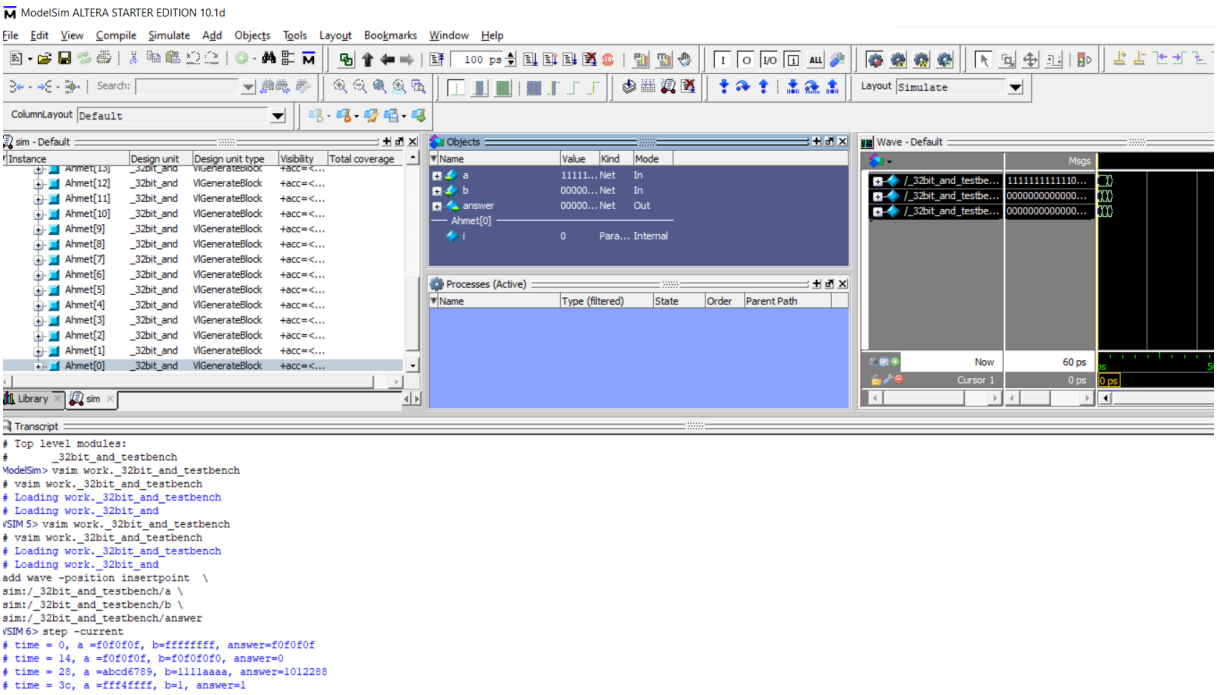
32bitadder



İn 32 bit adder file ı call 4 bit adder 8 times and ı create a 32 bit adder.

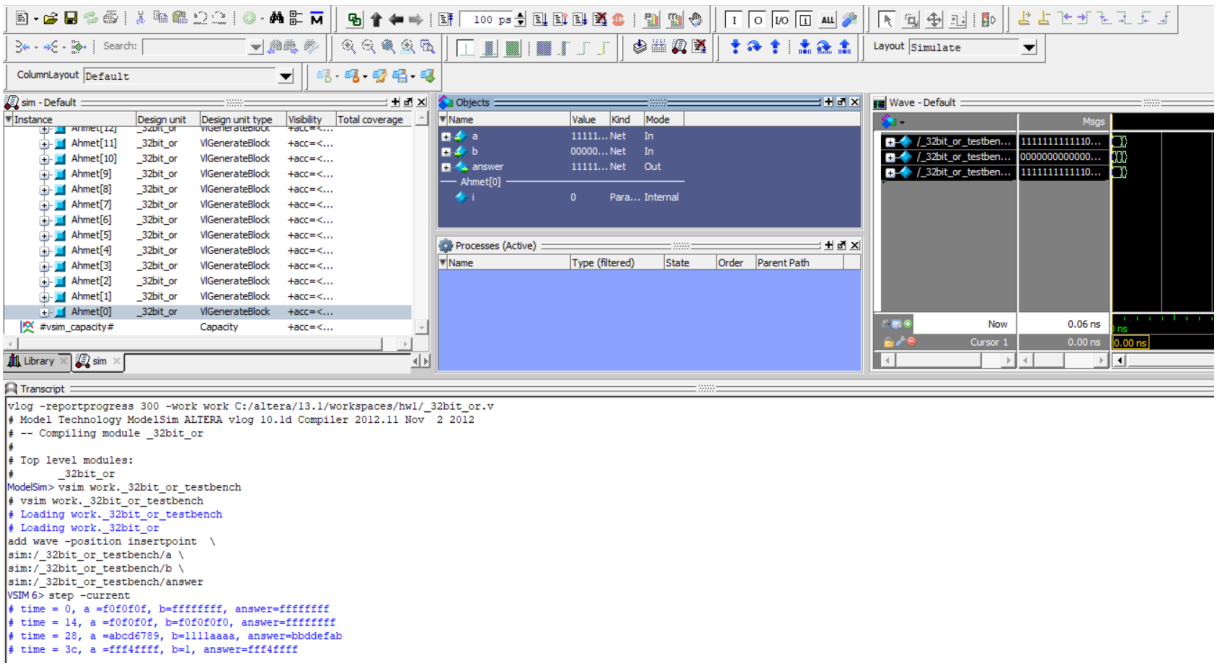
İ send zero to carry_in .

32bitand



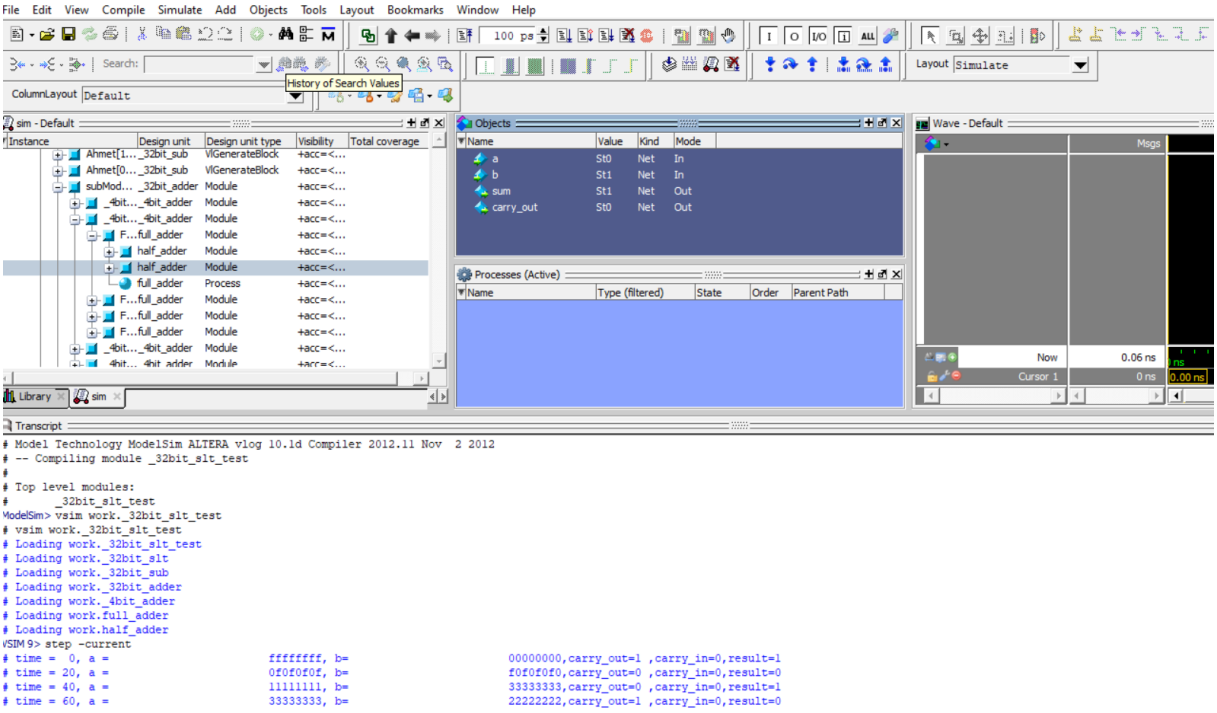
I call and operatör 32 times.

32bitor



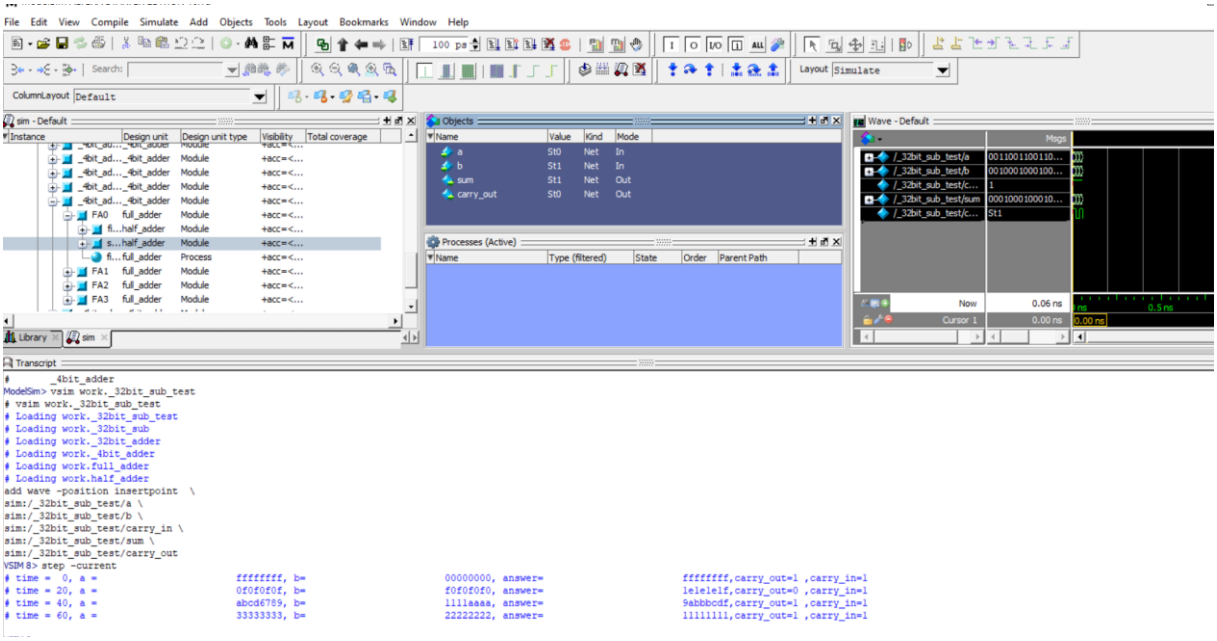
I cal lor operatör 32 times.

32bitslt



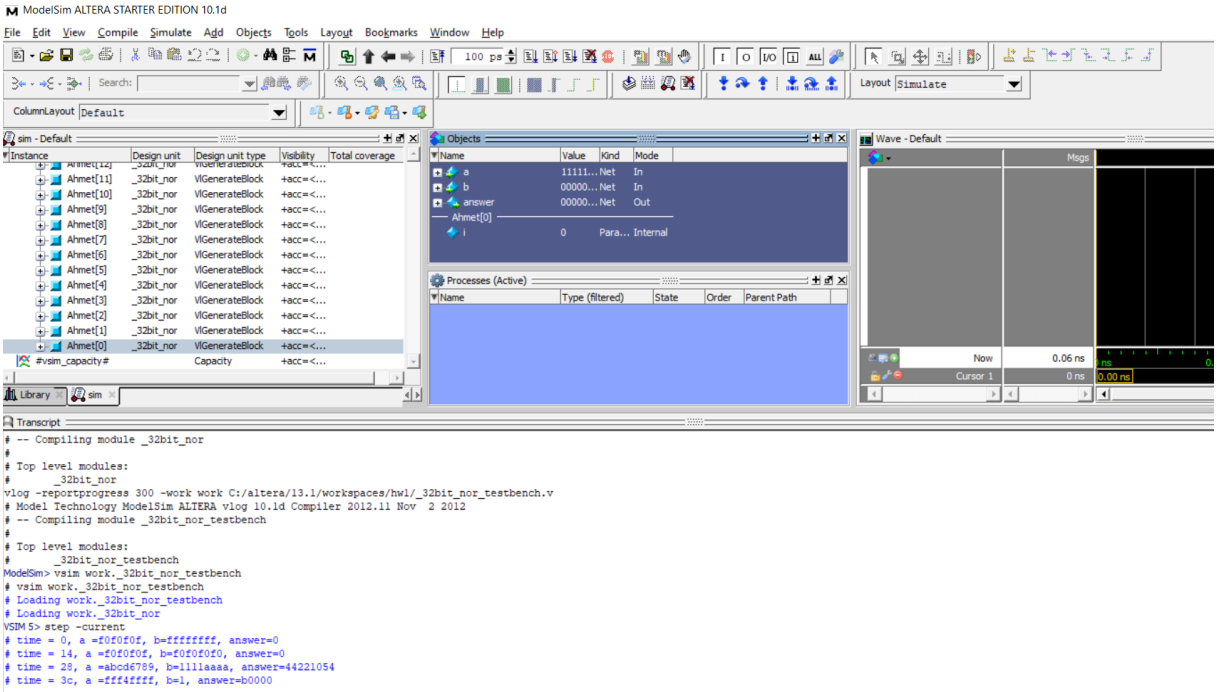
I call sub operatör and ı take most significant bit to result then ı turned it.

32bitsub



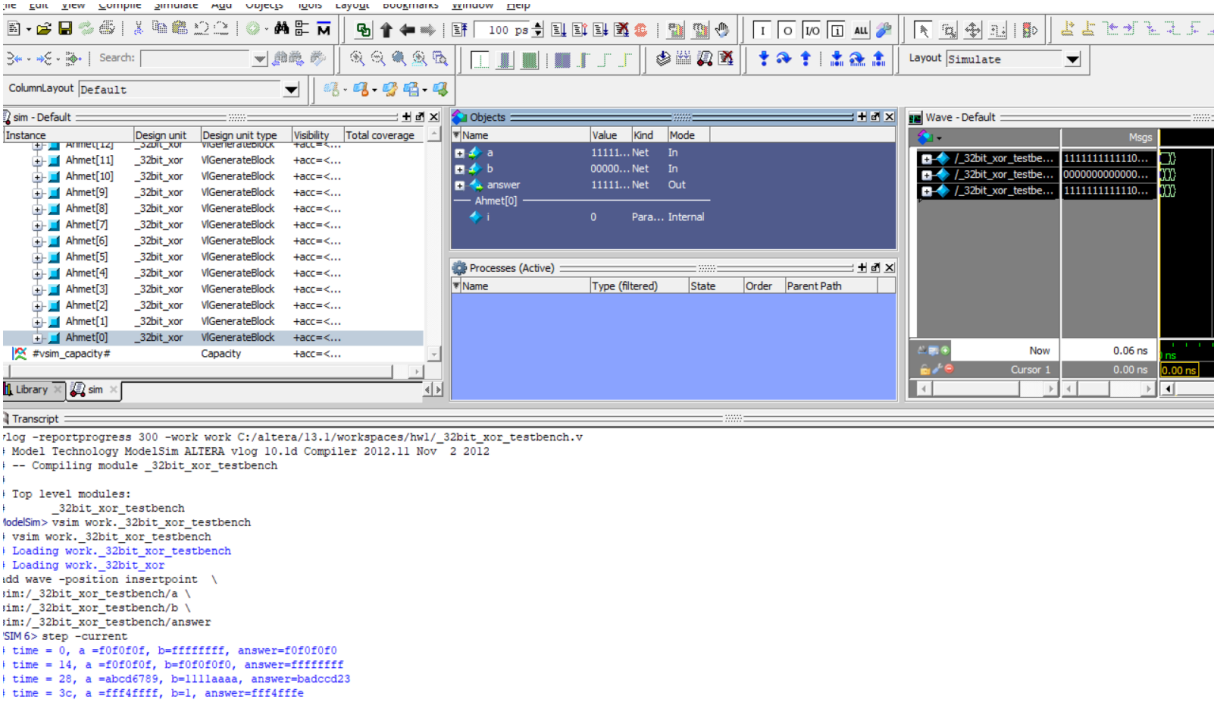
I call adder operation before called adder operation i xor the B with select bit 32 times then i take B' so B is turned to B' so ı can add A + (-B) then ı return result.

32bit nor



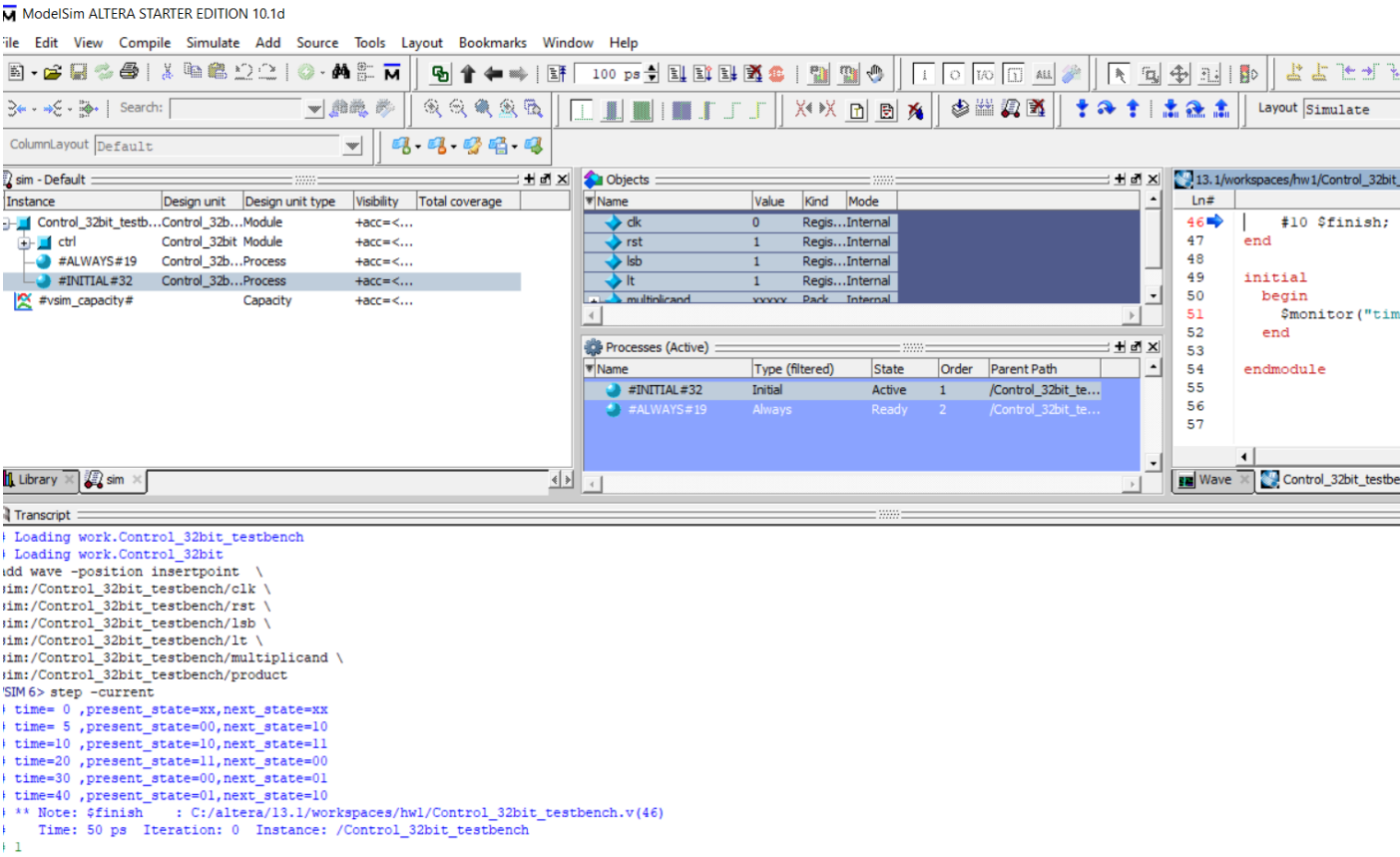
I called 32 times nor operatör.

32bitxor



I called xor operatör 32 times.

Control Unıt states

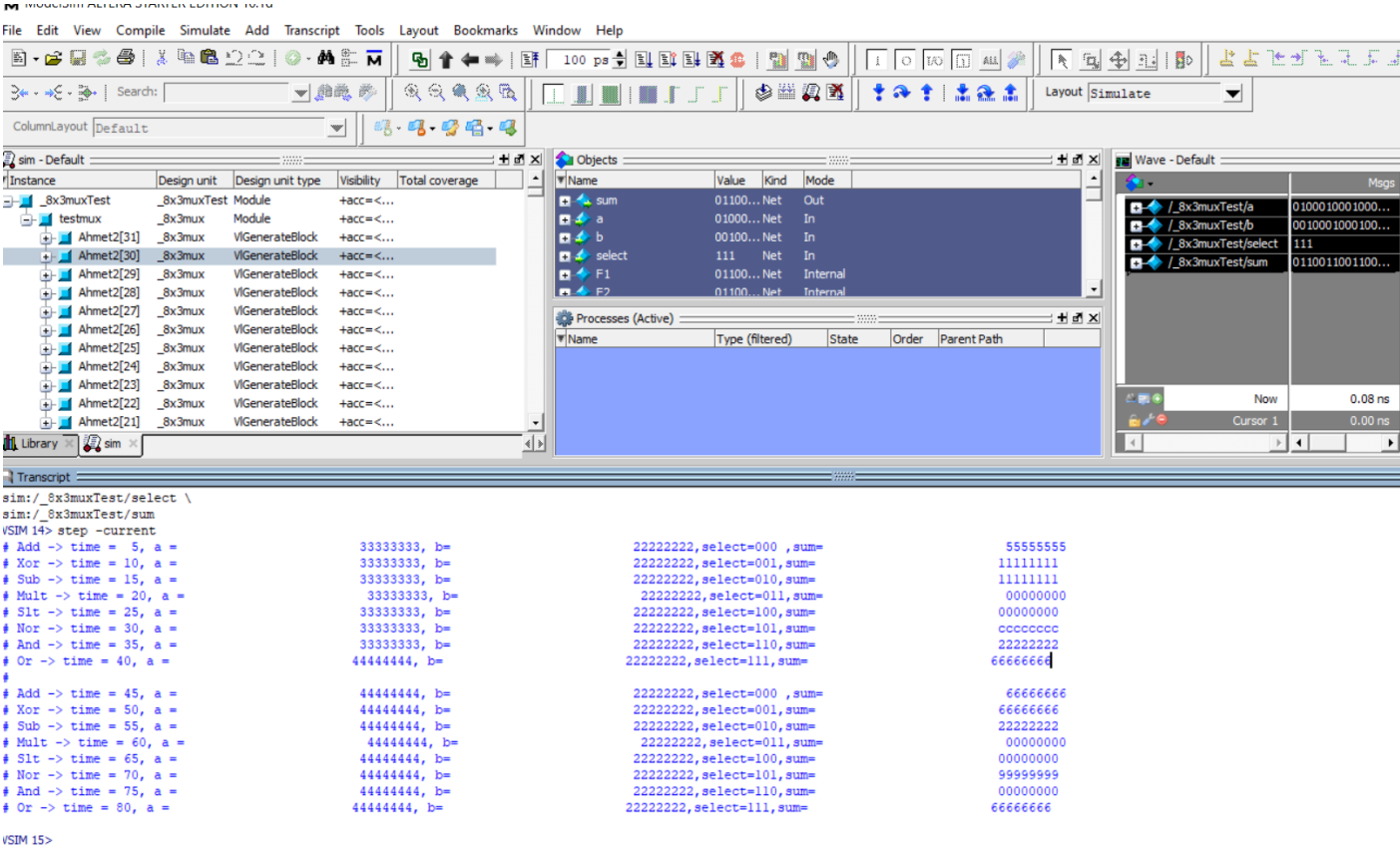


In control unıts ı reach the states one by one according to lsb and lt inputs .

According to the boolean expression that created using fsm and truth table ı find next states .

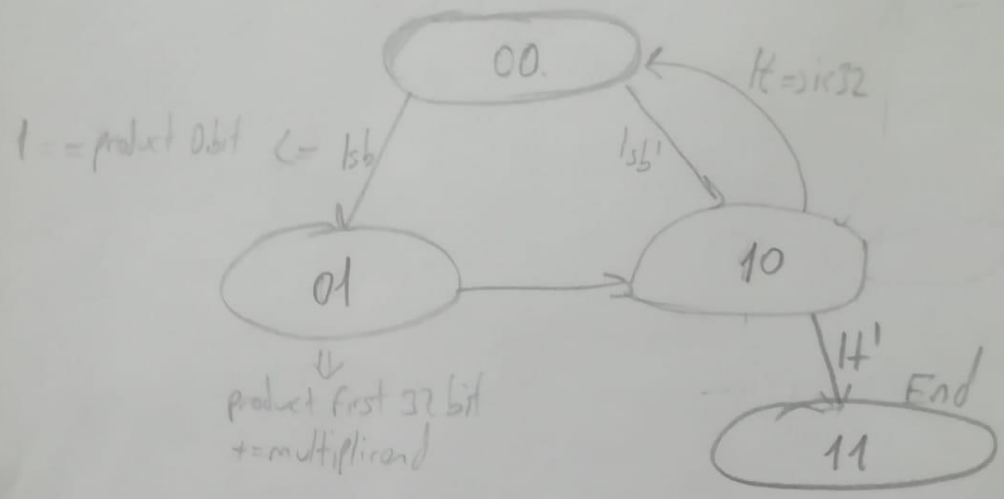
Then present state will change clk cycles. Write and Shift signal are created then ı send datapath these but mult result dont working.

8x3 ALU



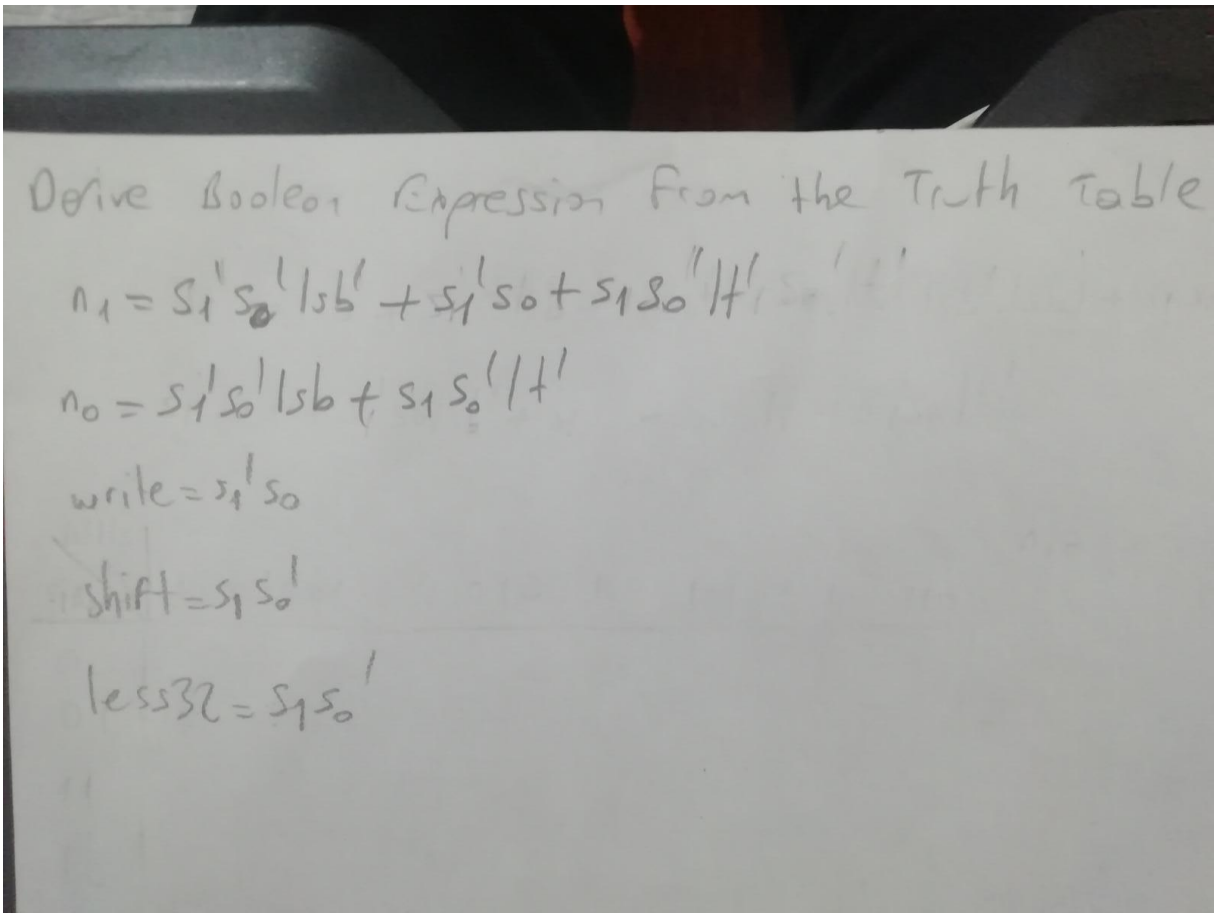
I called all modules in alu then i send the result to the A,B…H then using these equation i find the working modüle then ı send it to or gate then i find the working modüle according to the select bit .(sum=A1S0'S1'S2'+B1S0'S1'S2+C1S0'S1S2'+D1S0'S1S2+E1S0S1'S2'+I1S0S1'S2+G1S0S1S2'+H1S0S1S2)

STATE DIAGRAM



Truth Table

Inputs				Outputs				
s_1	s_0	lsb	lt	n_1	n_0	write	shift	less32
0	0	0	x	1	0	x	x	x
0	0	1	x	0	1	x	x	x
0	1	x	x	1	0	1	x	x
1	0	x	0	1	1	x	1	1
1	0	x	1	0	0	x	1	1



Instead of Mult, I put die or so that the system does not break, sir. I drew fsm for Mult and created tables, then I got boolean expressions and designed control unit. I did add and shift in datapath, but I couldn't combine them all and test, so mult doesn't work.

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HW3 REPORT