Lab 1: Multiplexer

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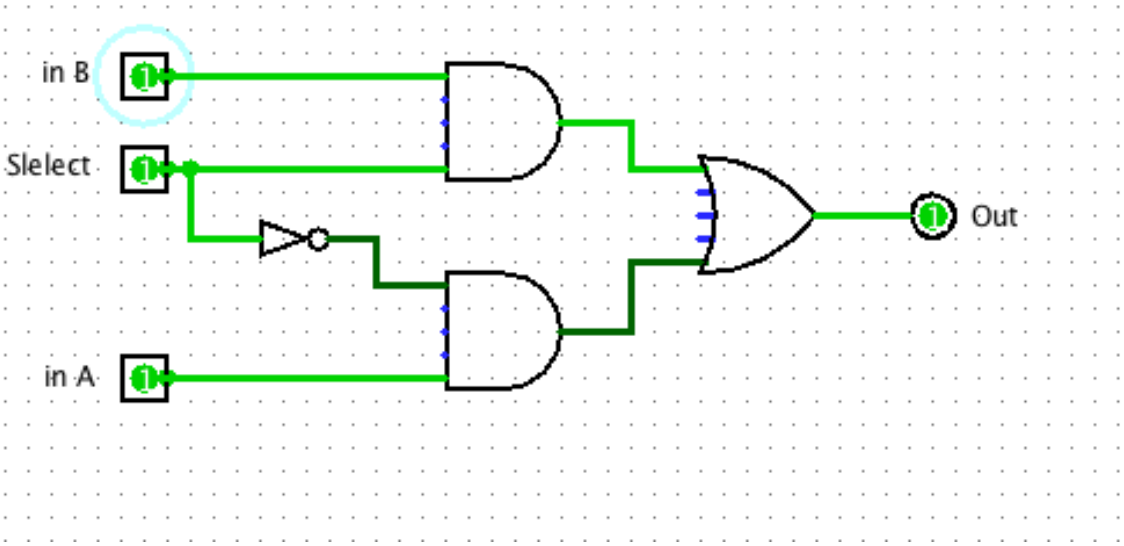
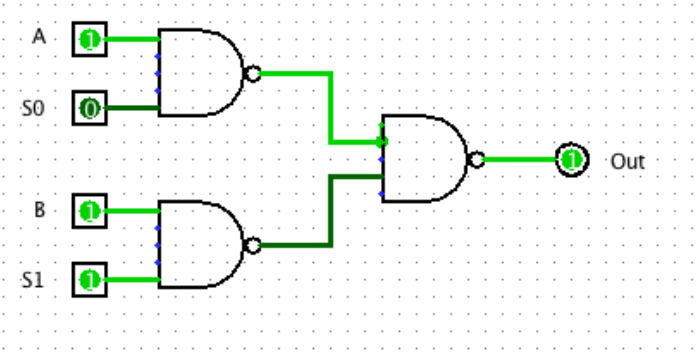
Task 2: 2:1 Multiplexer

Logisim produced Diagram of 2:1 MUX and respective truth table



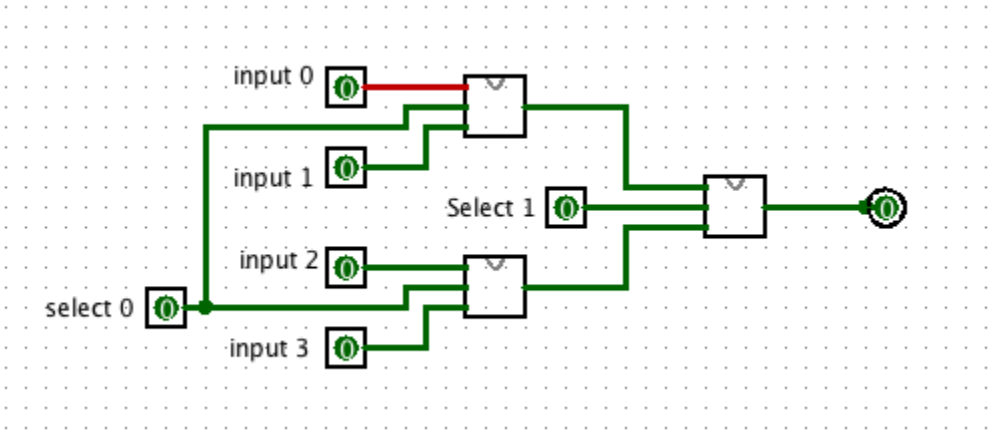
Select	Input A	Input B	Output
0	0	0	0
0	0	1	0
0	1	0	1
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	0
1	1	1	1



2:1 Mux using only NAND gates

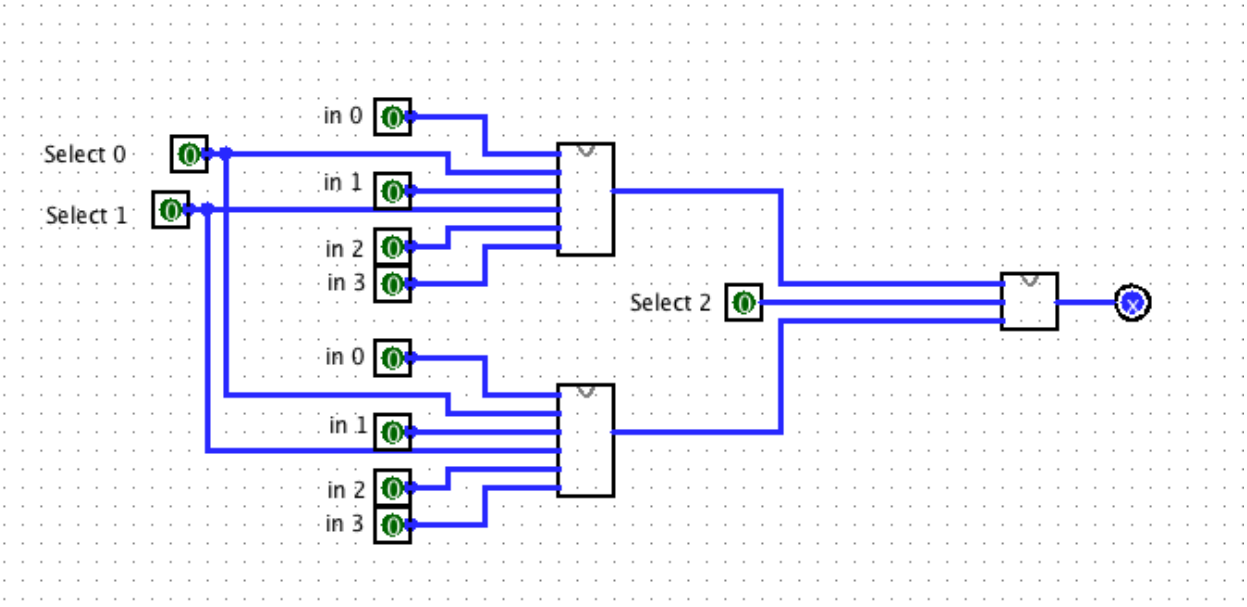
Task 3: 4:1 and 8:1 Multiplexer

4:1 Multiplexer Diagram



The 4:1 MUX utilizes three 2:1 MUXs, taking four inputs, turning them into two outputs which are fed into the final MUX for a singular output

8:1 Multiplexer diagram



The 8:1 MUX utilizes two 4:1 MUXs that feeds into a single 2:1 MUX in order to take 8 inputs and output one single output