ECE241, PRA0105 - Digital Logic

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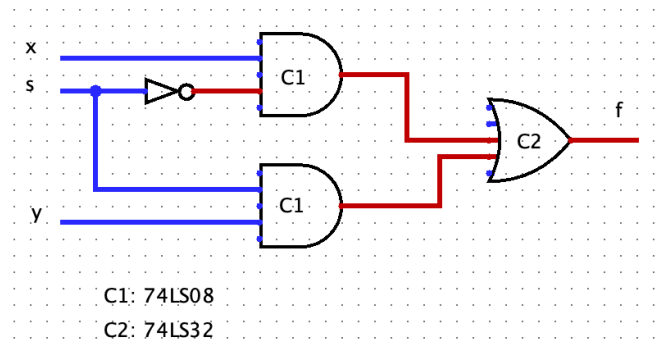
Part I

1. Multiplexer schematic diagram

This diagram illustrates the resultant function $f = \bar{s}x + xy$. Note:

- 7404: Not

- 7408: And
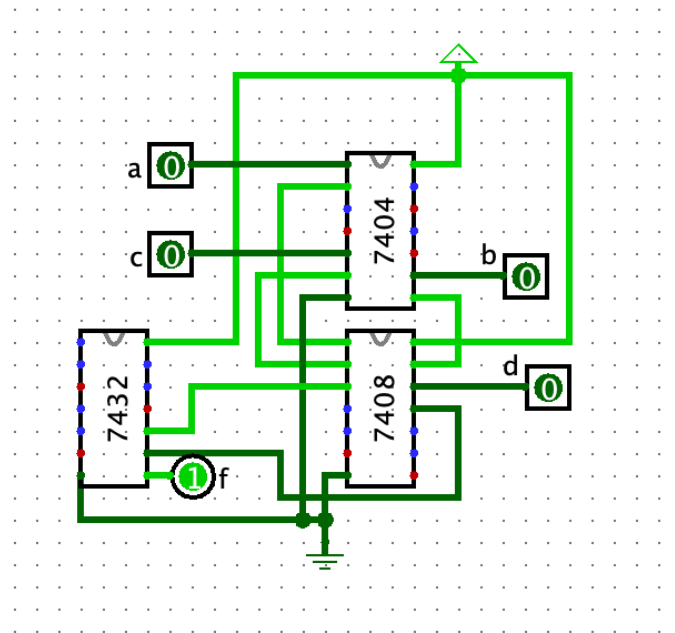
- 7432: Or

2. Truth table

x	s	y	$f = x\bar{s} + ys$
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	1
1	0	1	1
1	1	0	0
1	1	1	1

3. Logisim schematic and simulation output

a	b	c	d	f
0	0	0	0	1
0	0	0	1	1
0	0	1	0	0
0	0	1	1	1
0	1	0	0	1
0	1	0	1	1
0	1	1	0	0
0	1	1	1	0
1	0	0	0	0
1	0	0	1	1
1	0	1	0	0
1	0	1	1	1
1	1	0	0	0
1	1	0	1	0
1	1	1	0	0
1	1	1	1	0

4. Cheaper implementation
No, there is no cheaper implementation (i.e. expression cannot be simpliified using Boolean algebra).

Part II

6. Simpler implementation

1. Schematic

2. Truth table

3. Logisim schematic and simulation output