CSC258 Lab1 Pre-lab Report

Building Circuits using 7400-Series Chips

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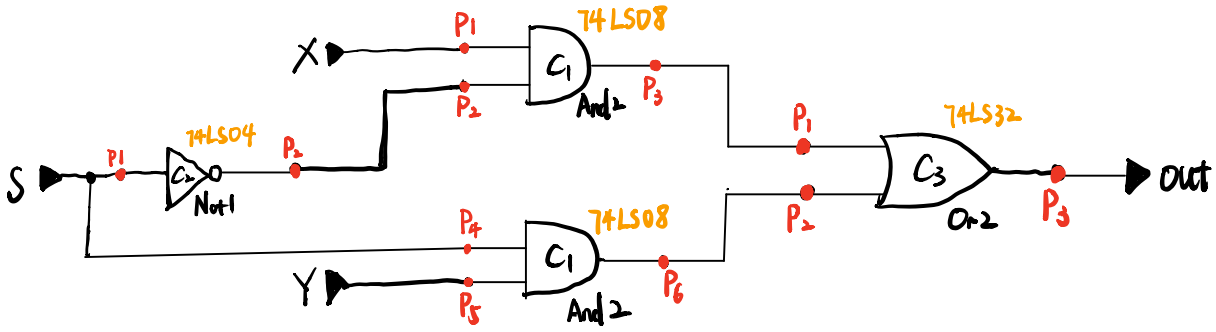
Part I

$f = xs' + ys$

Draw circuit and truth table for the above function, indicate pin numbers on the chips, specify which chip was used for which gate and which pins the inputs and outputs are connected to.



Chips used

C1 -74LS08
C2 -74LS04
C3 -74LS32

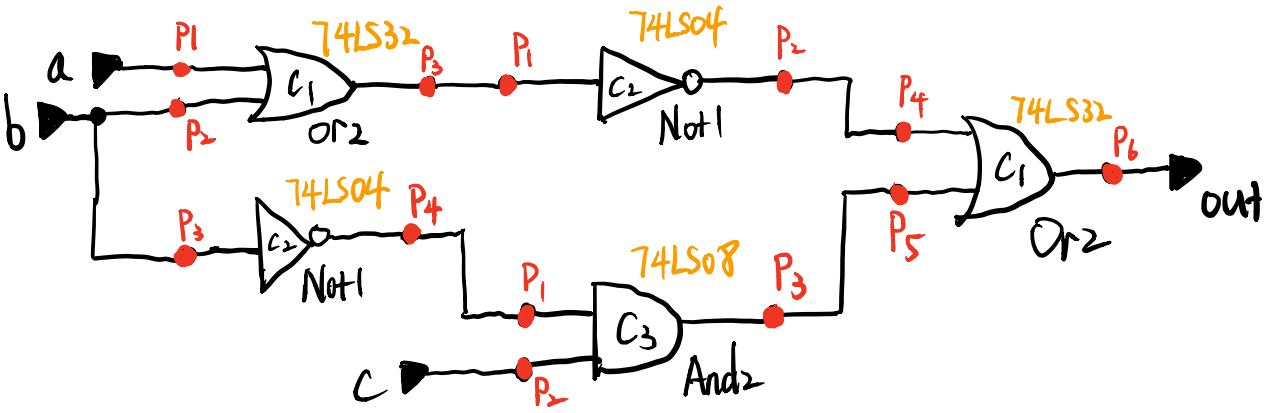
Connected to all chips
PIN#7 - Gnd
PIN#14 -Vcc

Truth table

S	X	Y	Out
1	1	1	1
0	1	1	1
1	0	1	1
0	0	1	0
1	1	0	0
0	1	0	1
1	0	0	0
0	0	0	0

Part II $f = (a+b)' + cb'$

Draw circuit and truth table for the above function, indicate pin numbers on the chips, specify which chip was used for which gate and which pins the inputs and outputs are connected to.



Chips used

C1 -74LS32
C2 -74LS04
C3 -74LS08

Connected to all chips
PIN#7 - Gnd
PIN#14 -Vcc

Truth table

a	b	c	(a+b)'	cb'	out
1	1	1	0	0	0
0	1	1	0	0	0
1	0	1	0	1	1
0	0	1	1	1	1
1	1	0	0	0	0
0	1	0	0	0	0
1	0	0	0	0	0
0	0	0	1	0	1

Find whether there is a cheaper implementation for the design

Yes, $(a+b)' \Leftrightarrow a'b'$

$a'b' + cb' \Leftrightarrow (a'+c)b'$

we only use two NOT gates, one AND gate and one OR gate.