CSC258 Prelab 1

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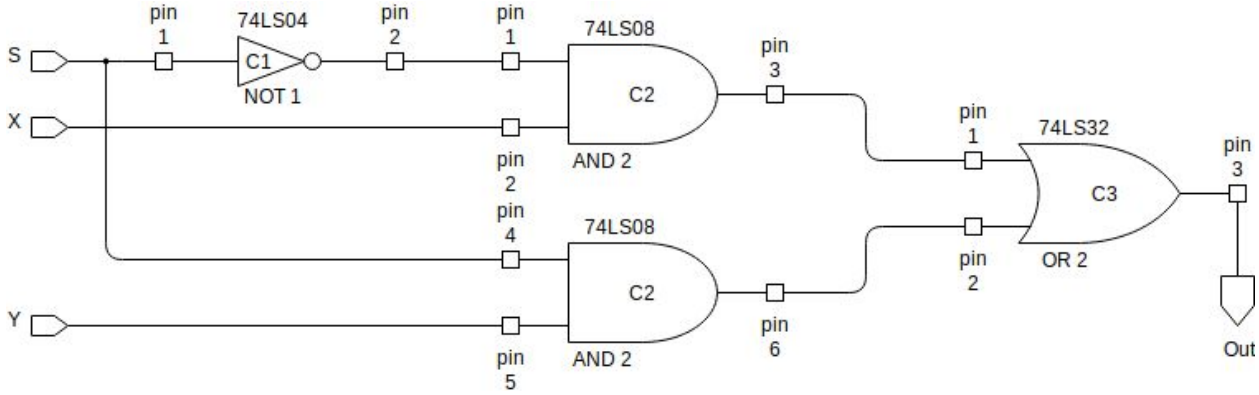
Part I

1) Chips used: C1 74LS04 (NOT1), C2 74LS09 (AND2), C3 74LS32 (OR2)
Connected to all: pin#7 ground, pin#14 Vcc

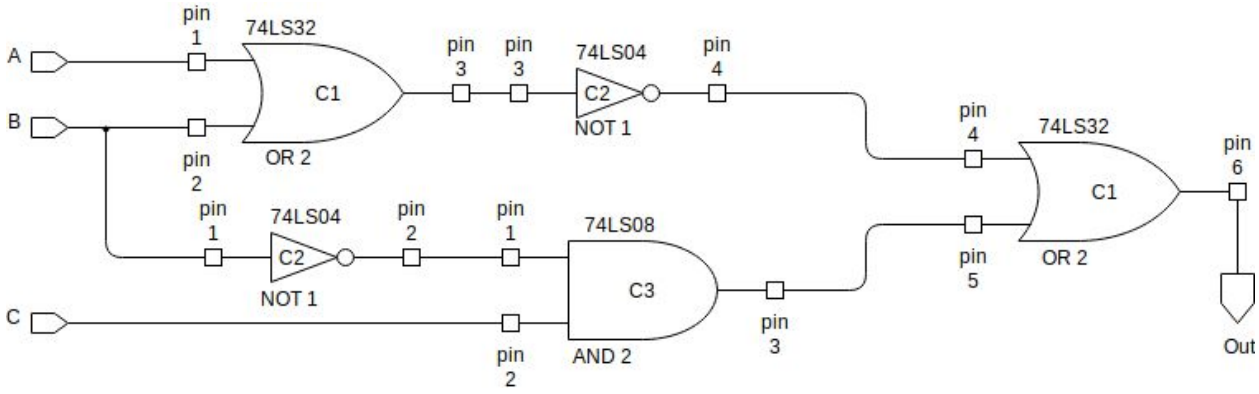


2) Truth Table

s	x	y	f
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

Part II

1) Chips used: C1 74LS32 (OR2), C2 74LS04 (NOT1), C3 74LS08 (AND2)
   Connected to all: pin#7 ground, pin#14 Vcc



2) Truth Table

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

4) Simplifying the given equation using De Morgan's law and distributive property:
   f = (a+b)'+cb'
   = a'b'+cb' # De Morgan's Law
   = b'(a'+c) # Distributive

   The original equation uses 5 gates (2 OR, 1 AND, 2 NOT) while this equation uses 4 gates (1 OR, 1AND, 2 NOT)