Day 6 (Feb 3rd)

Monday, February 3, 2020 1:37 PM

Division

Step	A (8 bit)	Q (9 bit)	Divisor (And Calculation)
0	0000 0000	1 0001 0010	0000 1101
1	0000 0001	0 0010 010 0	Q < D
2	0000 0010	0 0100 100 0	Q < D
3	0000 0100	0 1001 000 0	Q < D
4	0000 1000	1 0010 000 0	Q < D
5	0001 0001	0 0100 000 0	Q > D (R = 100)
5.5	0000 0100	0 0100 000 1	
6	0000 1000	0 1000 001 0	Q < D
7	0001 0000	1 0000 010 0	Q > D (R = 11)
7.5	0000 0011	1 0000 010 1	
8	0000 0111	0 0000 101 0	Q < D
9	0000 1110	0 0001 010 1	Q > D (R = 1)

Demultiplexer is in photos

S	I	A	B
0	0	0	0
0	1	1	0
1	0	0	0
1	1	0	1

A = S'*I
B = S*I

Comparator

Returns is A < B, A > B, A == B
All Four Nor Gates are 1 then A == B
Most Significant A > MS of B then A > B = true
More Significant Overrides bits down the line

A	B	A'	B'	A'B	AB'	+ (Equality)	+'
0	0	1	1	0	0	0	1
0	1	1	0	1	0	1	0
1	0	0	1	0	1	1	0
1	1	0	0	0	0	0	1

F= ∑(2,7,8,12,13)

d (don’t cares) = ∑(1,4,5,10)

			C	C	
	0	x	0	1	
	x	x	1	0	B
A	1	1	0	0	B
A	0	1	0	x	
		D	D		

F = B'*C*D' (2 and 10) + D*C' (1,5,9,13) + B*C' (4,5,12,and 13) + BDA' (5 and 7)
Fastest Choices NAND - NAND or NOR - NOR

NAND - NAND

Step	Equation	Law
0	[(B'C'D)' * (DC')' * (BC')'*(BDA')']'	Demorgans

NOR-NOR
F' = AC + A'C' + { D'C'B', AB'D' } + { BA'D', CBD' } +{ B'CD, A'B'D }
F = (F')' = (AC + A'C' + { D'C'B', AB'D' } + { BA'D', CBD' } +{ B'CD, A'B'D })'

A*C = (A'+C')' To turn the And into a NOR
F = [(A'+C')' + (A+C)' + (….)']'
Make Sure To List Choices

Side Note: Layout for 3 variables

			B	B
A				
		C	C	