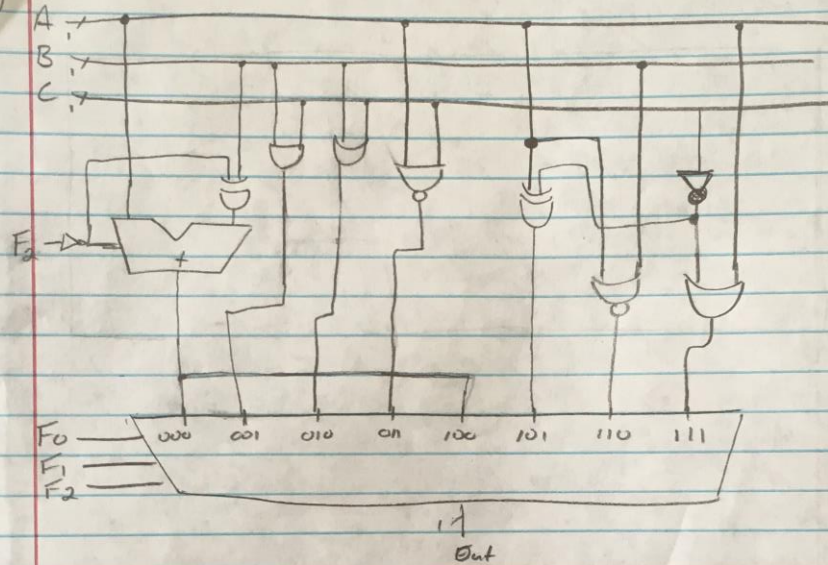


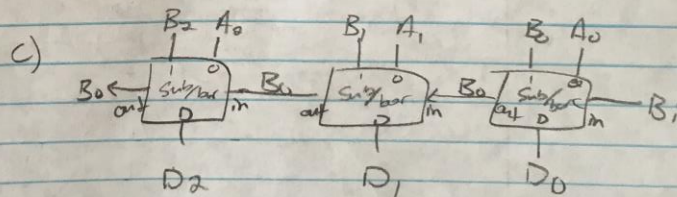
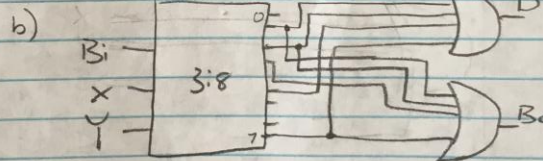
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Prof. Roseng

3.1) CSE 140 Hw 3



3.2) a)

X	Y	Z	D	B ₀
0	0	0	0	0
0	0	1	1	1
0	1	0	1	1
0	1	1	0	0
1	0	0	0	0
1	0	1	0	0
1	1	0	1	1
1	1	1	1	1



D) Delay part B

D - 3

B₀ - 3

Delay part C

D₀ - 3

D₁ - 6

D₂ - 9

B₀ - 9

3.3) a) $T_{gate} = 3 \text{ gate delay}$

$T_{FA} = 3 \text{ Full adder delay} = 3T_{FA}$

b) $T_{FA} = 3T_{gate}$

$4 \times 4 \text{ multiplier} = 7/2 T_{gate}$

c) propagation delay of a $N \times N$ multiplier is $4(N-1)$

this compares to ripple-carry Adders at $N+2$ gates

$4(N-1)$ gates vs $N+2$ gates

4) instructions

A)

$g_n = a_n b_n$

$e_n = a_n b_n + a_n b_{n-1} + a_{n-1} b_n$

$L_n = a_n b_n + a_n b_{n-1} + a_{n-1} b_n$

$L_n = a_n b_n + a_n b_{n-1} + a_{n-1} b_n$

