Recitation#9: Mux Application

CS232 Spring 2021

When: March 26 at 2:00 pm

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a) Given the function Z = B'C + A'BD + AB', fill in the truth-table below.

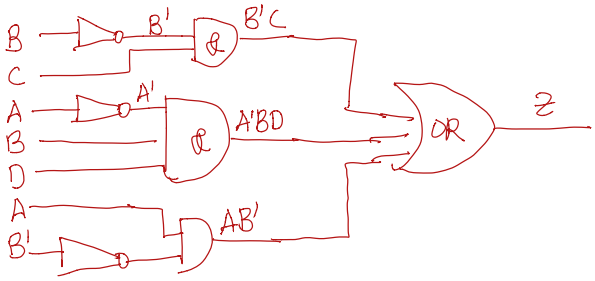
A	B	C	D	Z
0	0	0	0	0
0	0	0	1	0
0	0	1	0	1
0	0	1	1	1
0	1	0	0	0
0	1	0	1	1
0	1	1	0	0
0	1	1	1	1
1	0	0	0	1
1	0	0	1	1
1	0	1	0	1
1	0	1	1	1
1	1	0	0	0
1	1	0	1	0
1	1	1	0	0
1	1	1	1	0

B'C = B' & C = 0 & 1

A'BD

AB'

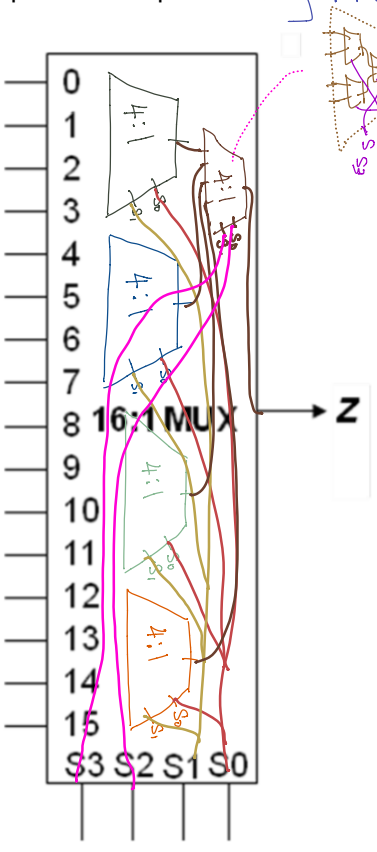
sop = sum of product

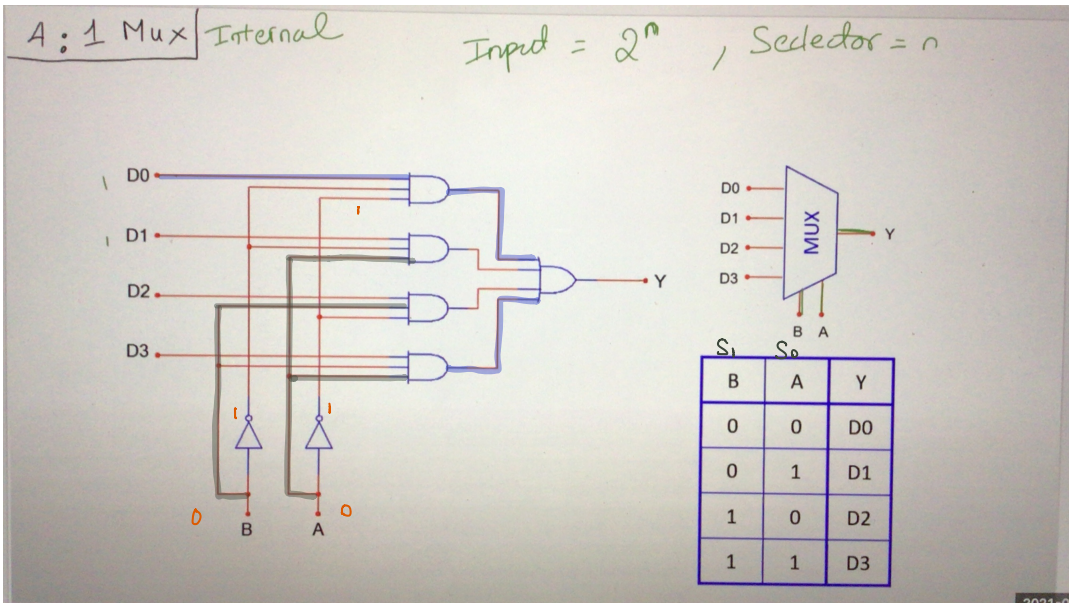


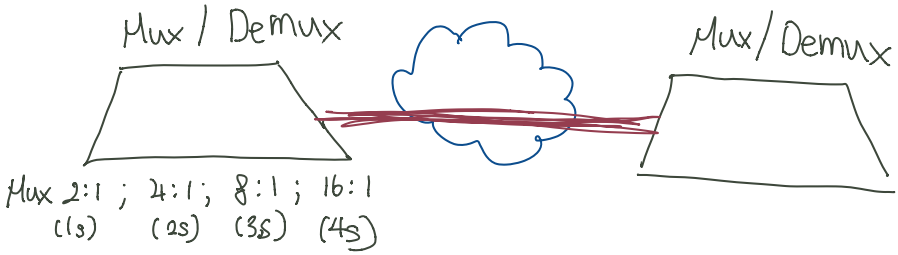
b) Given the truth table of part (a), implement Z using a single 16:1 multiplexer shown below. Make sure to clearly label all inputs and outputs.

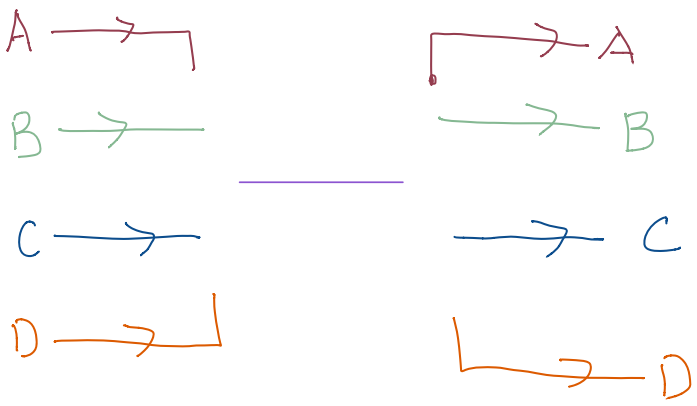
using 4:1 Mux (2

input output




4 : 1 Mux Internal
Input = 2^n , Selector = n
D0
D1
D2
D3
Y
B
A
MUX
S1 S0
B A Y
0 0 D0
0 1 D1
1 0 D2
1 1 D3


Mux / Demux
Mux/Demux
Mux 2:1 ; 4:1 ; 8:1 ; 16:1
(1s) (2s) (3s) (4s)


A
B
C
D
A
B
C
D