EECS 151/251A Homework 2

Due Friday, Feb 11th , 2022

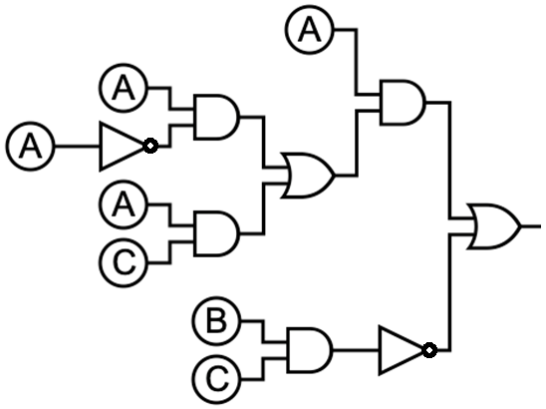
Problem 1: Moment of Truth Table

Please translate the following expressions/sentence/diagram into a truth table (you don't have to simplify the expressions in your solution)

(a) $Y = \overline{A\bar{B} + \bar{A}\bar{B}C + \bar{C}}$

(b) If A, then either both B and C or neither, else not B.

(c)



Problem 2: Boo…lean

Simplify the following expression to minterms (sum of product) expression (hint: you might want to consider starting with De Morgan's Law)

$$Y = \overline{\left(DC + \overline{(\overline{DC} + B\bar{A})D}\right)} + B\overline{(A + \bar{C})}$$

Problem 3: K for Karnaugh Map

Derive the minterm/maxterm expressions for the following K-maps, whichever is simplified the most

(a)

AB \ CD	00	01	11	10
00	0	0	0	0
01	1	0	0	0
11	1	1	0	0
10	0	0	0	0

(b)

CD / AB	00	01	11	10
00	1	1	1	1
01	1	1	1	1
11	1	1	0	1
10	1	1	0	1

(c)

CD / AB	00	01	11	10
00	0	1	0	0
01	0	1	1	1
11	0	1	0	0
10	0	1	0	0

Problem 4: Mealy or Moore

Identify whether the following diagram represents a Mealy Machine or a Moore Machine, and then convert it to the other type (Mealy to Moore, Moore to Mealy)