CMSC 313 HW2
Due 2/19/2024 11:59pm

Please submit the completed homework through Blackboard.

1. (10) Show that AB'C + AC = AC
2. (10) Show that (A+C')(AB + BC) = AB
3. (15) Use DeMorgan's Theorem to simplify ((A'+B)(AB+C'))'
4. (15) Write a truth table for the following inputs (A,B,C) and output (Z).
    * A==1 if month number is odd (Jan., Mar., May, etc.)
    * B==1 if month number >= 7 (July, Aug., Sept., etc.)
    * C==1 if month is July
    * Z==1 if month has 31 days

A	**B**	**C**	**Z**	**Comments**
0	0	0		Valid
0	0	1	X	Invalid because if C==1 (July), then it is an odd month (A should be 1) and month # >= 7 (B should be 1).
0	1	0		Valid
0	1	1	X	Invalid because if C==1 (July), then it is an odd month (A should be 1)
1	0	0		Valid
1	0	1	X	Invalid because if C==1 (July), then month # >= 7(B should be 1)
1	1	0		Valid
1	1	1		Valid

5. (25) Find the equation for Z using any method.

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

0	1	0	1
0	1	1	0
1	0	0	0
1	0	1	0
1	1	0	1
1	1	1	0

6. (25) Use K-Maps to find the equation for Z.

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