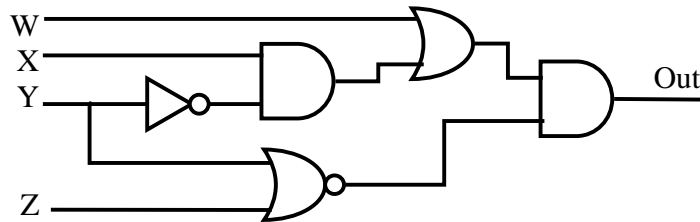


Assignment #3

Assuming the following 8-bit binary values plus a parity bit (P), give parity bit (P) for odd parity:

1. P10010111 (Problem 1.18a in textbook)
2. P10011001 (Problem 1.18c in textbook)

3. Find the Boolean logic equation for the following circuit



Find the truth tables for the follow Boolean logic equations:

4. $Z = A + B'$ (Problem 2.16a in textbook)
5. $m = xy'z + yz'$ (Problem 2.16c in textbook)
6. $f(A,B,C,D) = ABC'D + ABCD'$ (Problem 2.17a in textbook)
7. $f(A,B,C,D) = AB + A'B' + CD'$ (Problem 2.17b in textbook)

Solutions to Assignment #3

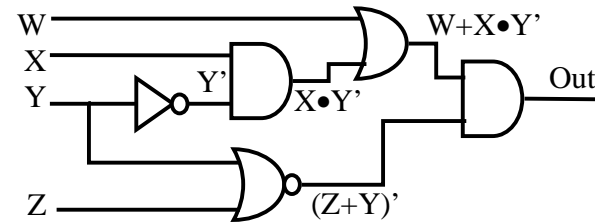
1. P10010111

Give parity bit (P) for odd parity
 There are five 1s in the data which is an odd #
 So the parity bit is 0 to maintain an odd # of 1s
 over the data word plus the parity bit,
P=0

2. P10011001

Give parity bit (P) for odd parity
 There are four 1s in the data which is an even #
 So the parity bit is 1 to obtain an odd # of 1s
 over the data word plus the parity bit,
P=1

3.



Out=(W+X•Y')•(Z+Y)'

If you want to simplify:
 Out=(W+X•Y')•(Z'•Y') by DeMorgan's
 Out=WY'Z' + XY'Z' a nice SOP

4. Find the truth table for Z=A+B'
 2 variables = 4 truth table entries

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

B'=1
 A=1 & B'=1
 A=1

5. Find the truth table for m=xy'z+yz'
 3 variables = 8 truth table entries

x	y	z	m
0	0	0	0
0	0	1	0
0	1	0	1
0	1	1	0
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	0

y=1, z'=1
 x=1, y'=1, z=1
 y=1, z'=1

6. Find the truth table for
 $f(A,B,C,D)=ABC'D+ABCD'$
 4 variables = 16 truth table entries

A	B	C	D	f(A,B,C,D)
0	0	0	0	0
0	0	0	1	0
0	0	1	0	0
0	0	1	1	0
0	1	0	0	0
0	1	0	1	0
0	1	1	0	0
0	1	1	1	0
1	0	0	0	0
1	0	0	1	0
1	0	1	0	0
1	0	1	1	0
1	1	0	0	0
1	1	0	1	1
1	1	1	0	1
1	1	1	1	0

A=1, B=1, C=0, D=1
 A=1, B=1, C=1, D=0

7. Find the truth table for
 $f(A,B,C,D)=AB+A'B'+CD'$
 4 variables = 16 truth table entries

A	B	C	D	f(A,B,C,D)
0	0	0	0	1
0	0	0	1	1
0	0	1	0	1
0	0	1	1	1
0	1	0	0	0
0	1	0	1	0
0	1	1	0	1
0	1	1	1	0
1	0	0	0	0
1	0	0	1	0
1	0	1	0	1
1	0	1	1	1
1	1	0	0	1
1	1	0	1	1
1	1	1	0	1
1	1	1	1	1

A=0, B=0
 A=0, B=0
 A=0, B=0 & C=1, D=0
 A=0, B=0
 C=1, D=0
 C=1, D=0
 A=1, B=1
 A=1, B=1
 A=1, B=1 & C=1, D=0
 A=1, B=1