HW 2

Brian Hert
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CSC 137

1.6 Given FP format:

Sign (S)	Exponent (E)	Mantissa (M)
1 bit	4 bits	11 bits

Exponent Bias = 7

$N = (-1)^S \times (1.M) \times 2^{E-7}$

Largest Positive number will have:

Sign (S) = 0

Exponent (E) = 1100

Mantissa (M) = 11111111111

$\rightarrow N = (-1)^0 \times (1.11111111111) \times 2^{14-7}$

$= (2 - 2^{-11}) \times 2^7$

$= 2^8 - 2^{-4}$

$= \boxed{255.9375}$ ✓

1.8 Exponent Bias = 7

$N = (-1)^S \times (1.M) \times 2^{E-7}$

Sign (S) = 0

Exponent (E) = $(0001_2) = 1$

Mantissa (M) = 00000000000 = 0

$\rightarrow N = (-1)^0 \times (1.00000000000) \times 2^{1-7}$

$= 1 \times 1 \times 2^{-6}$

$= 1/64$

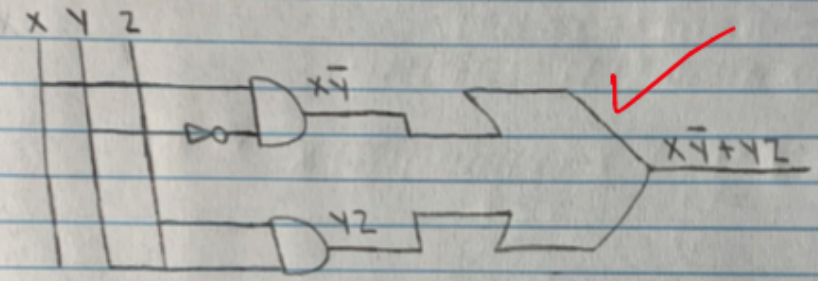
$= \boxed{0.015625}$ ✓

2.4

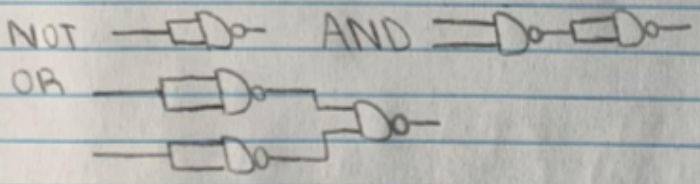
X	Y	X'	Y'	X+Y	(X+Y)'	X'Y'
0	0	1	1	0	1	1
0	1	1	0	1	0	0
1	0	0	1	1	0	0
1	1	0	0	1	0	0

last two columns are equal
Using truth table we can Prove $(x+y)' = x'y'$

2.5 $f = x\bar{y} + yz$



We can convert NOT, AND, and OR GATE to NAND using these conversion



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