



Introduction and Digital Logic Review

Professor Dickens



Introduction

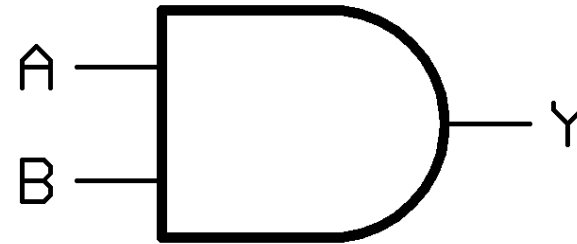
- Attendance
- Review of syllabus
 - Posted in MyCourses
 - Syllabus quiz Wednesday
- Review homework policy
 - Weekly group HWs
 - More to come Wednesday

Lab Review

- Lab I Week I
 - Quartus II Introduction
 - Swipe Access to GOL-I360
 - Obtain a DE0_CV board from Lab Manager
 - Tiger Bucks

Digital Review

1. What is this?

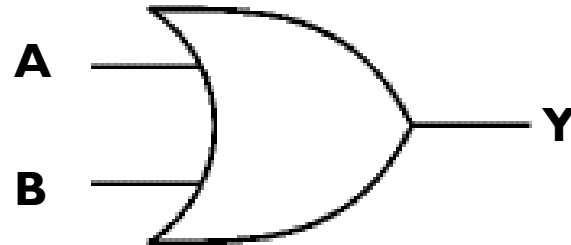


2. Fill in the truth table

A	B	Y
0	0	
0	1	
1	0	
1	1	

Digital Review

1. What is this?



2. Fill in the truth table

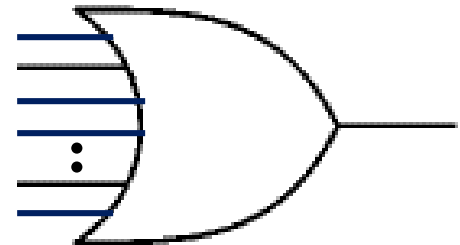
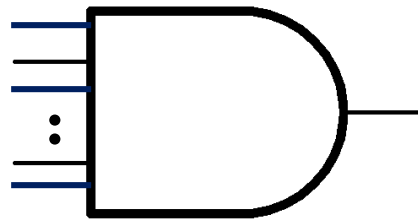
A	B	Y
0	0	
0	1	
1	0	
1	1	

Digital Review

I. Fill in the Blanks:

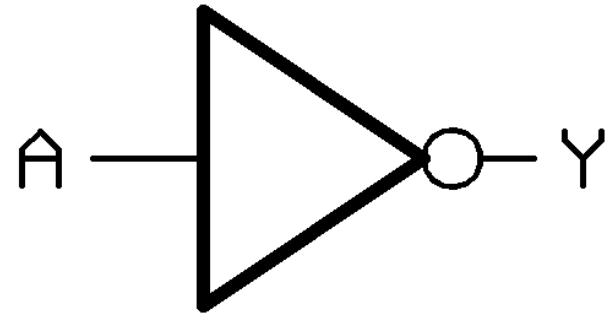
For an n input AND gate, the output will be high (1) if and only if _____

For an n input OR gate, the output will be low (0) if and only if _____



Digital Review

1. What is this?



2. Fill in the truth table

A	Y
0	
1	

Digital Review

1. What is this?

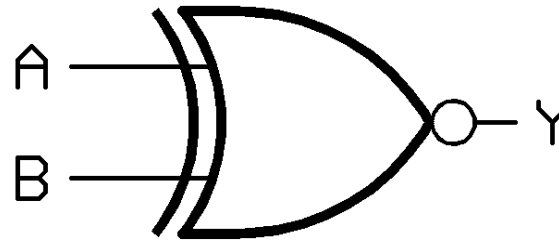
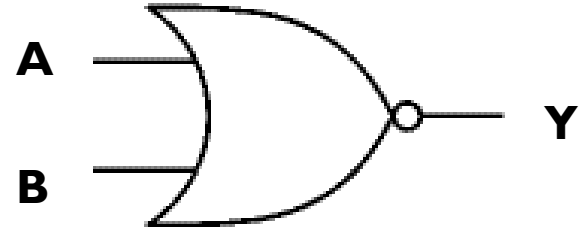
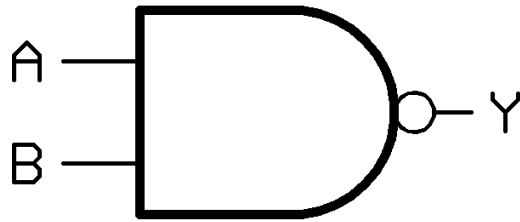


2. Fill in the truth table

A	B	Y
0	0	
0	1	
1	0	
1	1	

Digital Review

1. Name these gates



2. What do the bubbles on the output mean?

Boolean Laws

- Laws
 - $A + B = B + A$
 - $AB = BA$
 - $A + (B + C) = (A + B) + C$
 - $(AB)C = A(BC)$
 - $A(B + C) = AB + AC$
 - $(A + B)(C + D) = AC + AD + BC + BD$

Boolean Rules

- $A \bullet 0 = 0$
- $A \bullet 1 = A$
- $A + 0 = A$
- $A + 1 = 1$
- $A \bullet A = A$
- $A \bullet \bar{A} = 0$
- $A + \bar{A} = 1$
- $\bar{\bar{A}} = A$
- $A + \bar{A}B = A + B$
- $\bar{A} + AB = \bar{A} + B$

Digital Review

1. Generate the un-simplified equation for Y

A	B	C	Y
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	1

2. Use boolean algebra to simplify the equation



Digital Review

1. Apply DeMorgan's Theorem to the following:

$$\overline{XY} =$$

$$X + Y =$$

2. True or False

$$\overline{\overline{X}Y} = \overline{\overline{X}Y}$$

$$\overline{X} + \overline{XY} = \overline{X} + \overline{Y}$$