

CS/COE0447

**Computer Organization &
Assembly Language**

**Logic Design
Appendix C**

Outline

- Example to begin: let's implement a MUX
- Gates, Truth Tables, and Logic Equations
- Combinatorial Logic
- Constructing an ALU
- Memory Elements: Flip-flops, Latches, and Registers

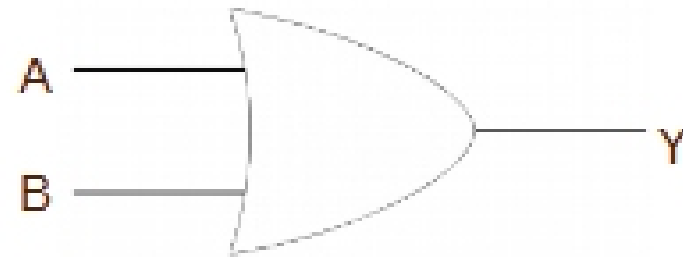
Logic Gates

2-input AND



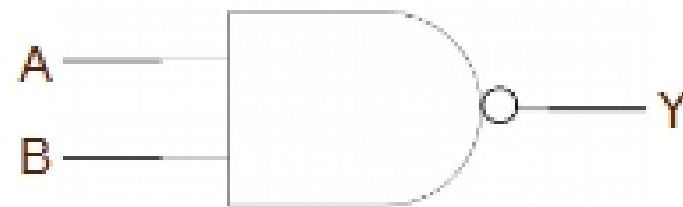
$$Y = A \& B$$

2-input OR



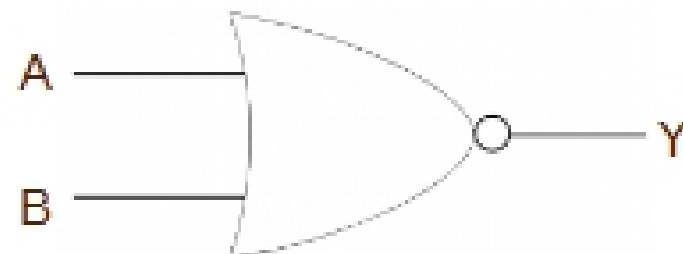
$$Y = A | B$$

2-input NAND



$$Y = \sim (A \& B)$$

2-input NOR



$$Y = \sim (A | B)$$