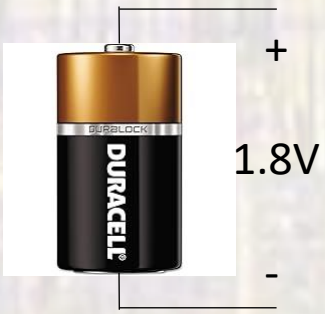
Voltage Supplies

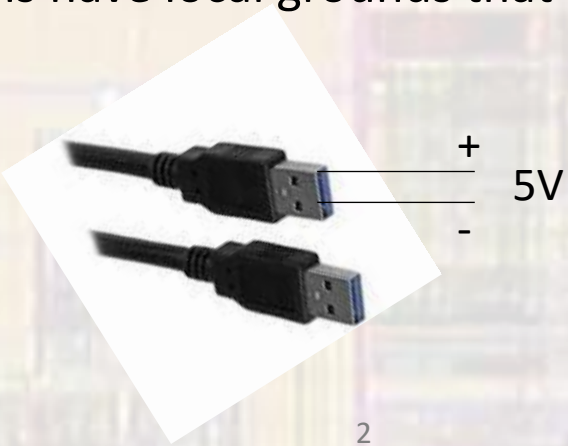
Last updated 10/2/24

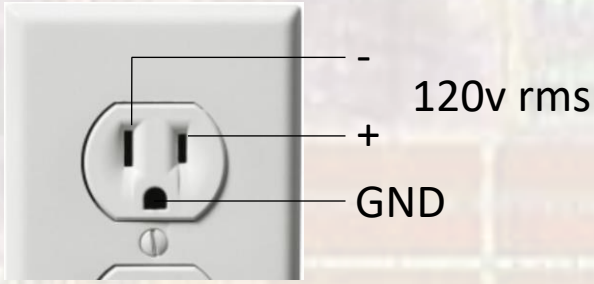
These slides introduce supply voltage concepts

Voltage Supplies

- Electrical circuits require energy to operate
  - Energy is provided in the form of electric potential
    - Measured in volts (V)
    - The source of the electric potential is typically called a voltage supply
  - The electric potential can be positive or negative
  - Electric potential is referenced to a ground (0V) potential
    - Ground refers to the actual ground on Earth which is arbitrarily chosen to be at 0V
    - Many systems have local grounds that are not referenced to earth

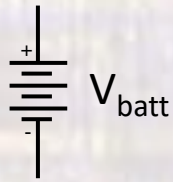






Voltage Supplies

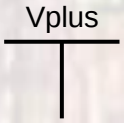
- Supply Iconography
  - Voltage supplies



V_{batt}

V_{DC}

V_{ac}



GND

GND

Voltage Supplies

- Electronic circuits are powered by DC supplies
  - AC voltages are converted to DC before being used by most electronic circuits
  - Bipolar transistor circuits
    - Originally named for connections to bipolar transistors (Collector, Emitter)

  - CMOS transistor circuits
    - Originally named for connections to MOS transistors (Drain, Source)

Most digital circuits use only a single supply voltage, VDD, and GND

Voltage Supplies

- Common DC supply voltages used in electronics

Dual Supply

+/- 24V

+/- 12V

+/- 5V

Single Supply (+ GND)

24V

12V

5V

3.6V

2.5V

1.8V

1.2V

0.9V