

DramaLab

Basics of Electronics

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Electronics Circuit

Terminology

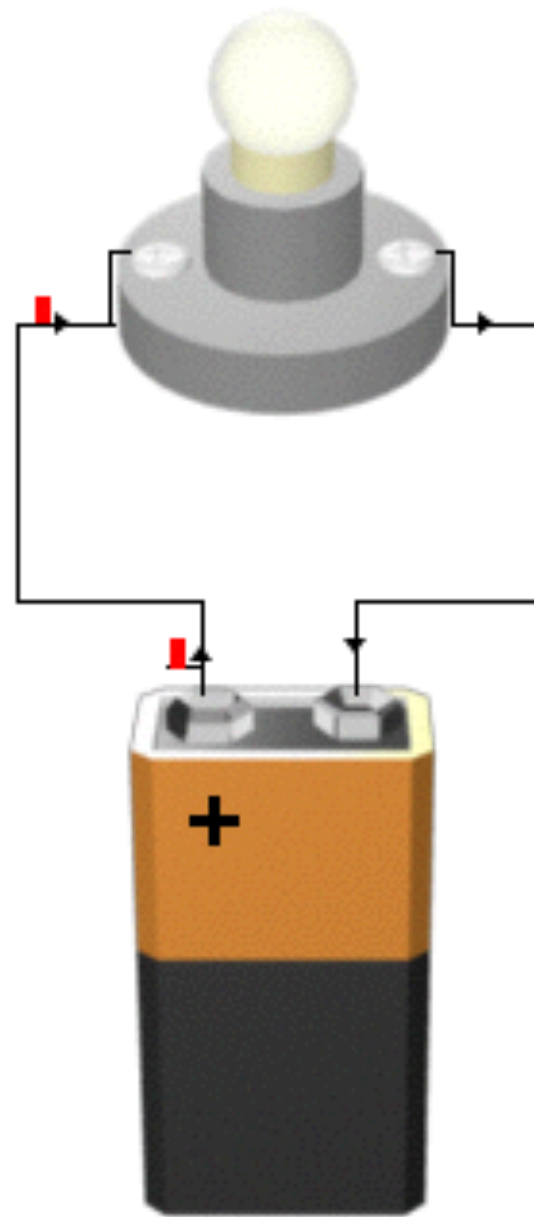
Components

Basic Circuit with Arduino

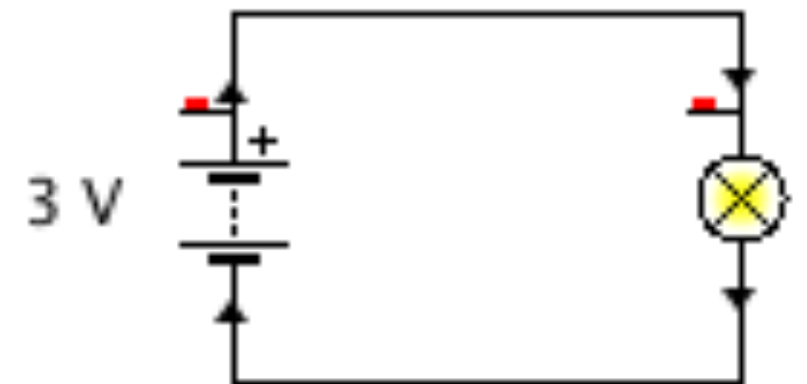
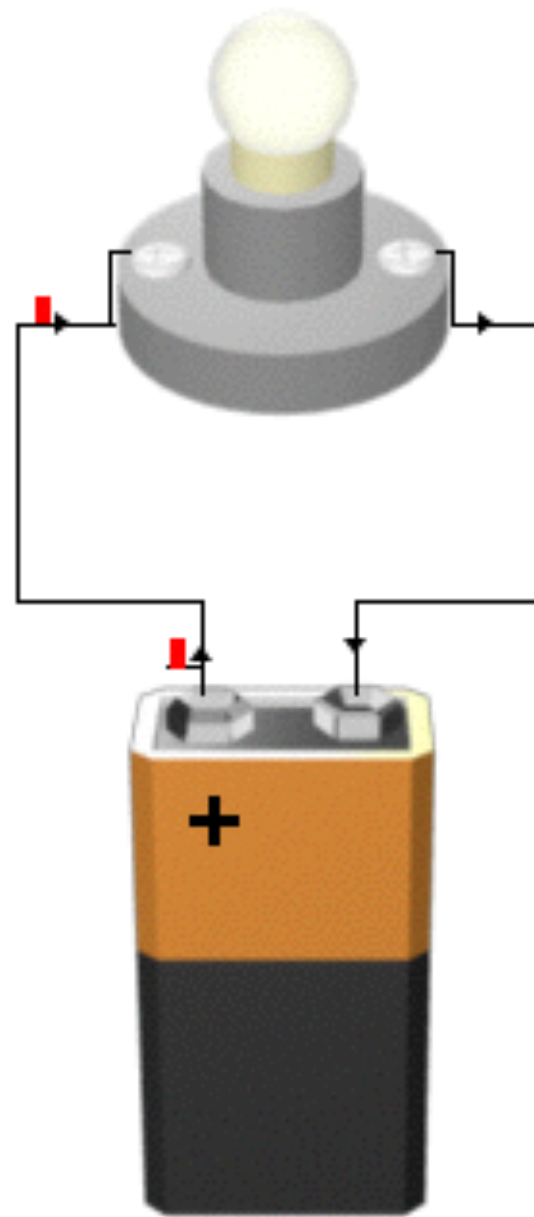
Electronic Circuit

- Electronic components, connected by wire through which electric current can flow
- Needs three components: source, connection, consumer
- Specific laws, symbols and terminology

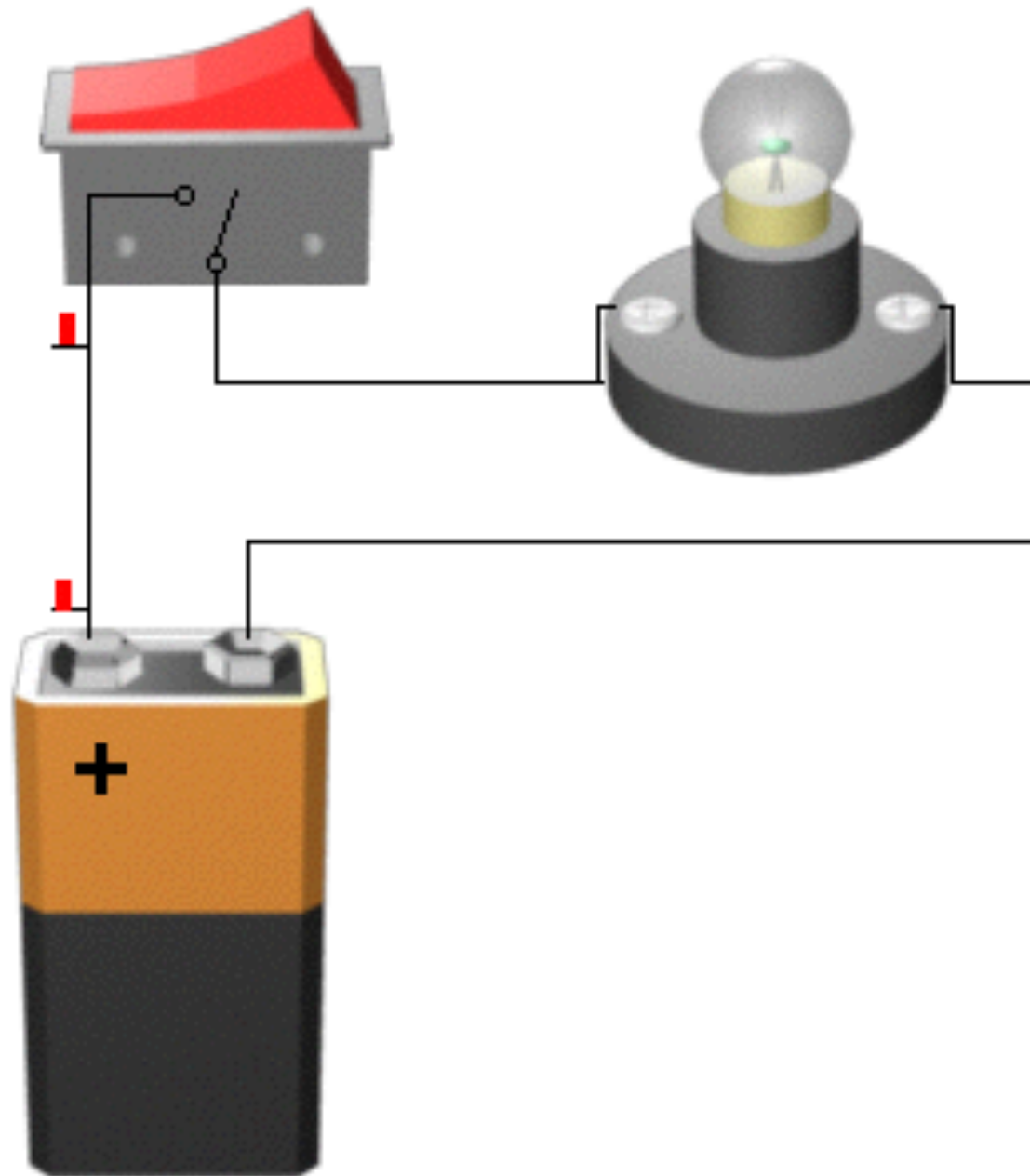
Simple Circuit



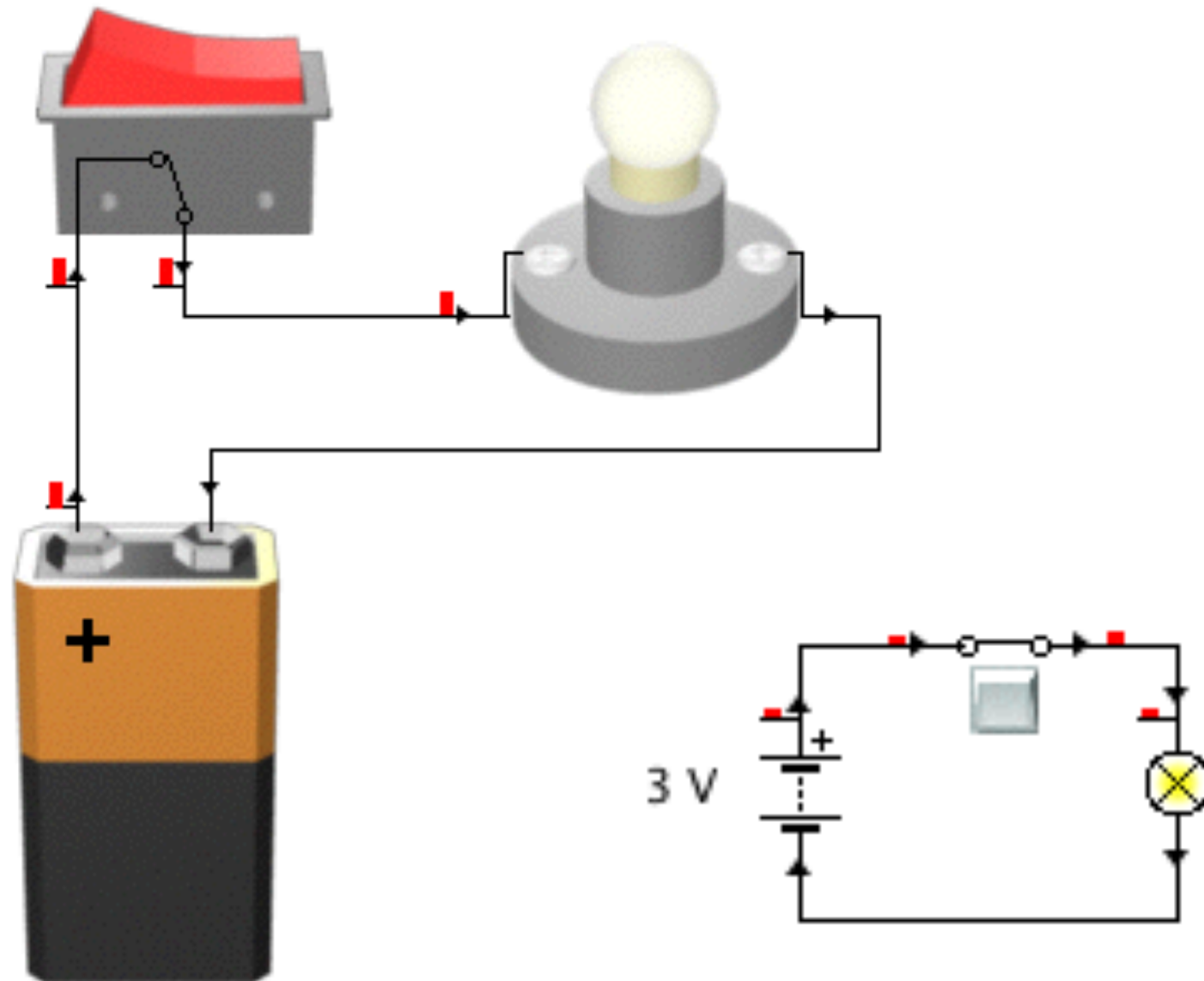
Simple Circuit



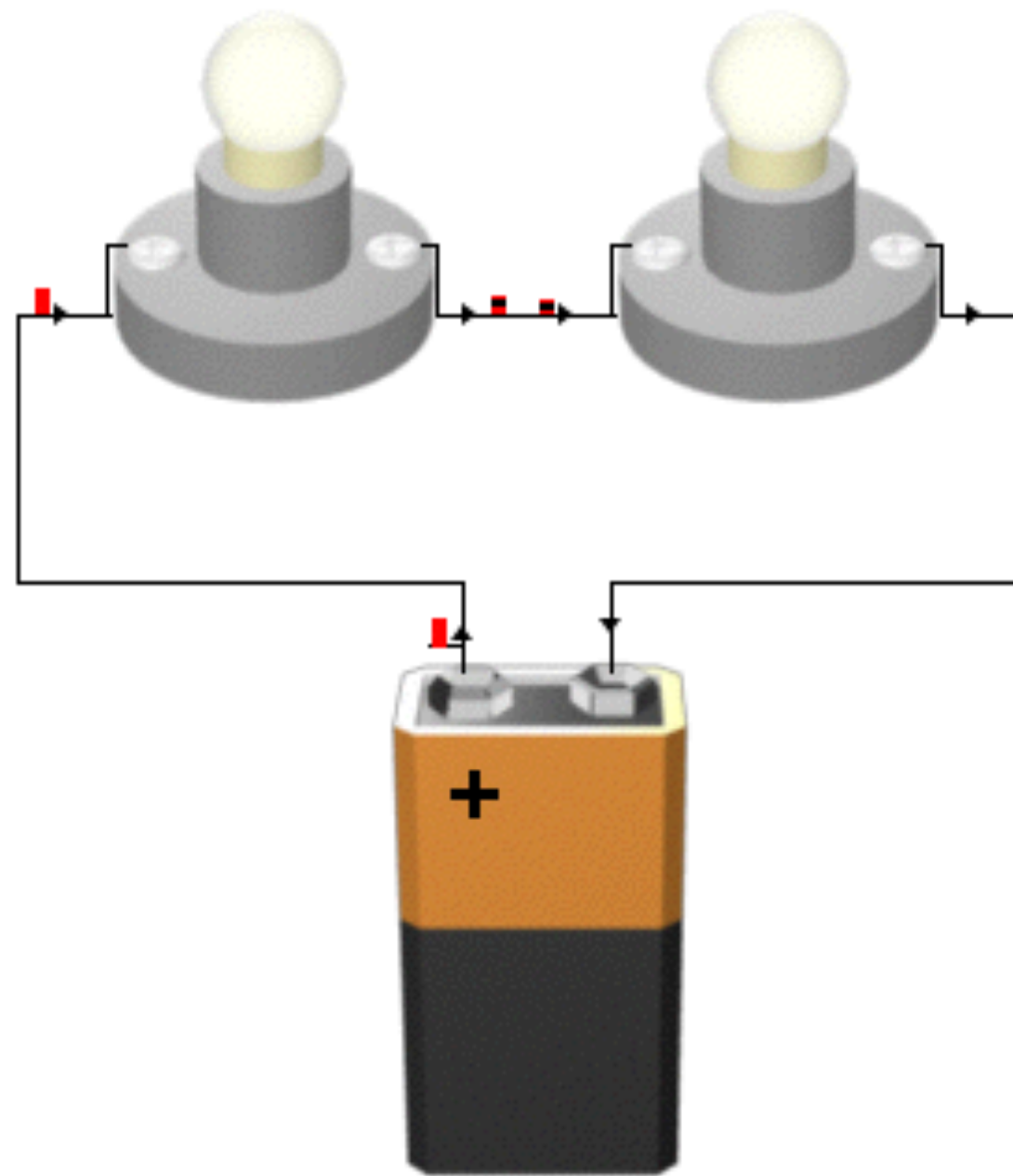
Simple Circuit 2



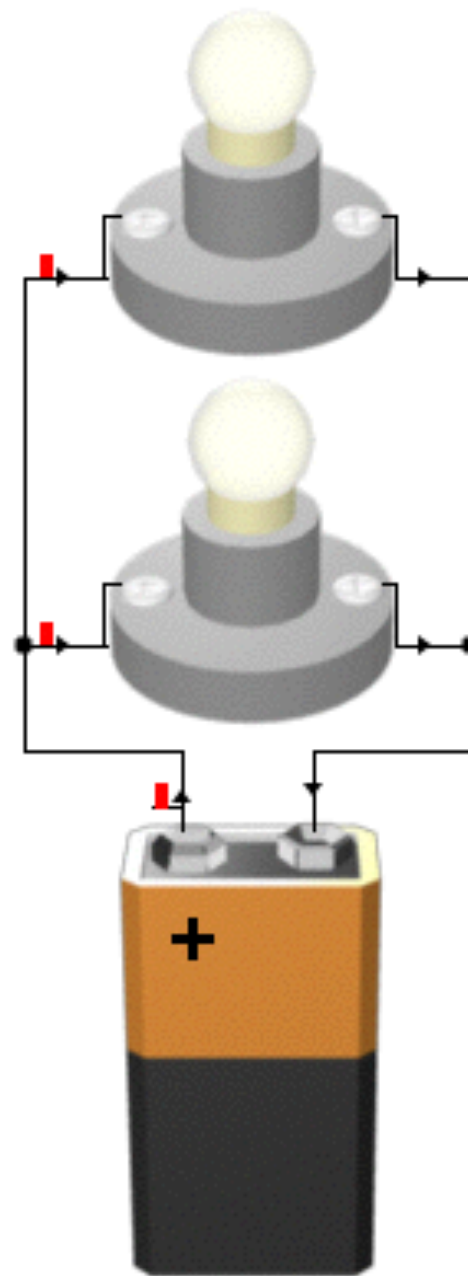
Simple Circuit 2



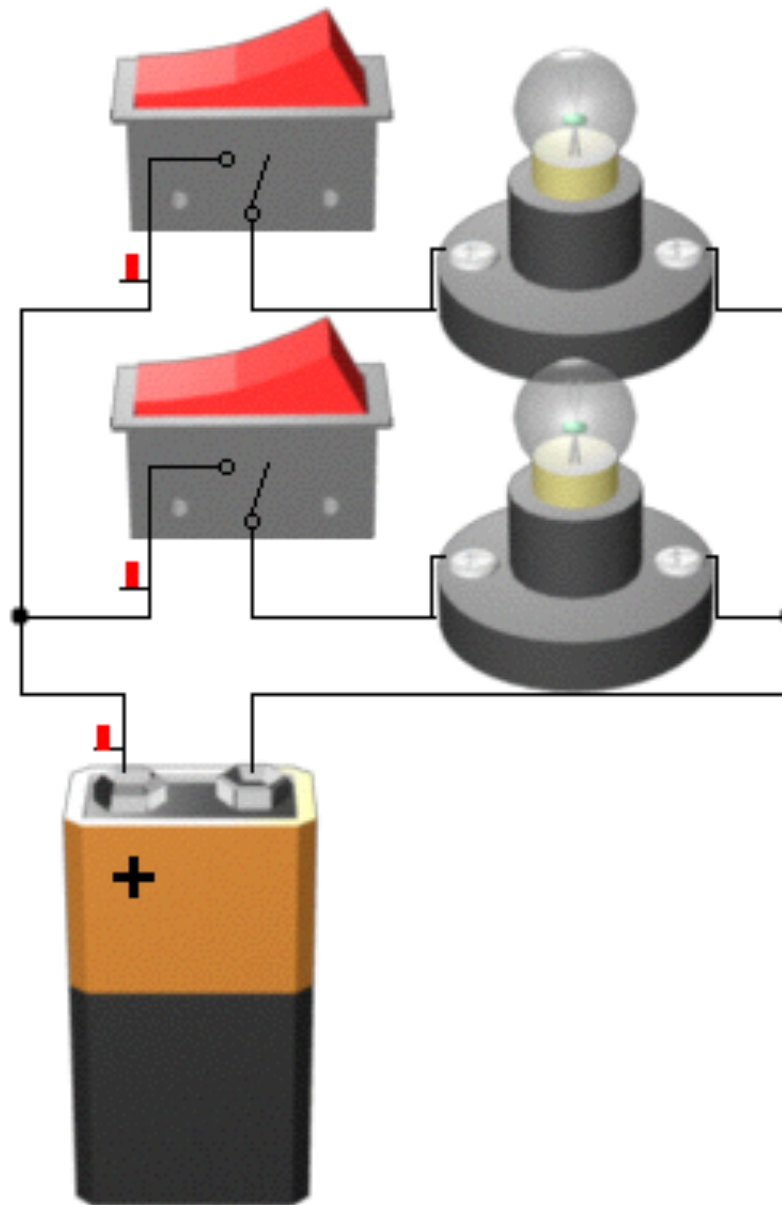
Series Circuit



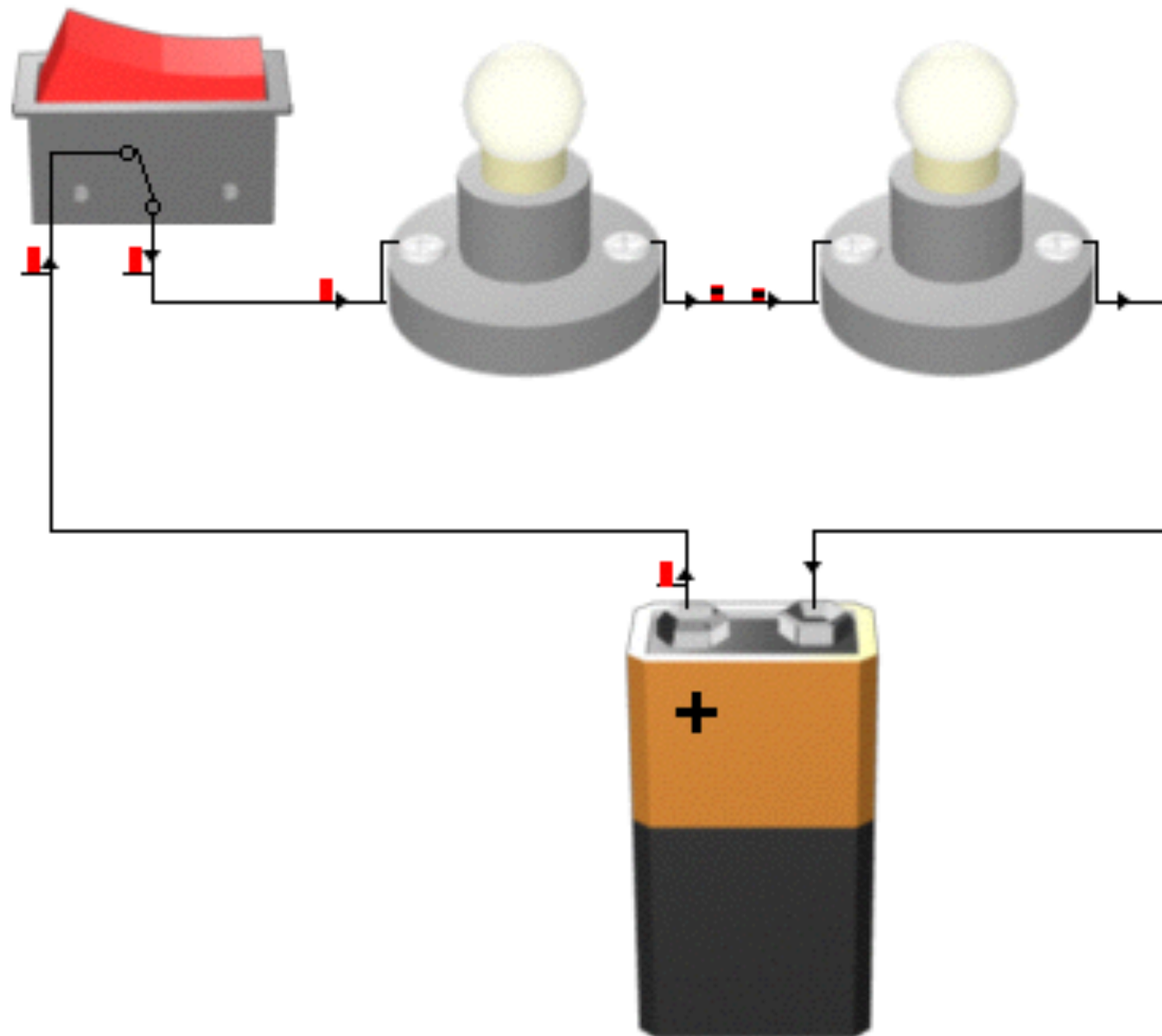
Parallel Circuit



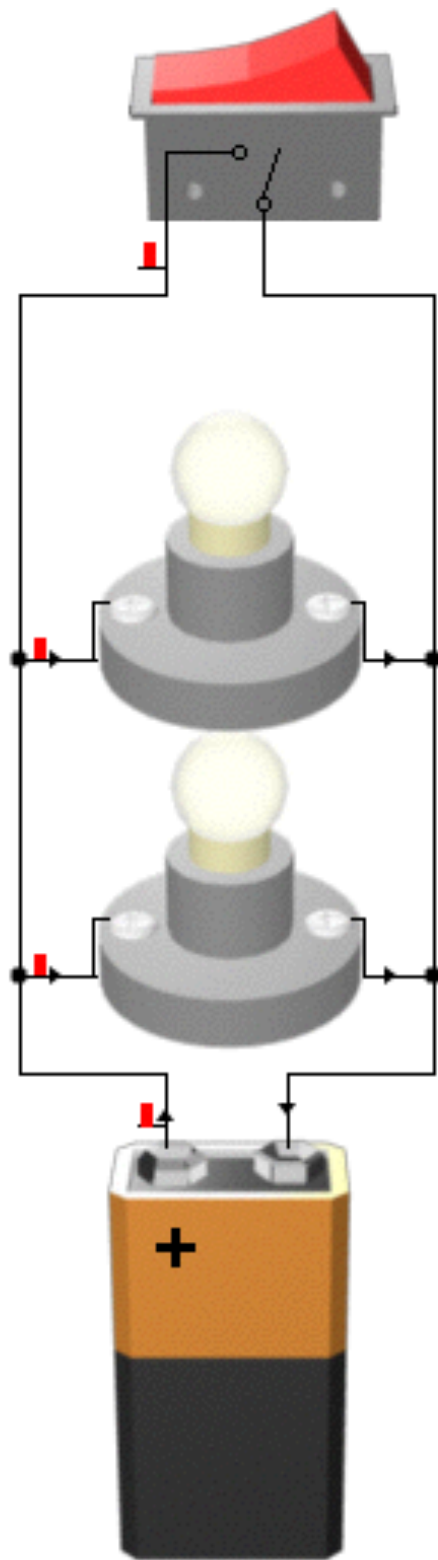
Circuits



Circuits



Circuits

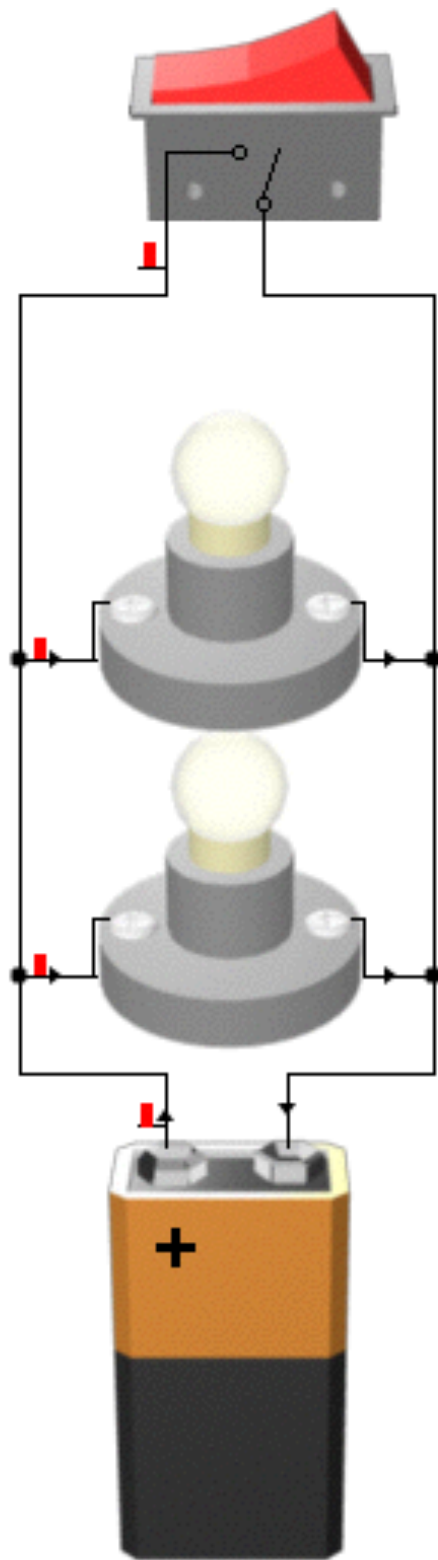


Circuits

Never create something like this!

short circuit

-> electronic circuit with no consumer



Ohm's Law

$$U = R * I$$

U = Voltage in Volt, R = Resistance in Ω , I = Current in Ampere

Ohm's Law

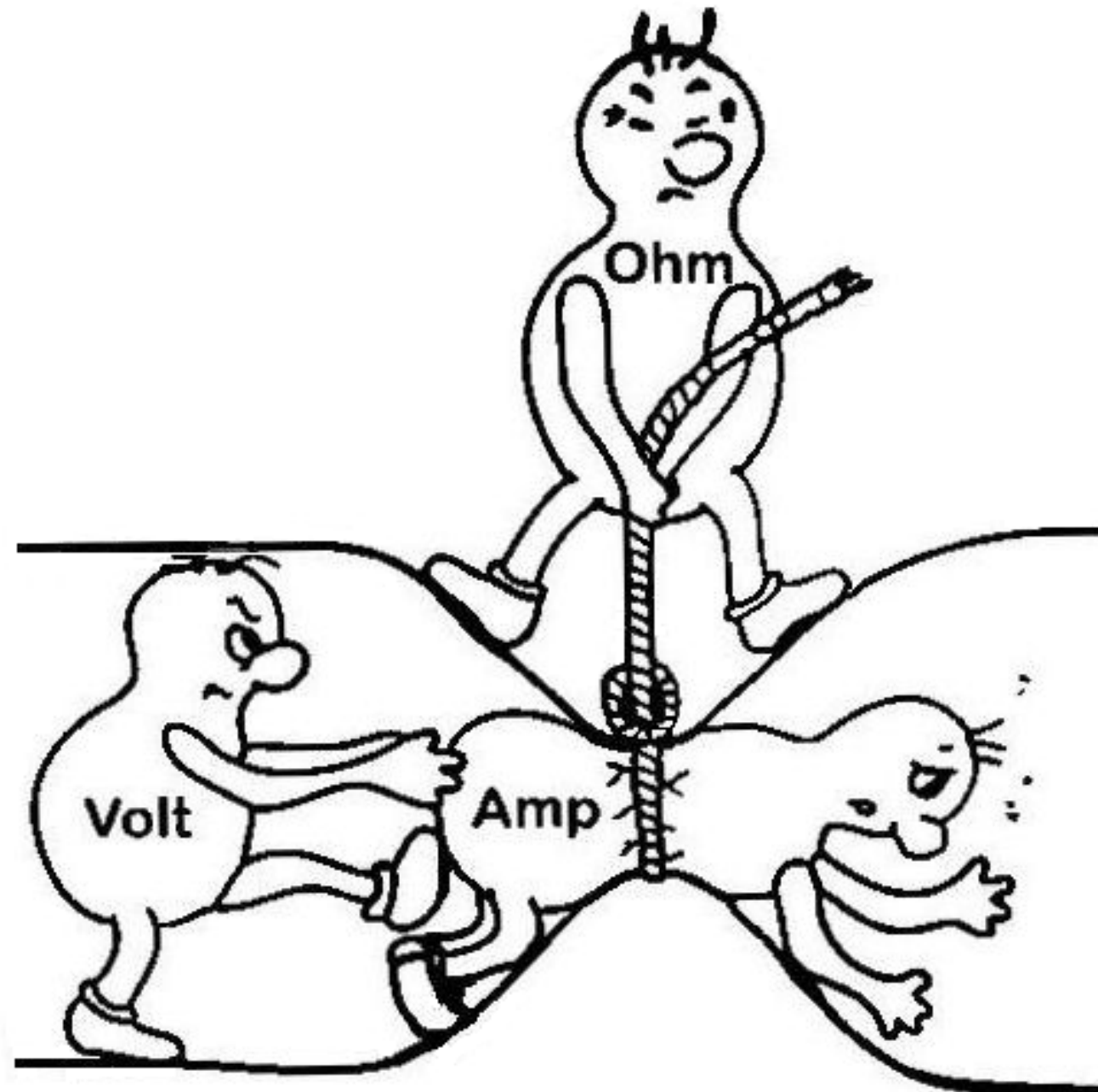
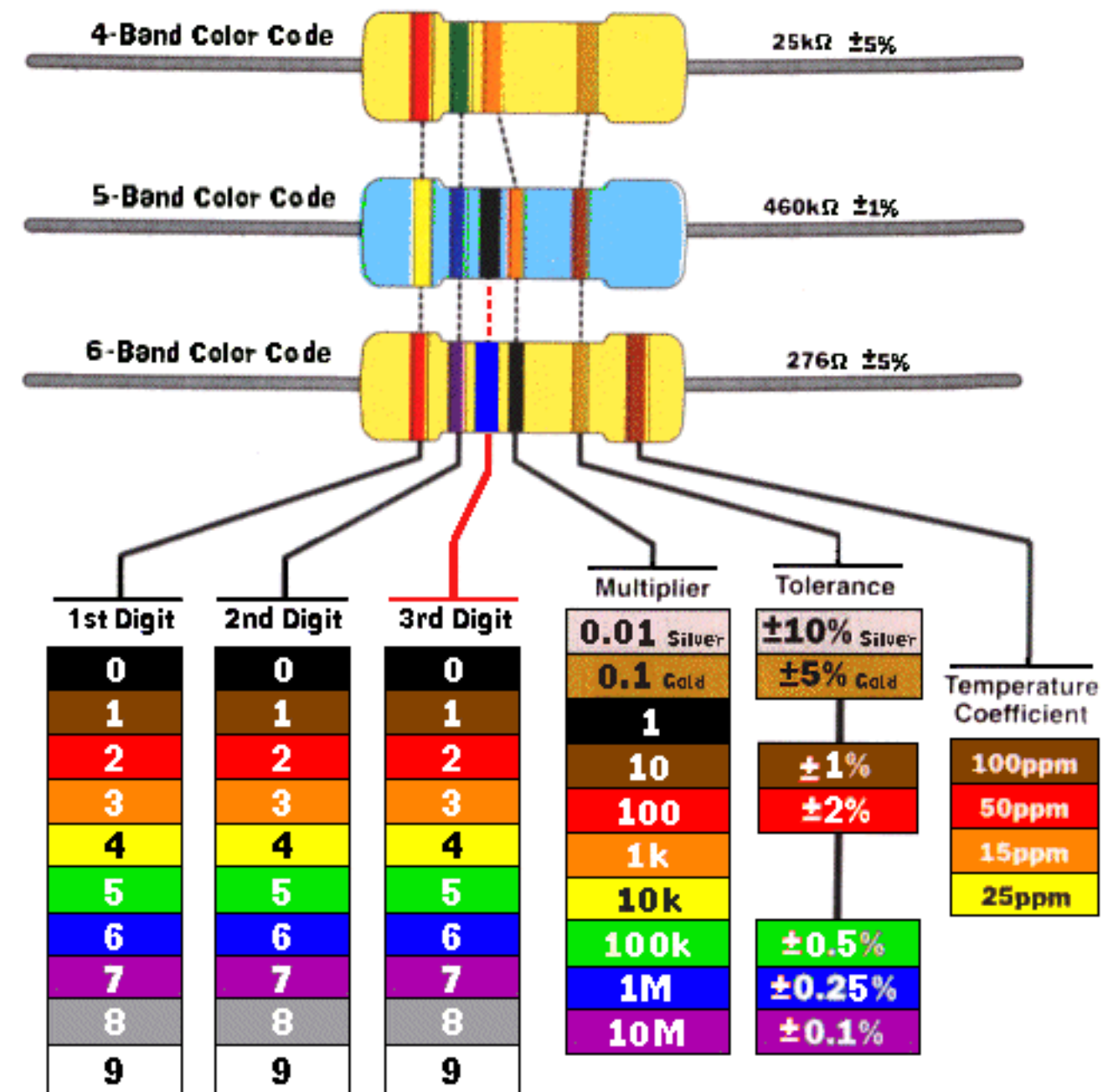
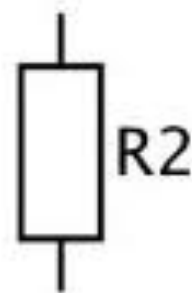
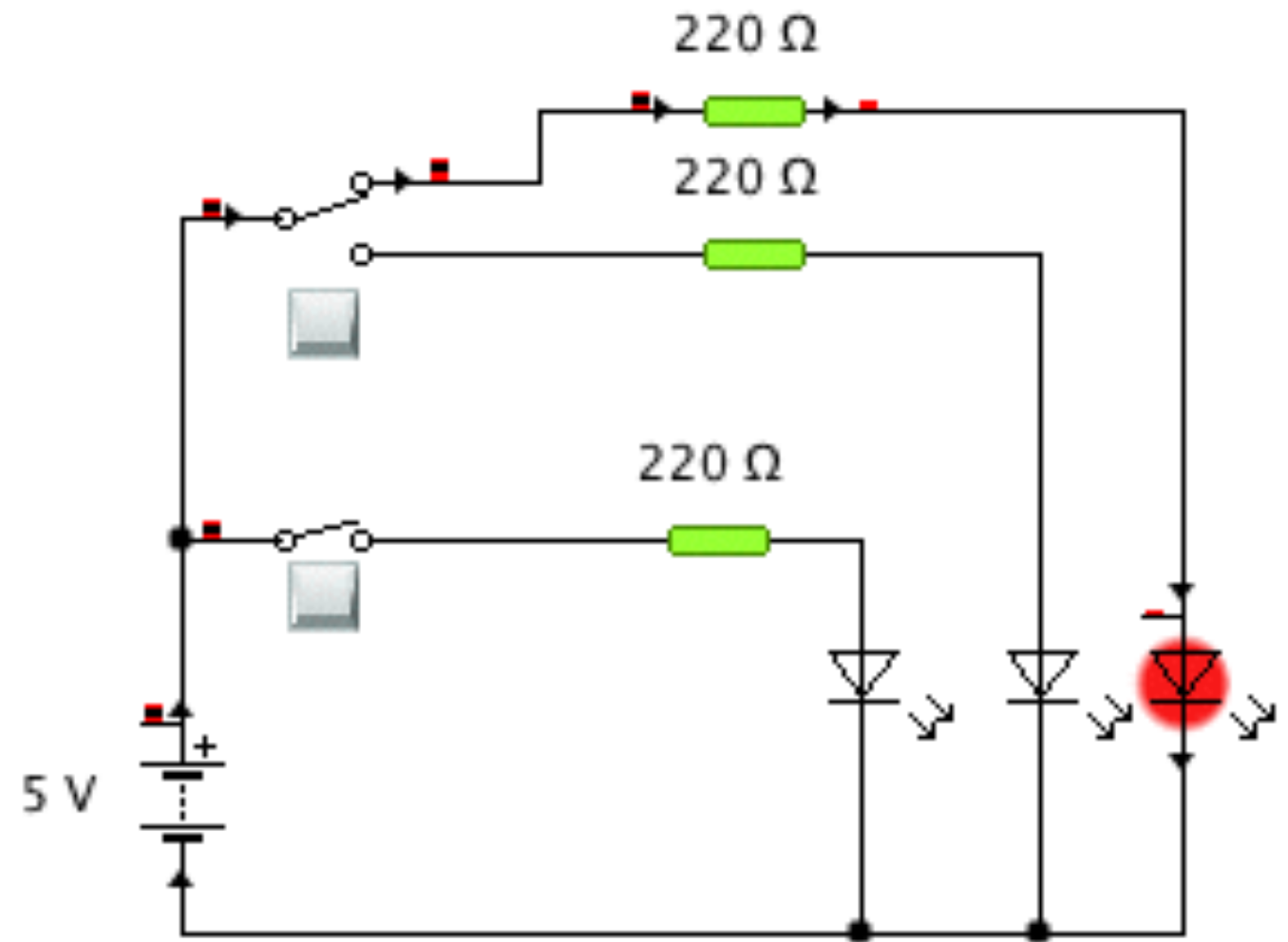


image source: <http://www.sengpielaudio.com/Rechner-ohmschesgesetz.htm>

Components - Resistor

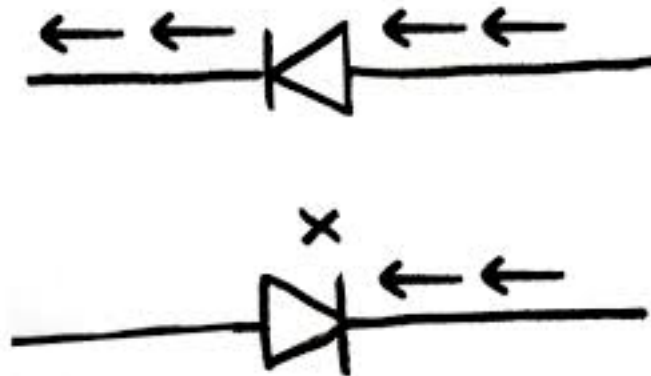
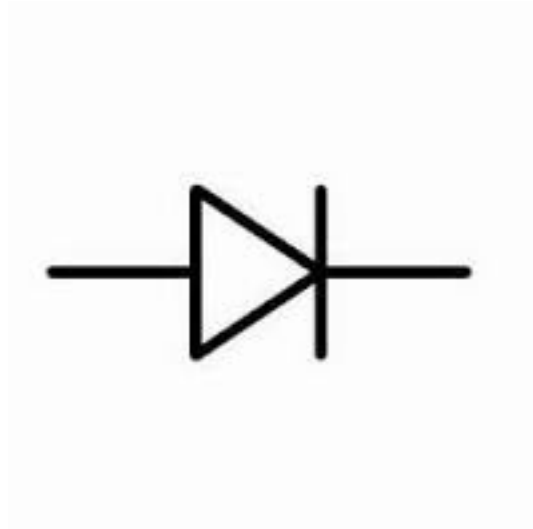


Components - Buttons



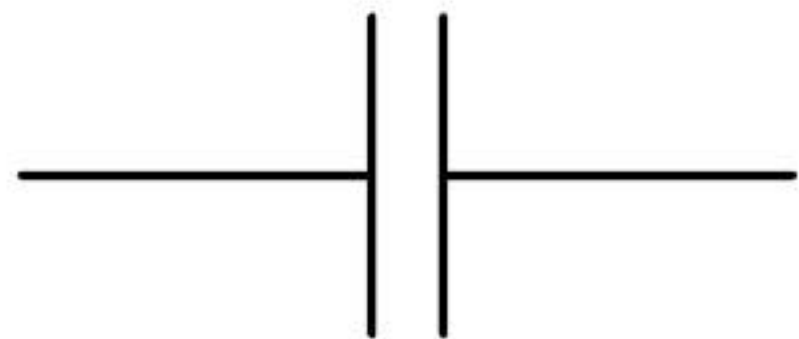
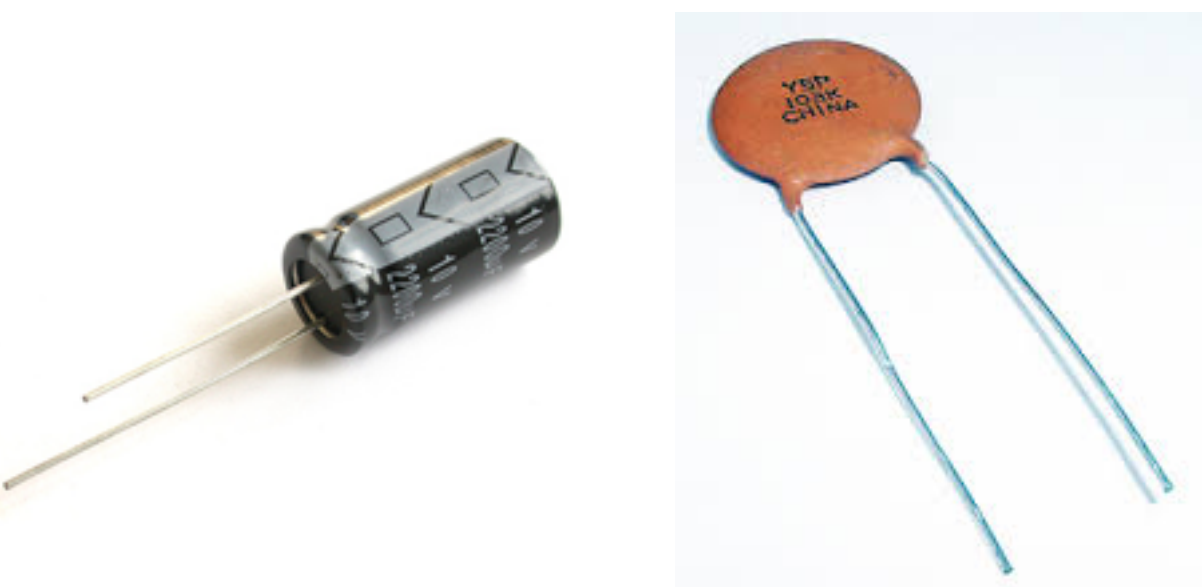
Components - Diodes

- allows current to pass in one direction only
- often used to decouple the effect of one component from another
- special case: LED = light emitting diode



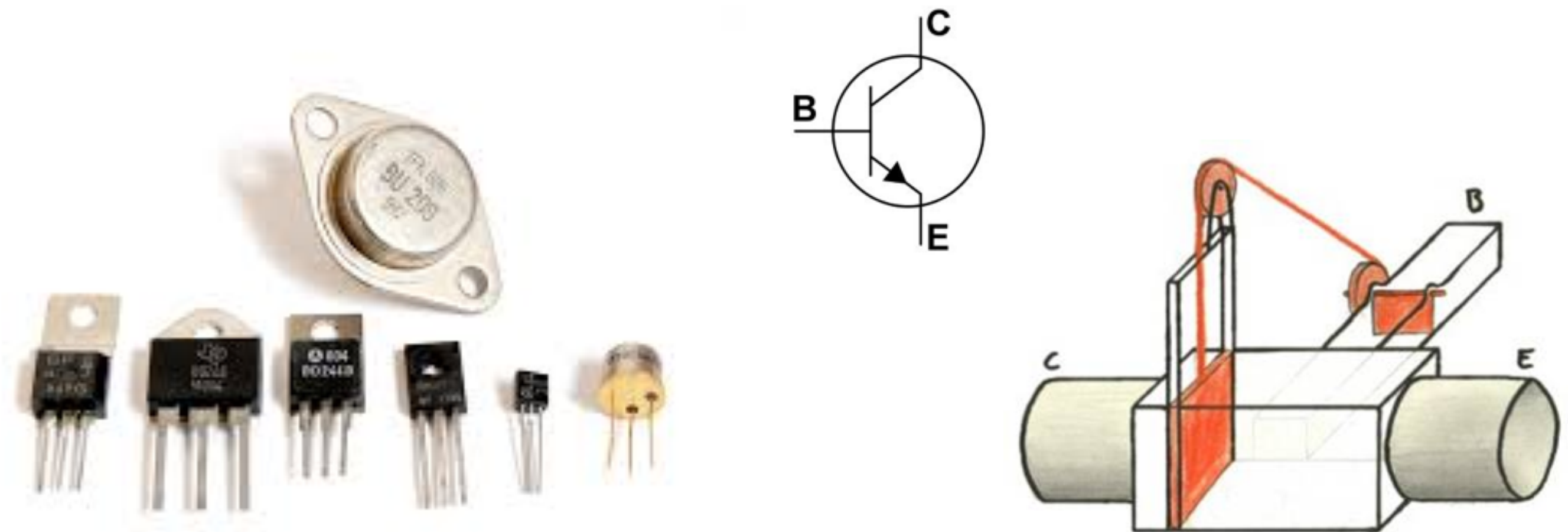
Components - Capacitor

simplification: capacitors are like batteries
work in completely different ways, but both can store electrical energy

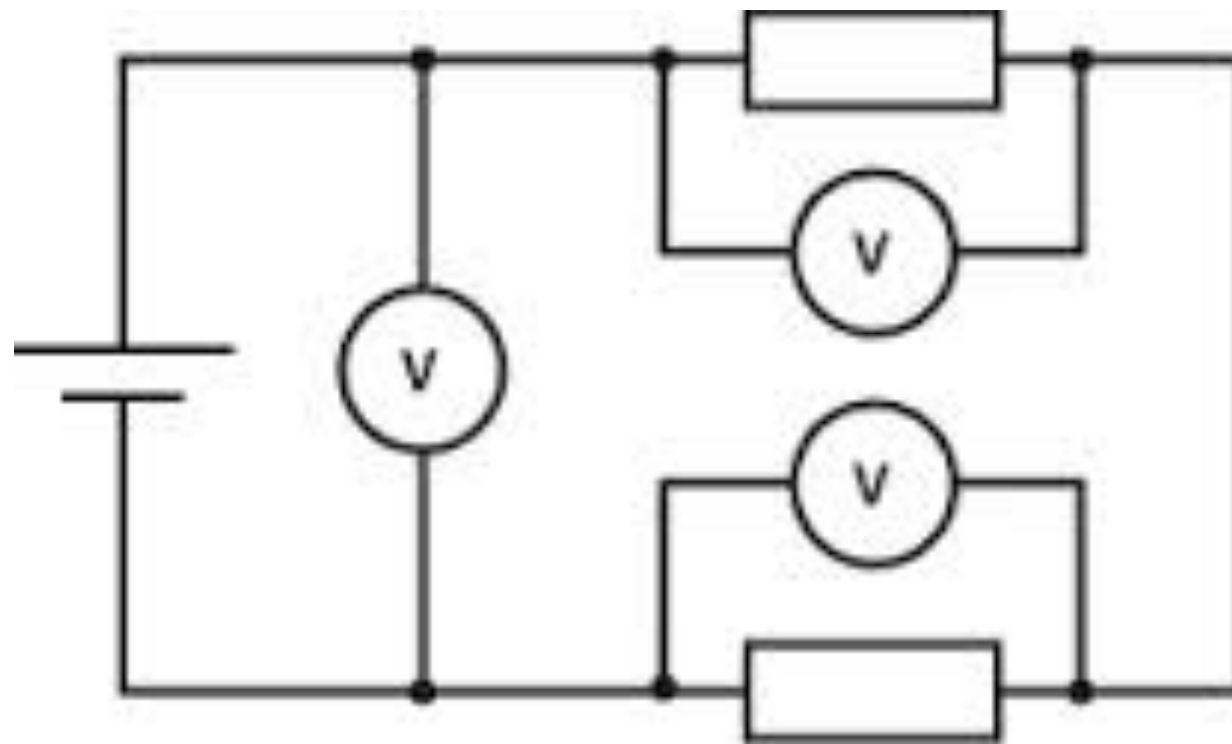


Components - Transistor

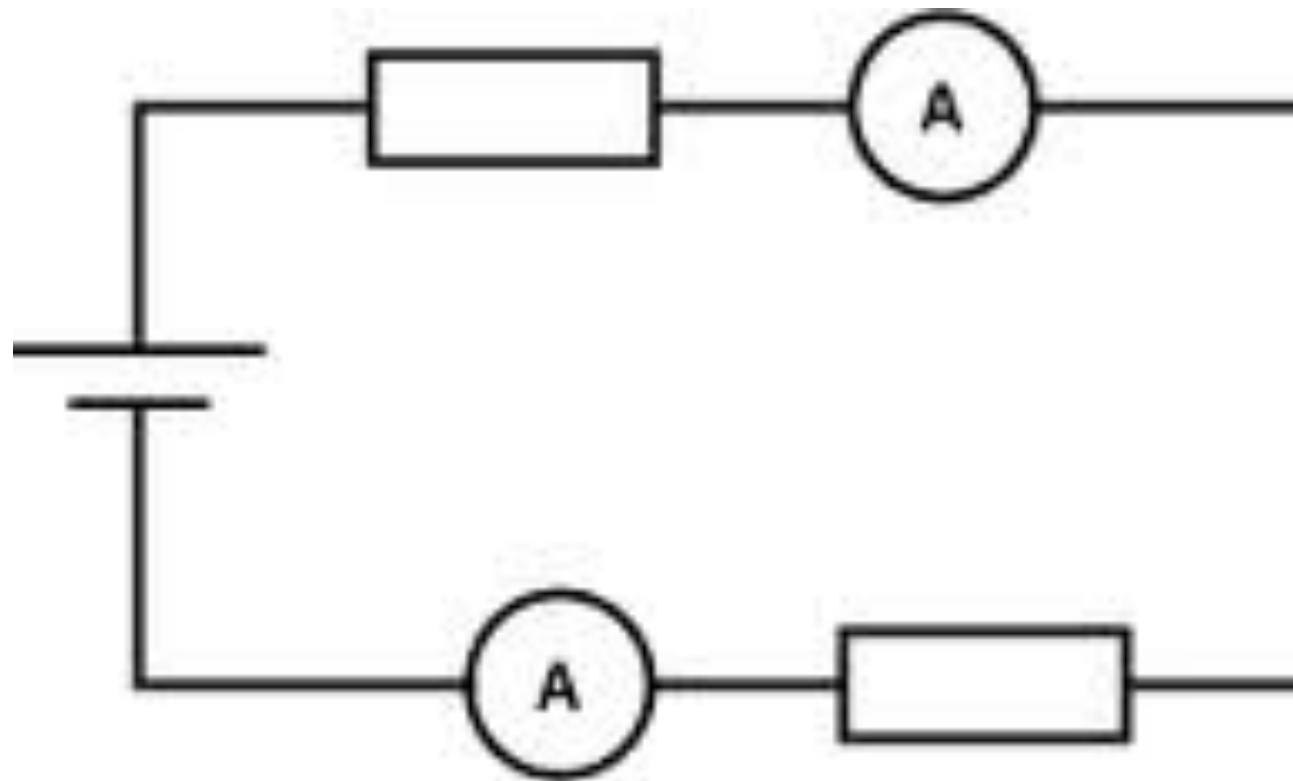
simplification: electronic version of a switch



Measure Voltage



Measuring Current



Arduino Circuit

