

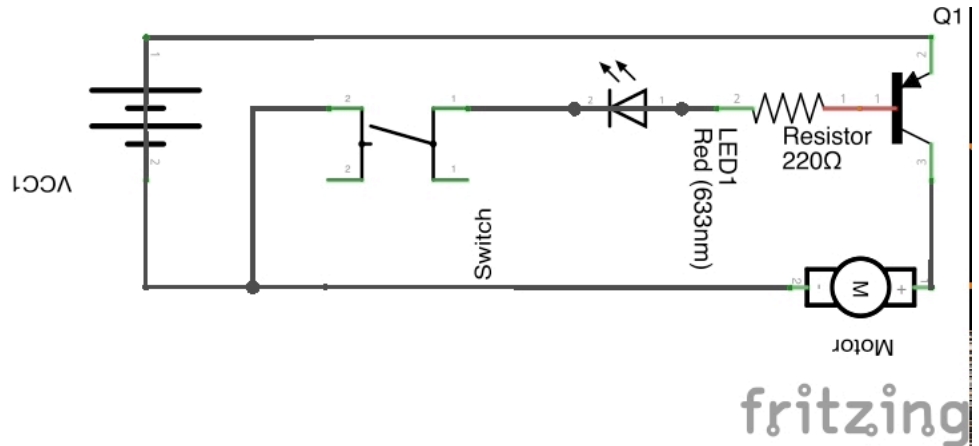
Conceptual

A transistor is a digital switch. NPN and PNP transistors are similar but one is normally on while the other is normally off.

- Review the water model for a PNP bipolar transistor
 - Determine what voltage at the base turns on or off the transistor?
- Draw a connection diagram for a PNP bipolar transistor – label *Base*, *Collector* and *Emitter*
- Determine and record the difference between the two types of transistors.

Basic Make

- Make this circuit
- Make a breadboard wiring diagram of this circuit



Advanced/Extended Make

- Does the order of where the motor is connected matter?
 - Connect to the emitter side
 - Connect to the collector side
- Duplicate diagrams using Fritzing

Equipment

- Computer with access to Fritzing and Arduino
- Circuit components: PNP bipolar transistor (2N 3906)

Objective

Physics Concepts

- Semiconductor devices
- Transistors

Experimental analysis

- Circuit design

Technology Concepts

- Schematic Symbols
- Programming Syntax