Motors 1

How to drive a small DC motor from a logic signal. These techniques apply to other higher voltage and current loads as well, it's not only motors you can drive like this.
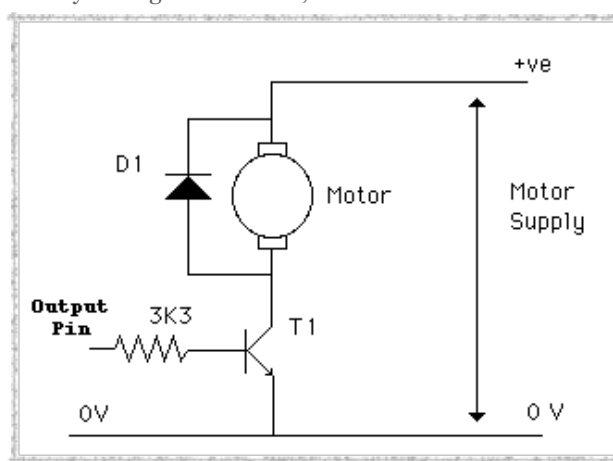
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Introduction

Small DC motors can take little current but they normally can't be driven directly from the output pin of an Arduino or any other embedded processor. Therefore they need some sort of driver or current boost before you can control them. Also motors are a great source of interference that can make the rest of your electronics misbehave. This can be countered by isolating the motor power supply to a greater or lesser extent.

Basic Driving

A motor will often need a bigger voltage as well as current than can be supplied directly so an external power supply is normally used to provide this. The simplest way of driving a motor is directly through a transistor, as shown here:-

An output pin from the Arduino is connected through a resistor to the base of a transistor, the motor sits between the collector and the positive external power supply and the emitter is connected to ground, earth or zero volts to give the line just three commonly interchangeable names. Note that the ground has to be common (connected together) between your external supply and the Arduino. A motor is basically and electromagnet or coil, in electronic terms this is an inductor. When you suddenly remove the power, that is turn it off, the magnetic field collapses