LESSON 9: DC MOTOR

INTRODUCTION

A DC motor (Direct Current motor) is the most common type of motor. DC motors normally have just two leads, one positive and one negative. If you connect these two leads directly to a battery, the motor will rotate. If you switch the leads, the motor will rotate in the opposite direction.

To drive a DC motor you need a larger amount of current than Arduino board can give. For that reason you must use a transistor. Transistors have limits and maximum specs, just be sure those values are enough for your use. The transistor we are using for this tutorial is 2N2222 and is rated at 40V and 200mA, it just perfect for one toy dc motor.

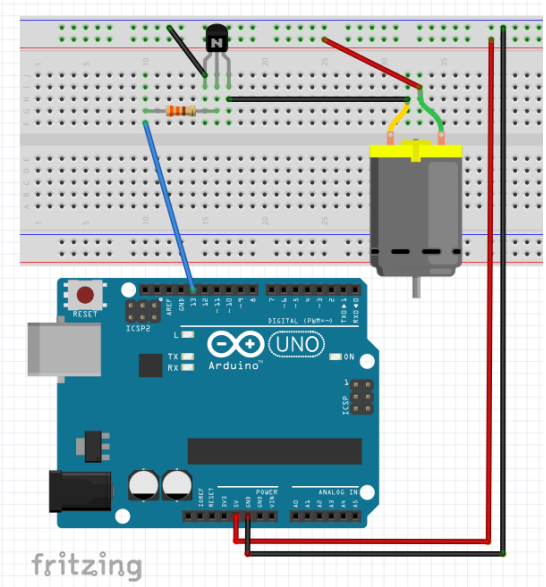
Warning – Do not drive the motor directly from Arduino board pins. This may damage the board. Use a driver Circuit or an IC.

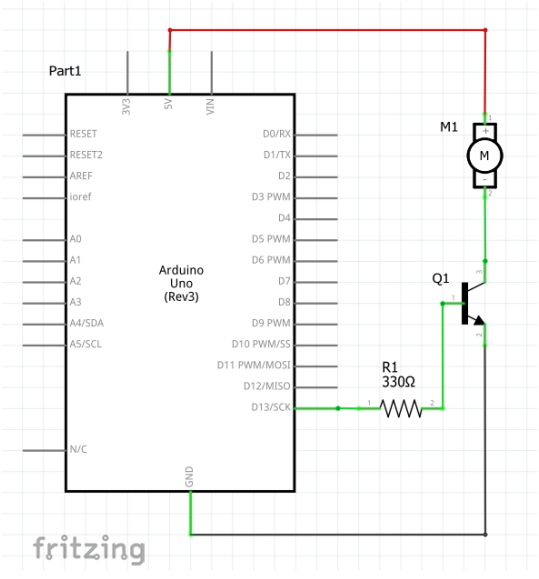
COMPONENTS

- 1x Arduino UNO board
- 1x 2N2222 Transistor
- 1x 3V miniature brush motor w/o gear
- 1x 330Ω Resistor
- Breadboard
- Jumper wire

CONNECTION

STEP 1: The circuit. The breadboard and schematic of the circuit I constructed can be seen below.

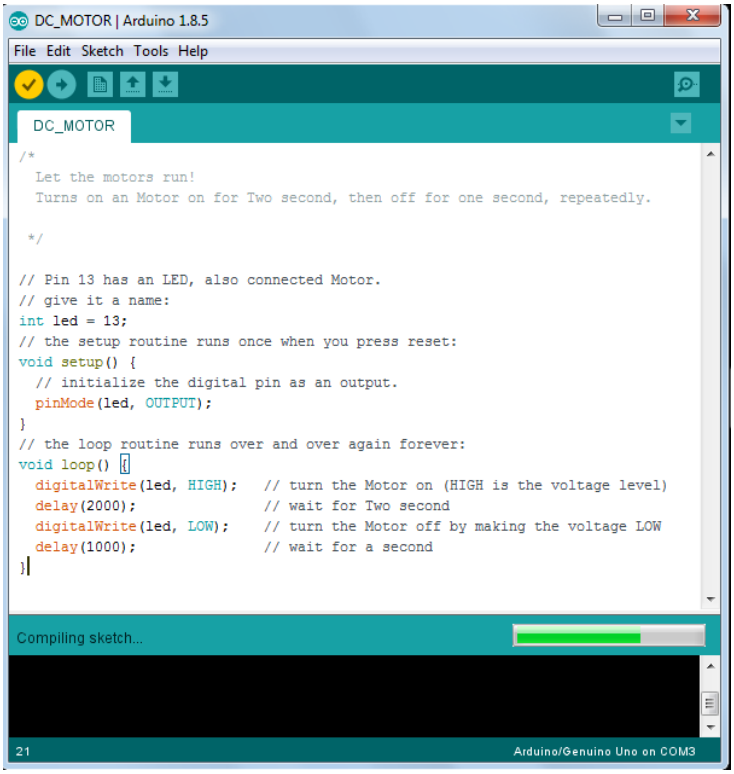




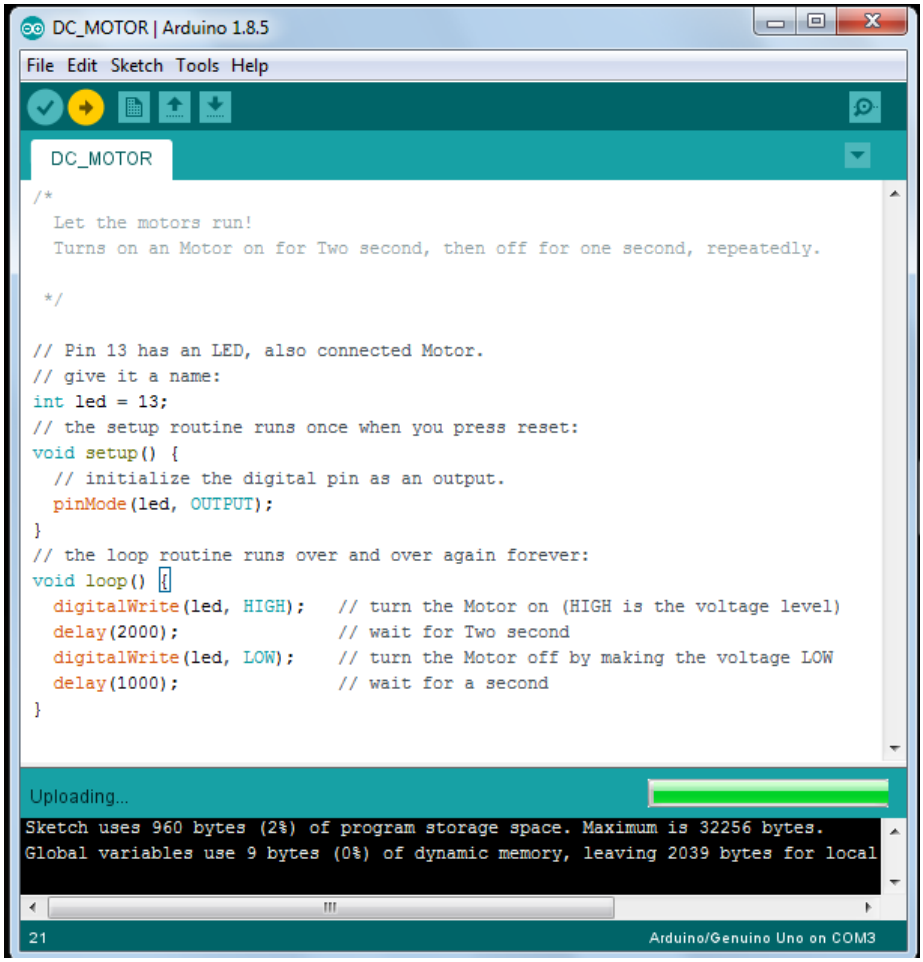
STEP 2: Program

```
/*
  Let the motors run!
  Turns on an Motor on for Two second, then off for one second, repeatedly.

 */

// Pin 13 has an LED, also connected Motor.
// give it a name:
int led = 13;
// the setup routine runs once when you press reset:
void setup() {
  // initialize the digital pin as an output.
  pinMode(led, OUTPUT);
}
// the loop routine runs over and over again forever:
void loop() {
  digitalWrite(led, HIGH);   // turn the Motor on (HIGH is the voltage level)
  delay(2000);               // wait for Two second
  digitalWrite(led, LOW);    // turn the Motor off by making the voltage LOW
  delay(1000);               // wait for a second
}
```

STEP 3: Compile the code. Click the Verify button on the top left. It should turn orange and then back to blue.



STEP 4: Upload the sketch to Arduino UNO. Click the Upload button. It will also turn orange and then blue once the sketch has finished uploading to your Arduino board.



RESULT: Motor on for Two second, then off for one second, repeatedly.