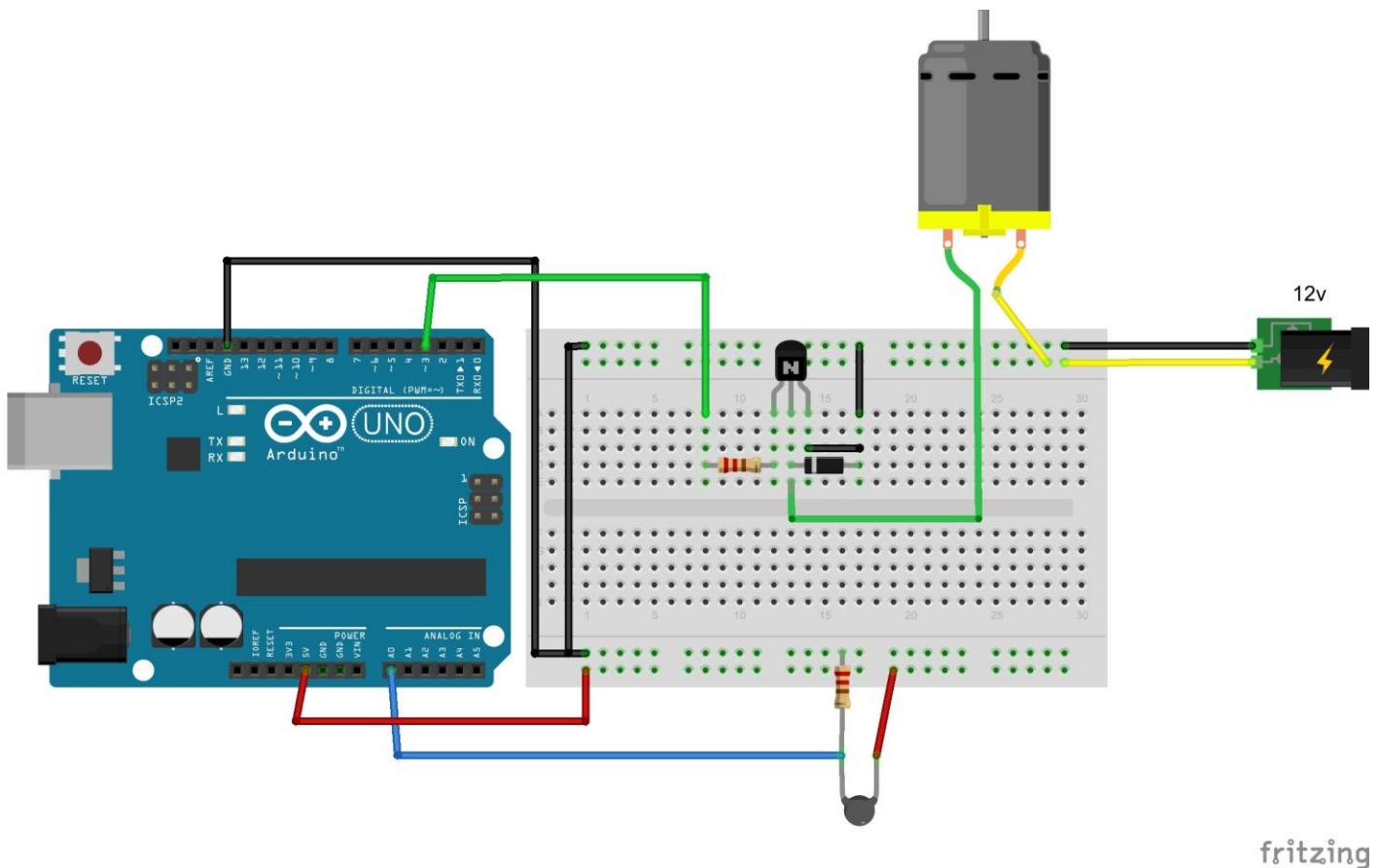# Control Speed of DC FAN Using Arduino PID Library

fritzing

The circuit looks like this but can be changed. The dc fan motor connected to PWM 3 and thermistor connected with pin A0. The thermistor check the temperature of a device that heated by nearby heater so fan cools the device to get the specific temperature.

```
#include <PID_v1.h>
double Setpoint, Input, Output;  //not there in original sketch
//Define Variables we'll be connecting to double Setpoint, Input, Output;
//Define the aggressive and conservative Tuning Parameters
double aggKp = 4, aggKi = 0.2, aggKd = 1;
double consKp = 1, consKi = 0.05, consKd = 0.25;
//double consKp=2, consKi=5, consKd=1;

//Specify the links and initial tuning parameters
PID myPID(&Input, &Output, &Setpoint, consKp, consKi, consKd, REVERSE);

void setup()
{
  Serial.begin(9600);
    Setpoint = 100;
  myPID.SetOutputLimits(0, 255); //MIN,MAX
  //turn the PID on
```

```
  myPID.SetMode(AUTOMATIC);  // MANUAL
  myPID.SetControllerDirection(REVERSE);  // DIRECT
}


void loop()
{
  int sensorValue = analogRead(0);
  Input = map(sensorValue, 0, 1023, 0, 255);

  double gap = abs(Setpoint - Input); //distance away from setpoint
  if (gap < 10)
  { //we're close to setpoint, use conservative tuning parameters
    myPID.SetTunings(consKp, consKi, consKd);
  }
  else
  {
    //we're far from setpoint, use aggressive tuning parameters
    myPID.SetTunings(aggKp, aggKi, aggKd);
  }

  myPID.Compute();
  analogWrite(3, Output);
  Serial.print(" PWM = ");
  Serial.print(Output,0);
  Serial.print("      sensor value =  ");
  Serial.print(sensorValue);
  Serial.print("     Input =");
  Serial.println(Input,0);
}
```