

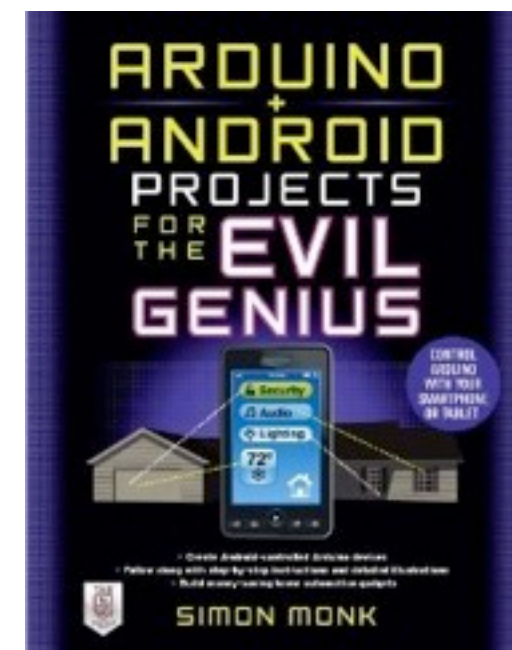
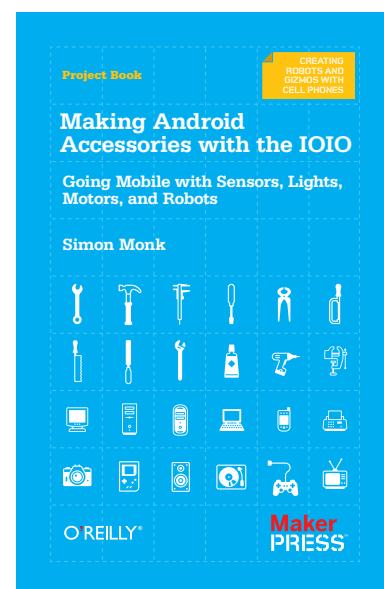
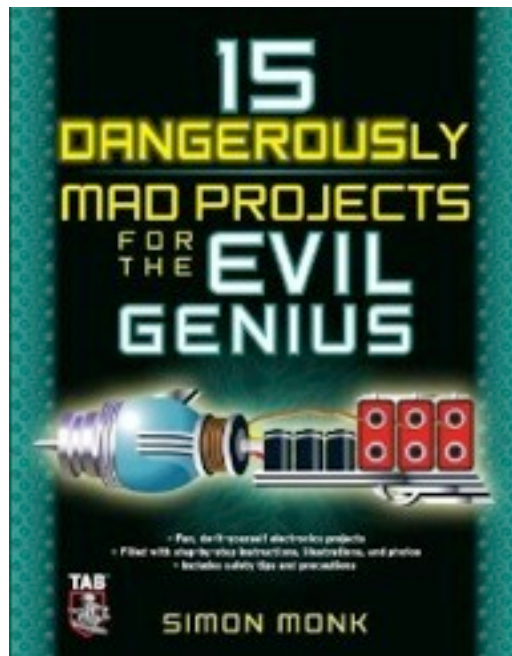
# 20 Things to do with your Arduino

Simon Monk



# I am

- Simon Monk
- Author
- Arduino Enthusiast

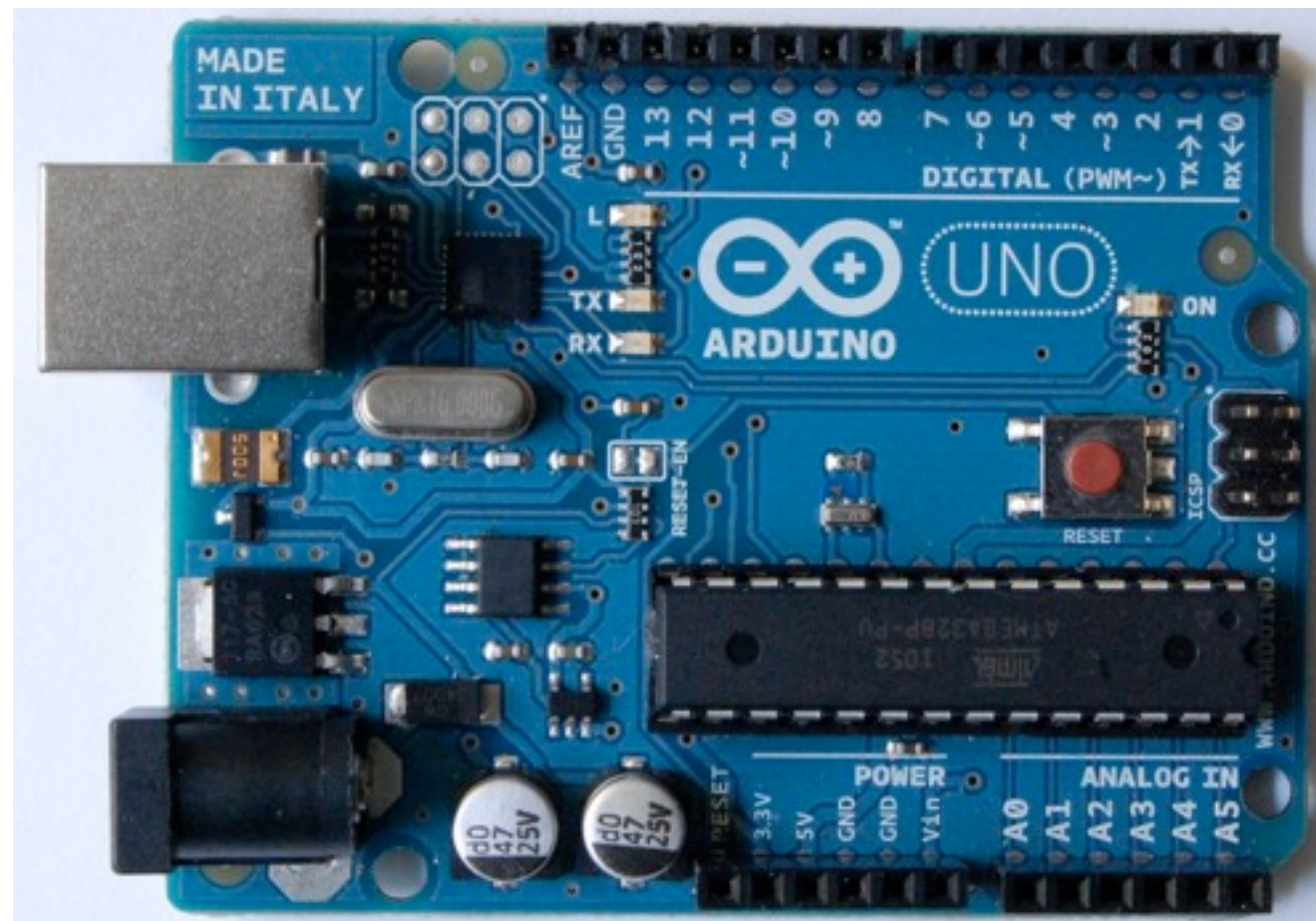


# What is an Arduino?

Digital Inputs / Outputs


USB

Power



Analog Inputs

# Arduino Software



The screenshot shows the Arduino IDE interface. The title bar reads "blink | Arduino 1.0". The toolbar contains icons for checking, running, saving, uploading, and downloading. A tab labeled "blink" is active. The code editor displays the following C++ code:

```
const int ledPin = 8;

void setup()
{
  pinMode(ledPin, OUTPUT);
}

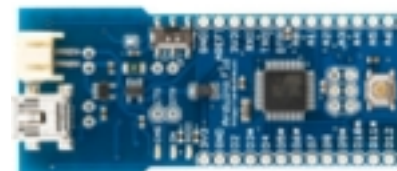
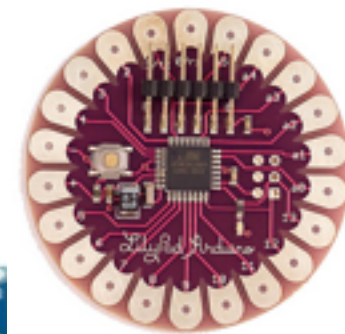
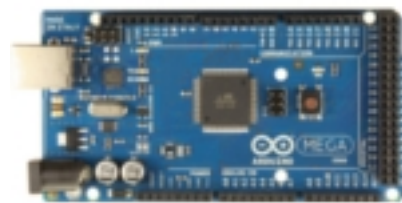
void loop()
{
  digitalWrite(ledPin, HIGH);
  delay(500);
  digitalWrite(ledPin, LOW);
  delay(500);
}
```

The line `digitalWrite(ledPin, HIGH);` is currently selected. Below the code editor is a status bar with a teal background. It displays the message "Done uploading." in white text. Below this, in a black background, it shows "Binary sketch size: 1026 bytes (of a 32256 byte maximum)" in white text. At the bottom, it shows "10" on the left and "Arduino Uno on /dev/tty.usbmodem621" on the right.



# Types of Arduino

- Uno - most popular - all rounder
- Mega - more pins
- LilyPad - wearable
- Fio - wireless
- Mini
- Nano
- Bluetooth
- Pro Versions

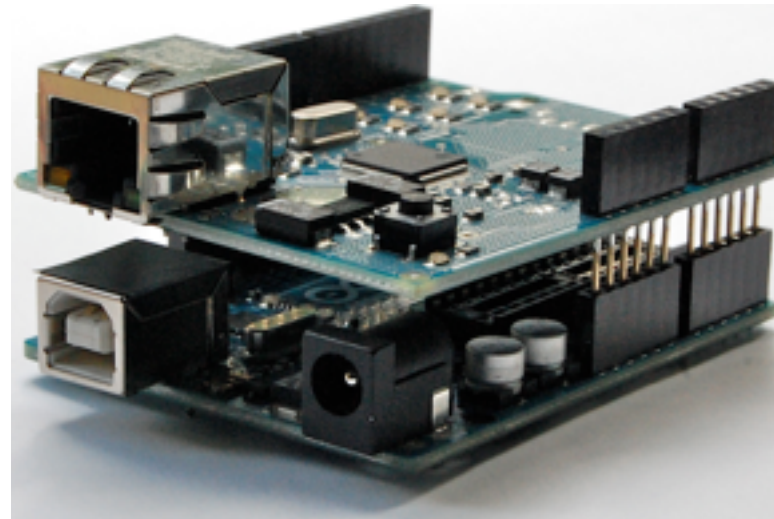


# Other Types of Arduino

- Built-in Ethernet (EtherTen)
- Built-in USB Host (Electric Sheep, USBDroid etc.)
- Drone Piloting (ArduPilot)
- Lighting Control

# Shields

- Ethernet
- Motor Driver
- Relay
- LCD Display
- USB Host
- Sensors
- etc. etc.





# I. Blink an LED

```
blink | Arduino 1.0

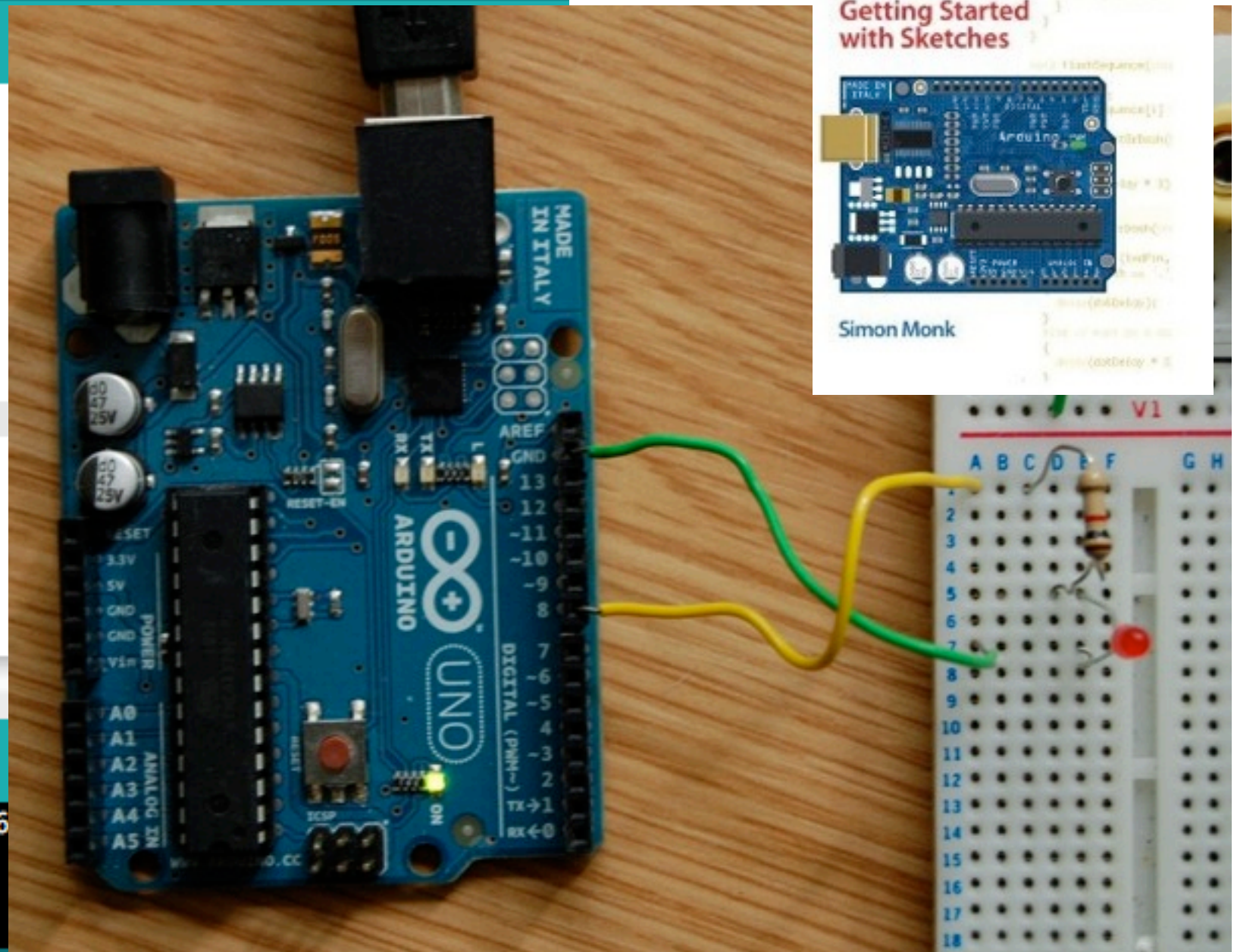
const int ledPin = 8;

void setup()
{
  pinMode(ledPin, OUTPUT);
}

void loop()
{
  digitalWrite(ledPin, HIGH);
  delay(500);
  digitalWrite(ledPin, LOW);
  delay(500);
}

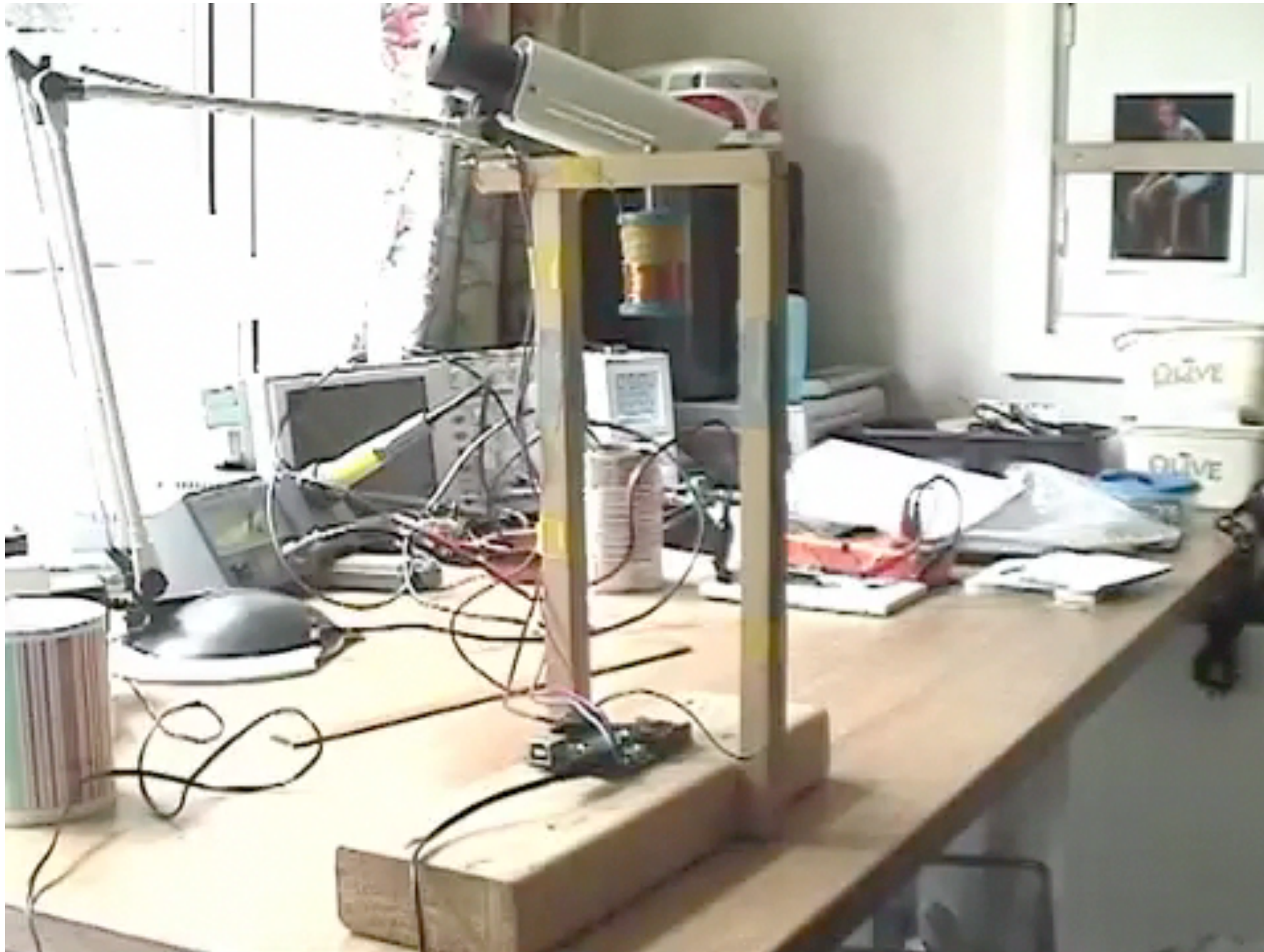
Done uploading.
Binary sketch size: 1026 bytes (of a 32256)

10
Arduino Uno on /dev/tty.usbmodem621
```



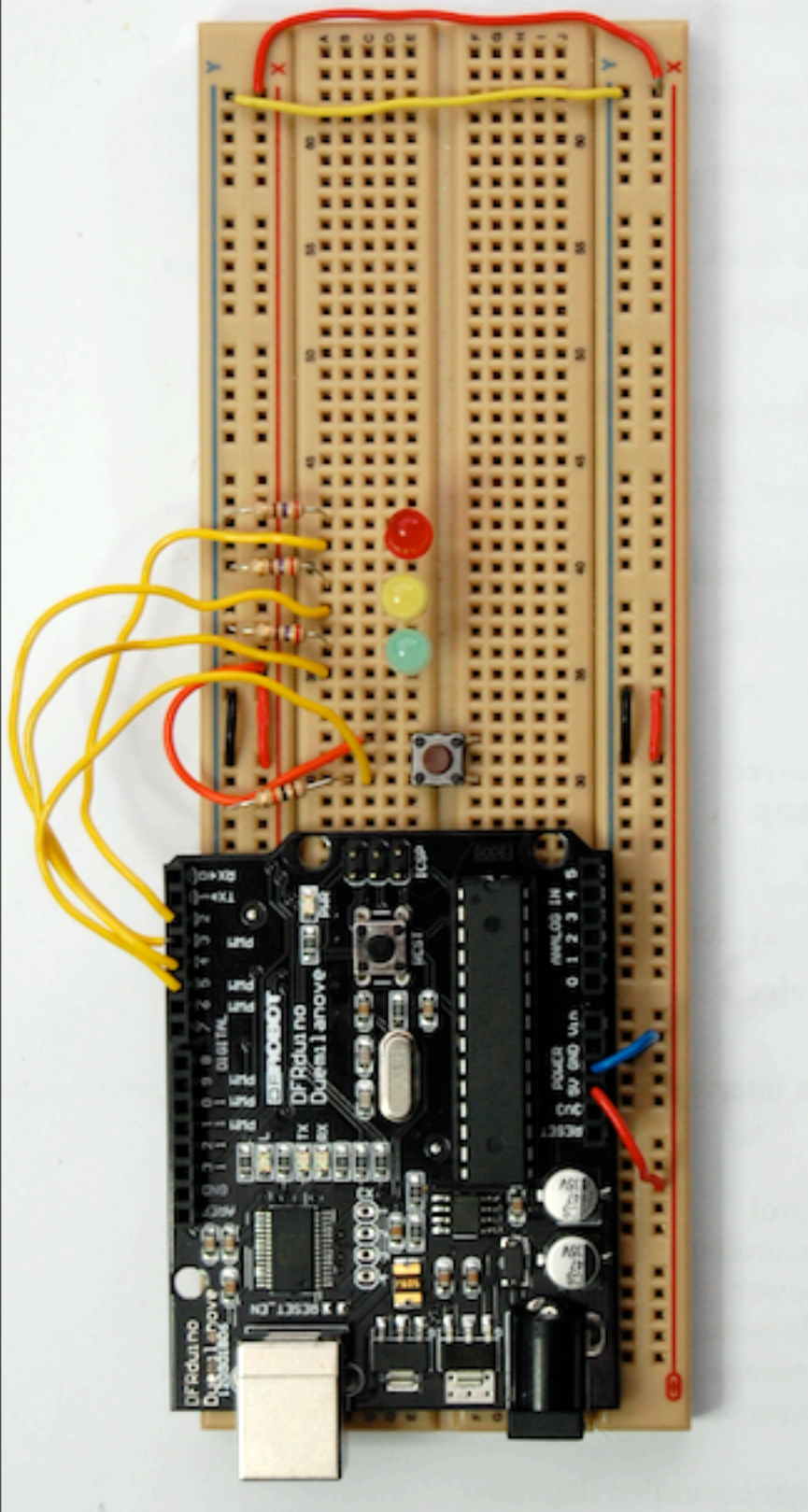


# 2. Levitation Machine





# 3. Make a Traffic Signal



```
Project_05_traffic_signal | Arduino 0022

Project_05_traffic_signal

// Project 5

int redPin = 2;
int yellowPin = 3;
int greenPin = 4;
int buttonPin = 5;

int state = 0;

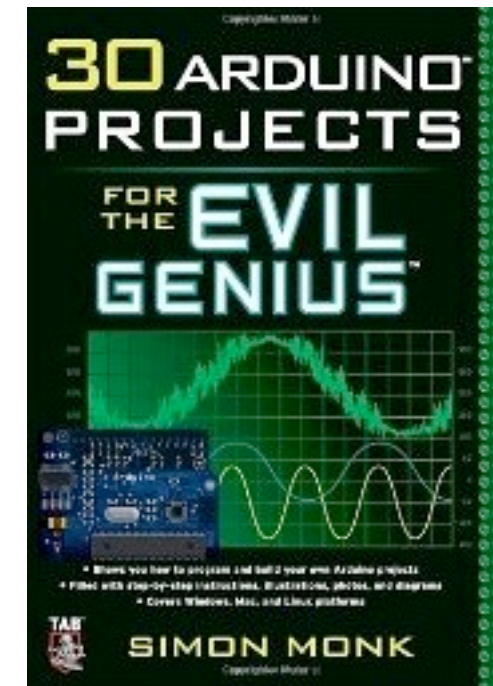
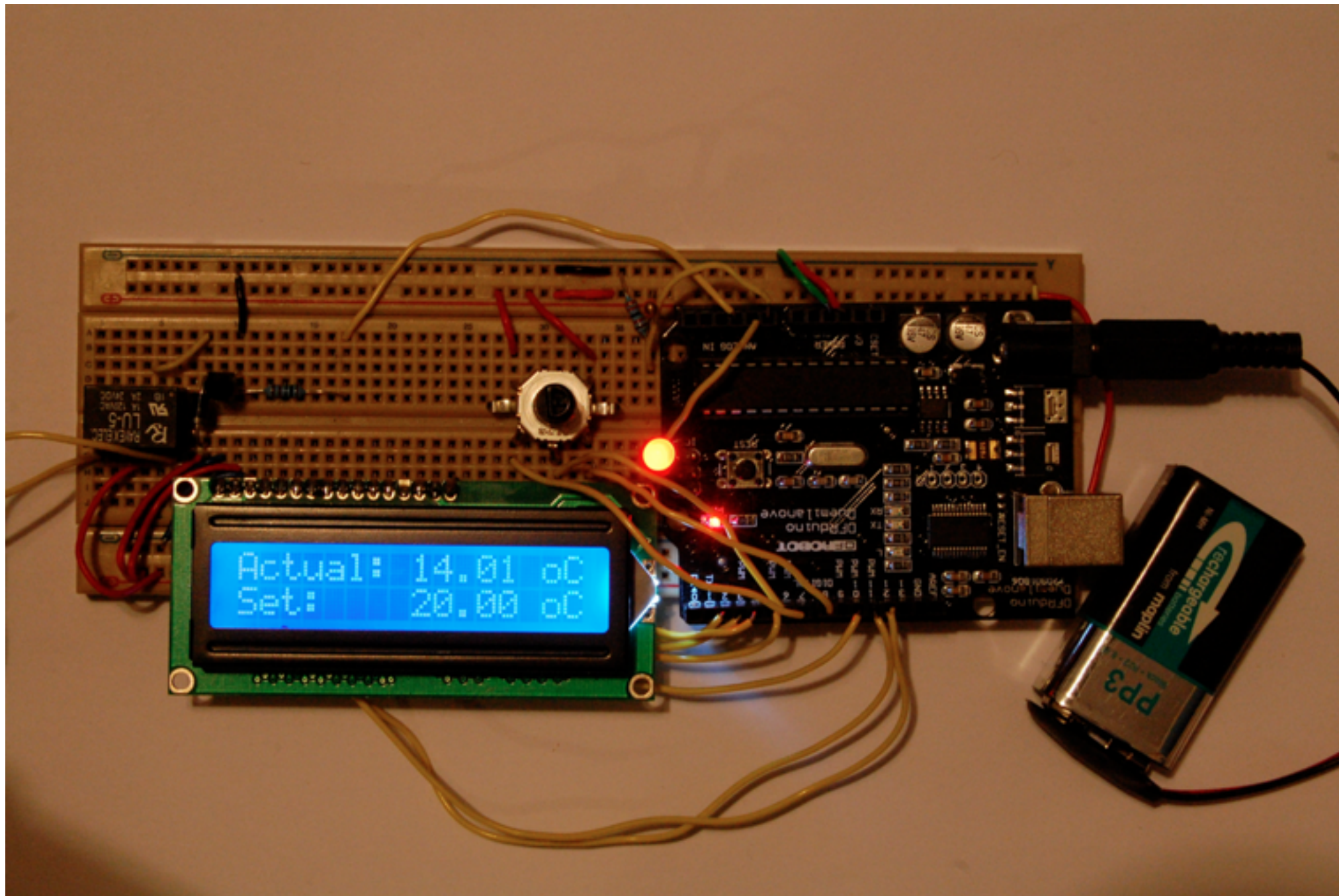
void setup()
{
  pinMode(redPin, OUTPUT);
  pinMode(yellowPin, OUTPUT);
  pinMode(greenPin, OUTPUT);
  pinMode(buttonPin, INPUT);
}

void loop()
{
  if (digitalRead(buttonPin))
  {
    if (state == 0)
    {
      setLights(HIGH, LOW, LOW);
      state = 1;
    }
    else if (state == 1)
    {
      setLights(HIGH, HIGH, LOW);
      state = 2;
    }
  }
}
```



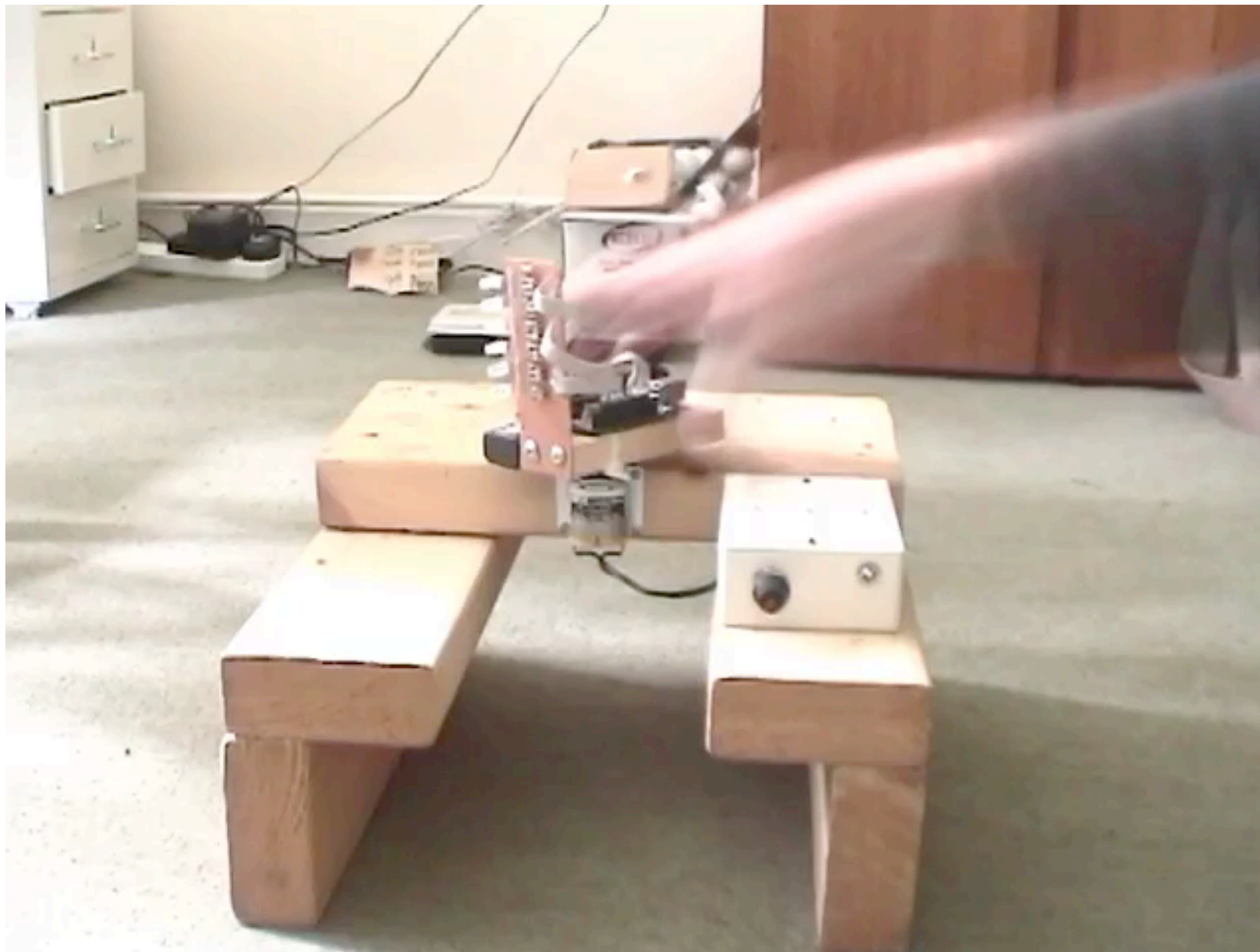


# 4. LCD Thermostat



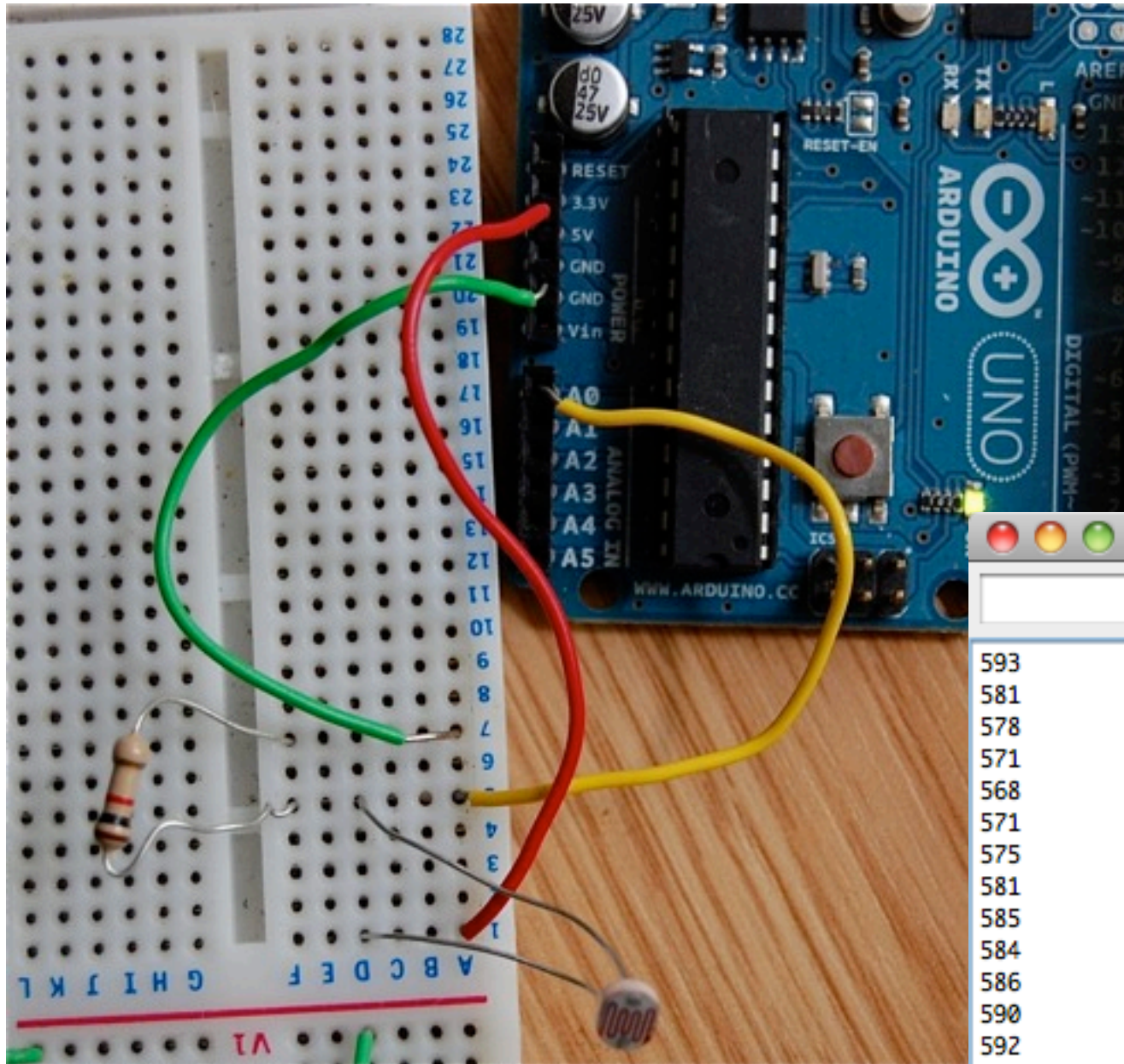


# 5. Persistence of Vision Display





# 6. Measure the Light Level



```
light_level | Arduino 1.0

const int ldrPin = 0;

void setup()
{
  Serial.begin(9600);
}

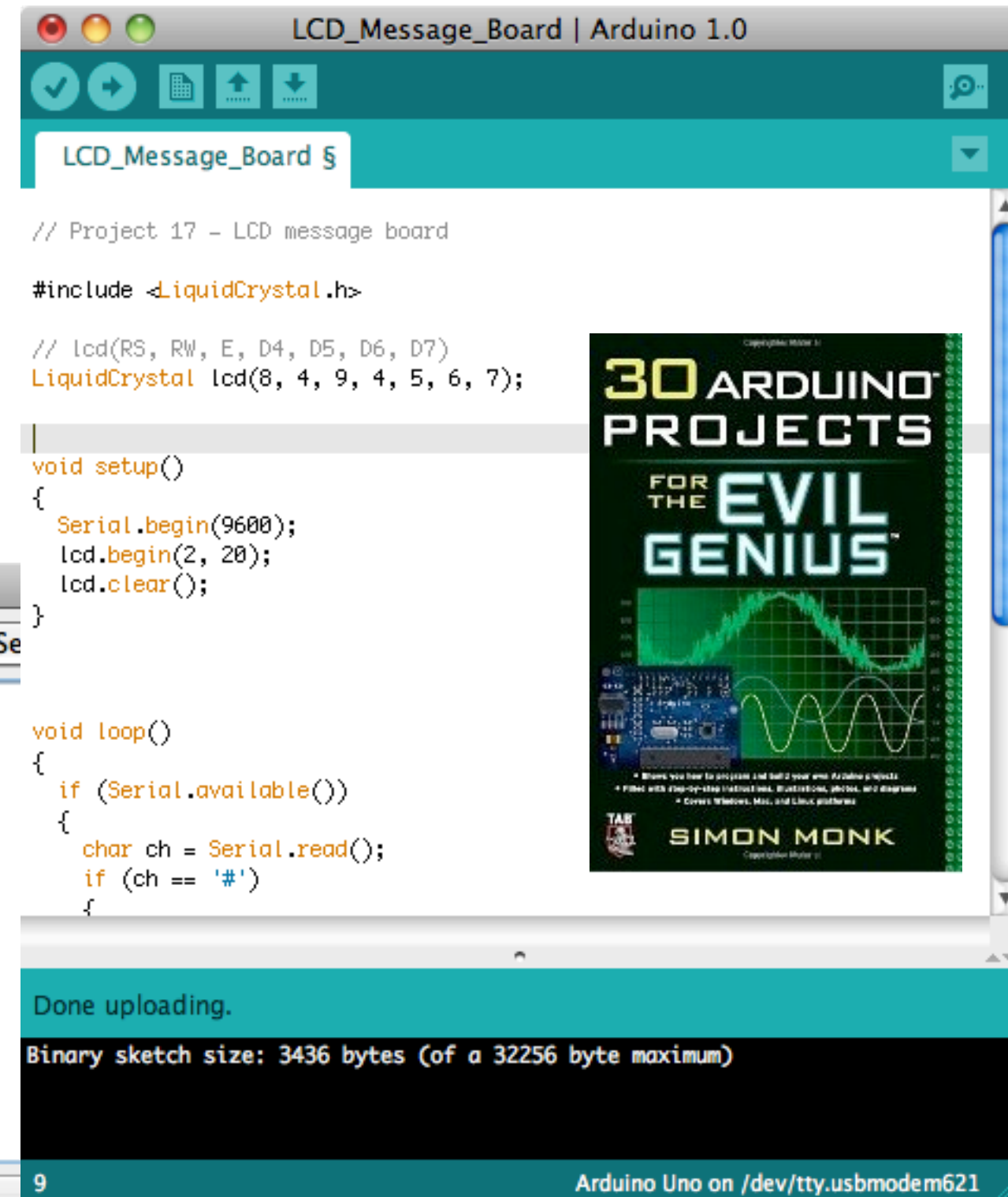
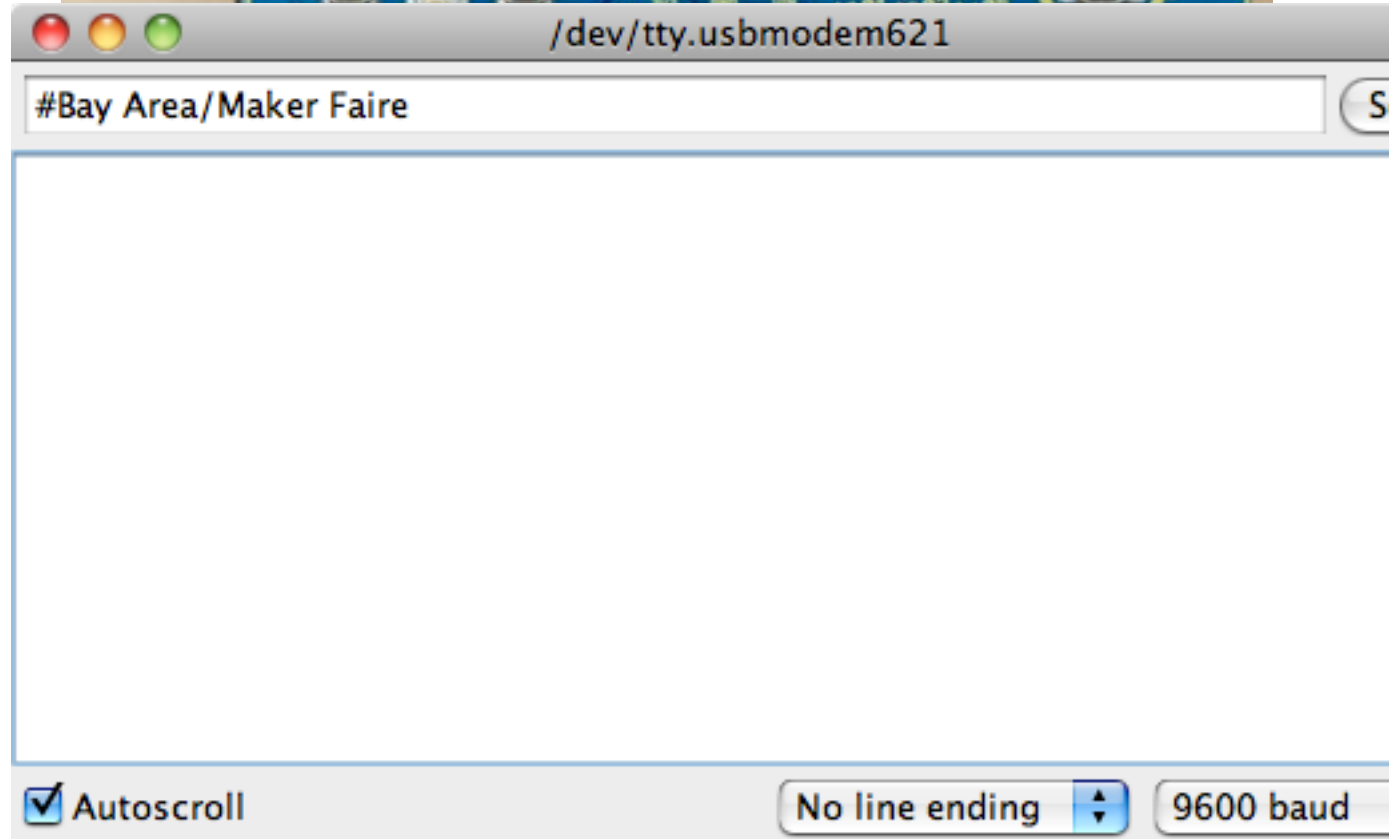
void loop()
{
  Serial.println(analogRead(ldrPin));
  delay(1000);
}

Done uploading.
Binary sketch size: 2654 bytes (of a 32256 byte maximum)

11 Arduino Uno on /dev/tty.usbmodem621

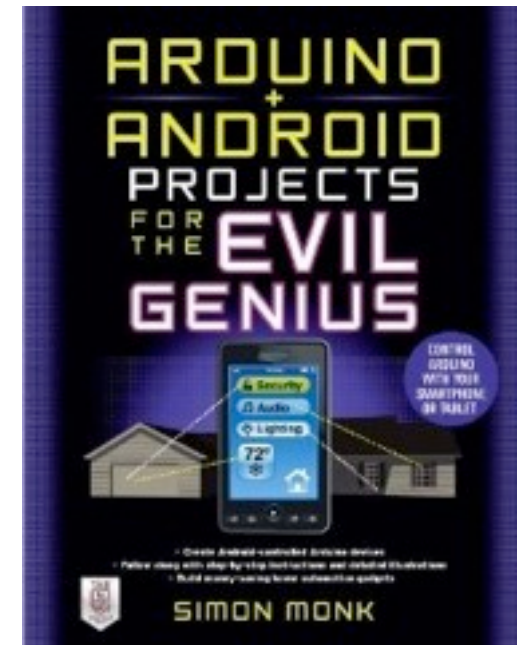
Autoscroll No line ending 9600 baud
```

# 7. USB Message Board



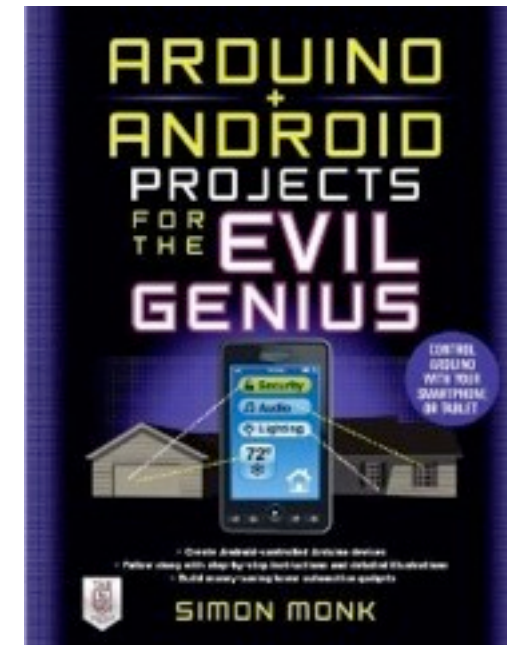


# 8. RFID Door Lock



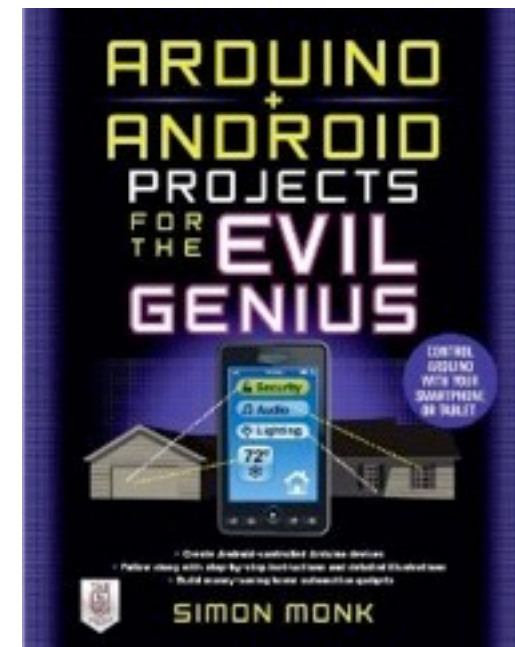
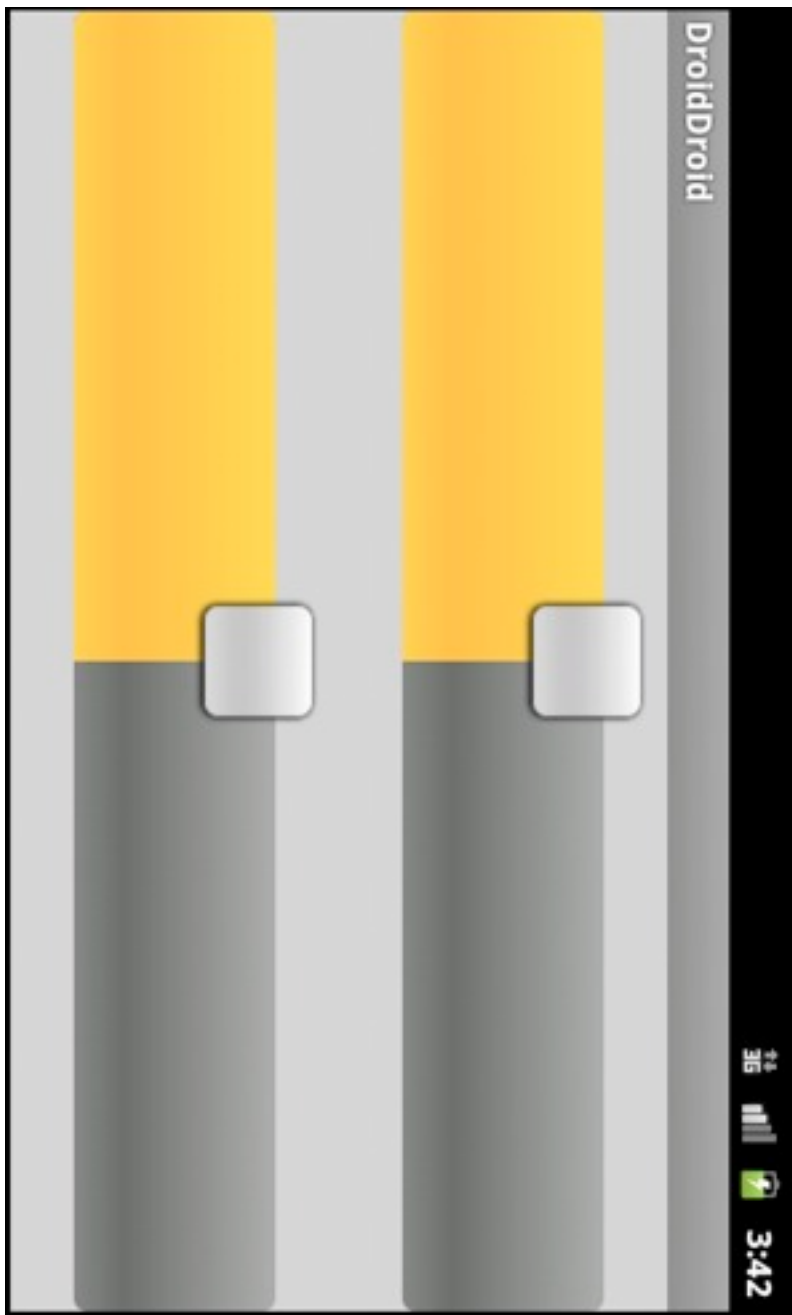
# 9. Ethernet Flags

- Servos
- Ethernet Shield

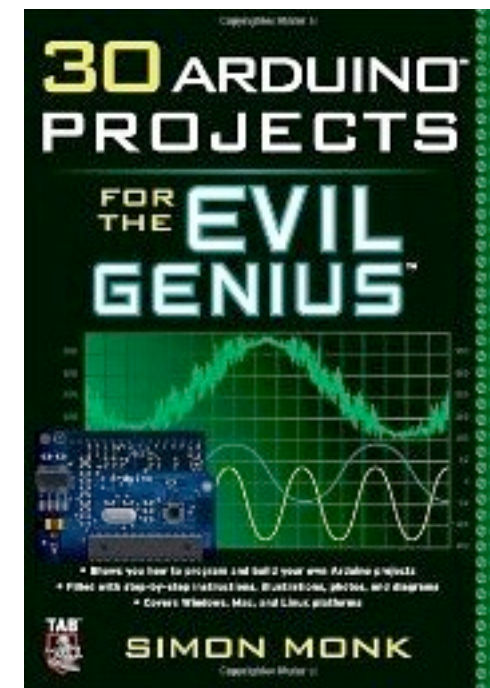
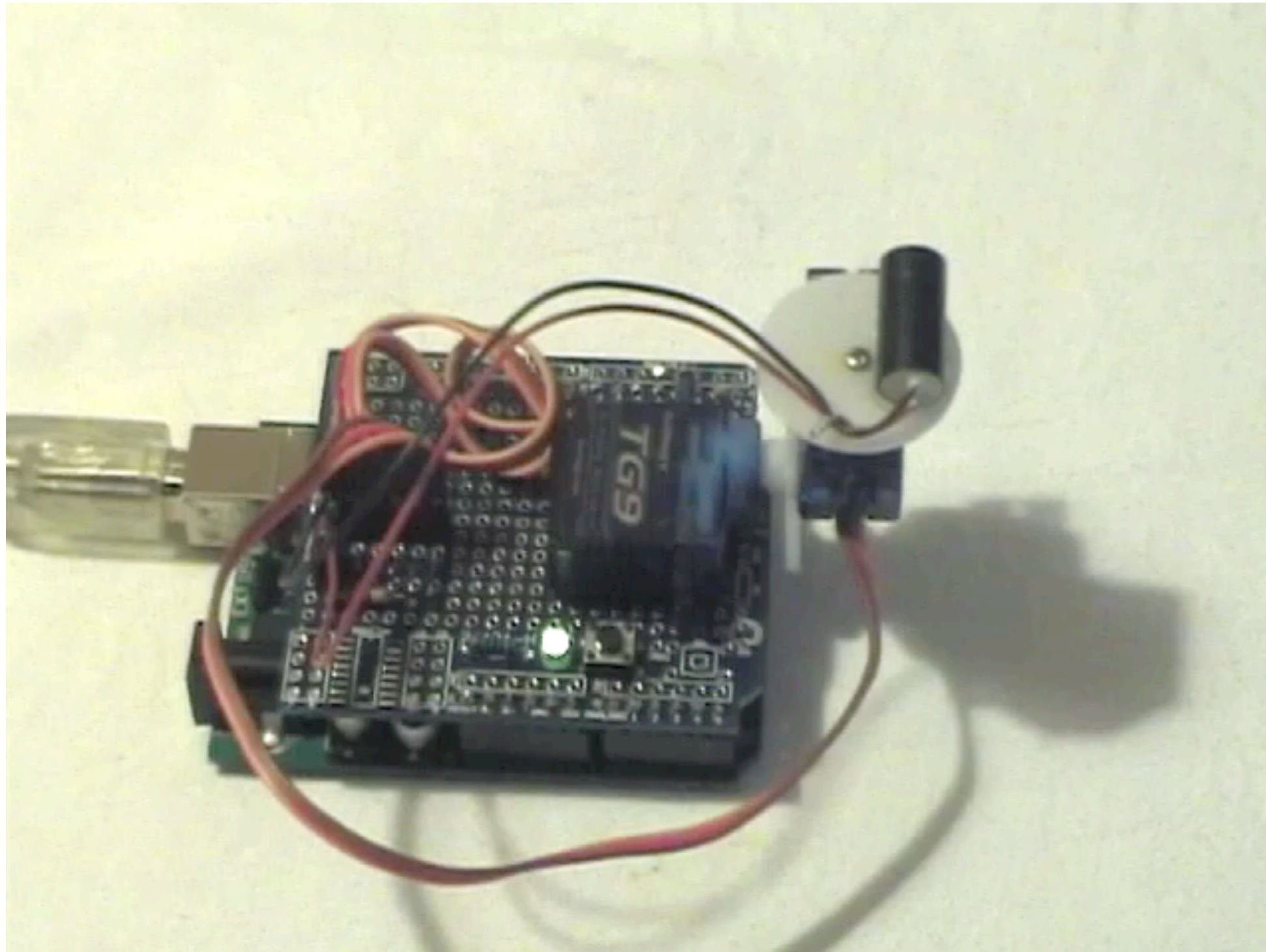




# 10. Bluetooth Robot

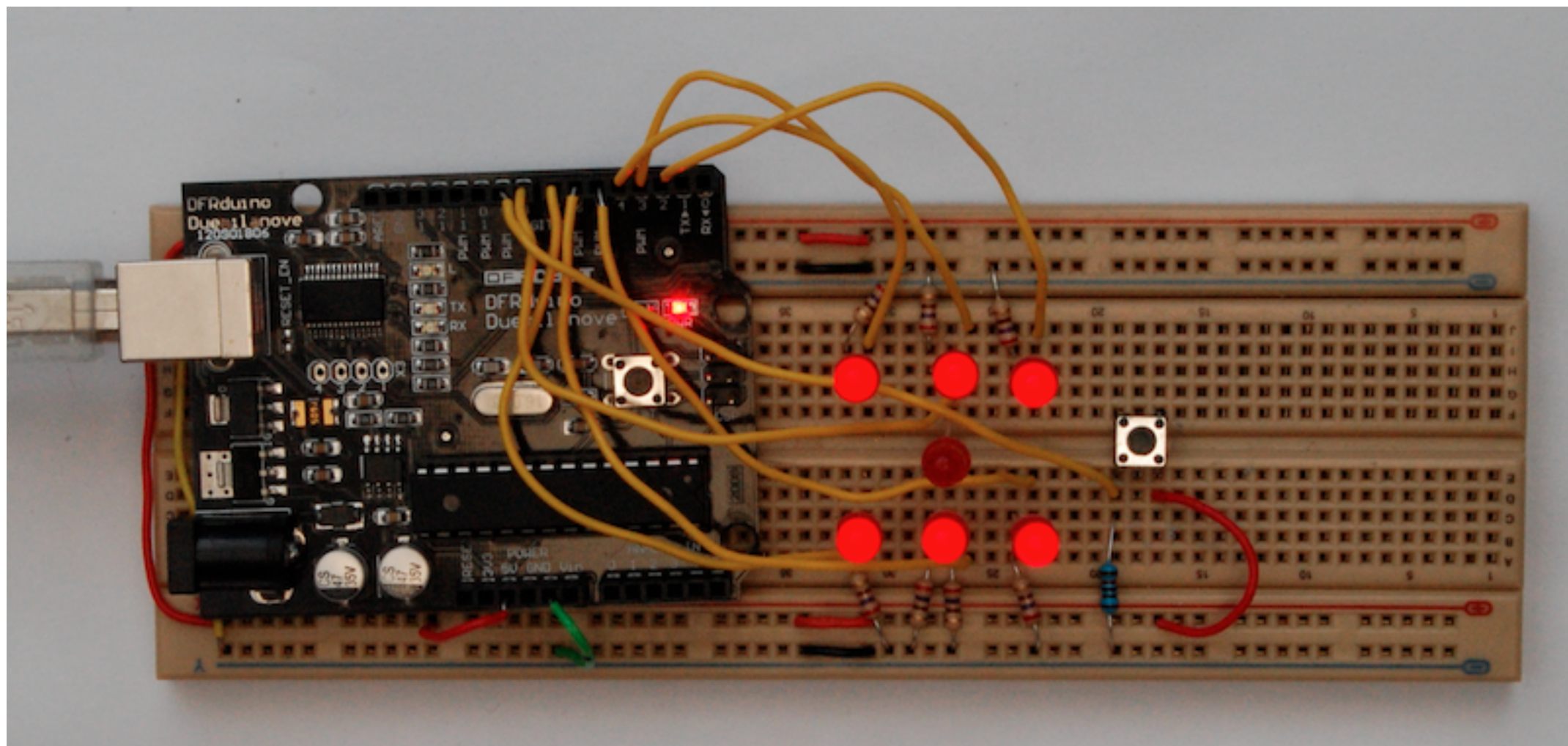
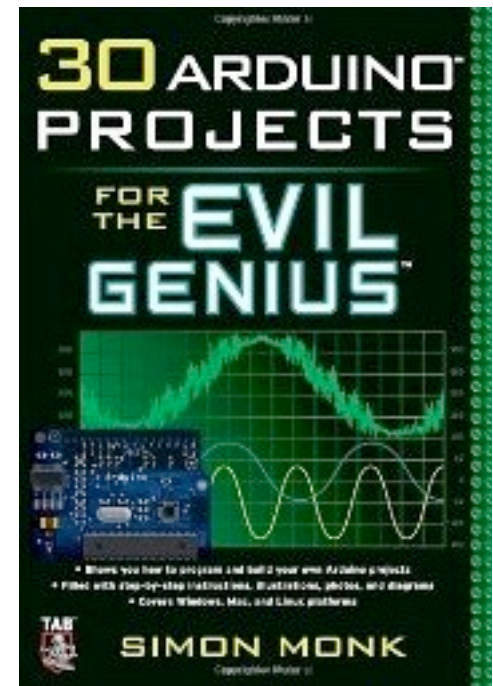


# 11. Servo Controlled Laser



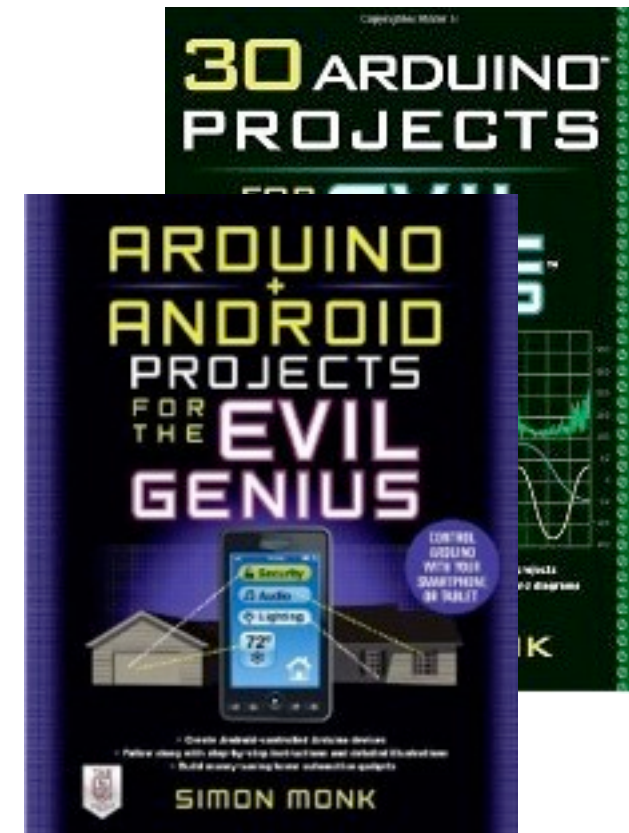
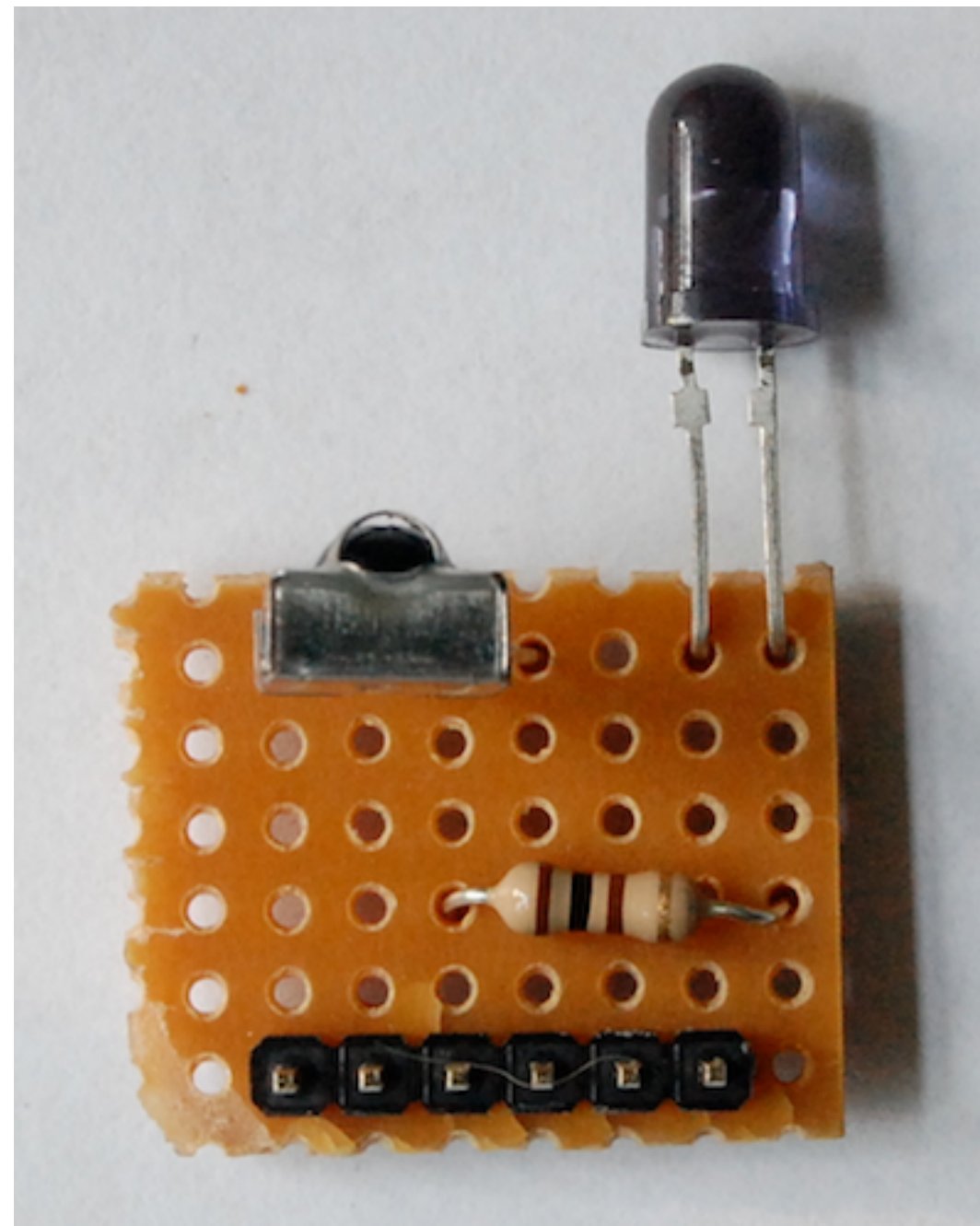
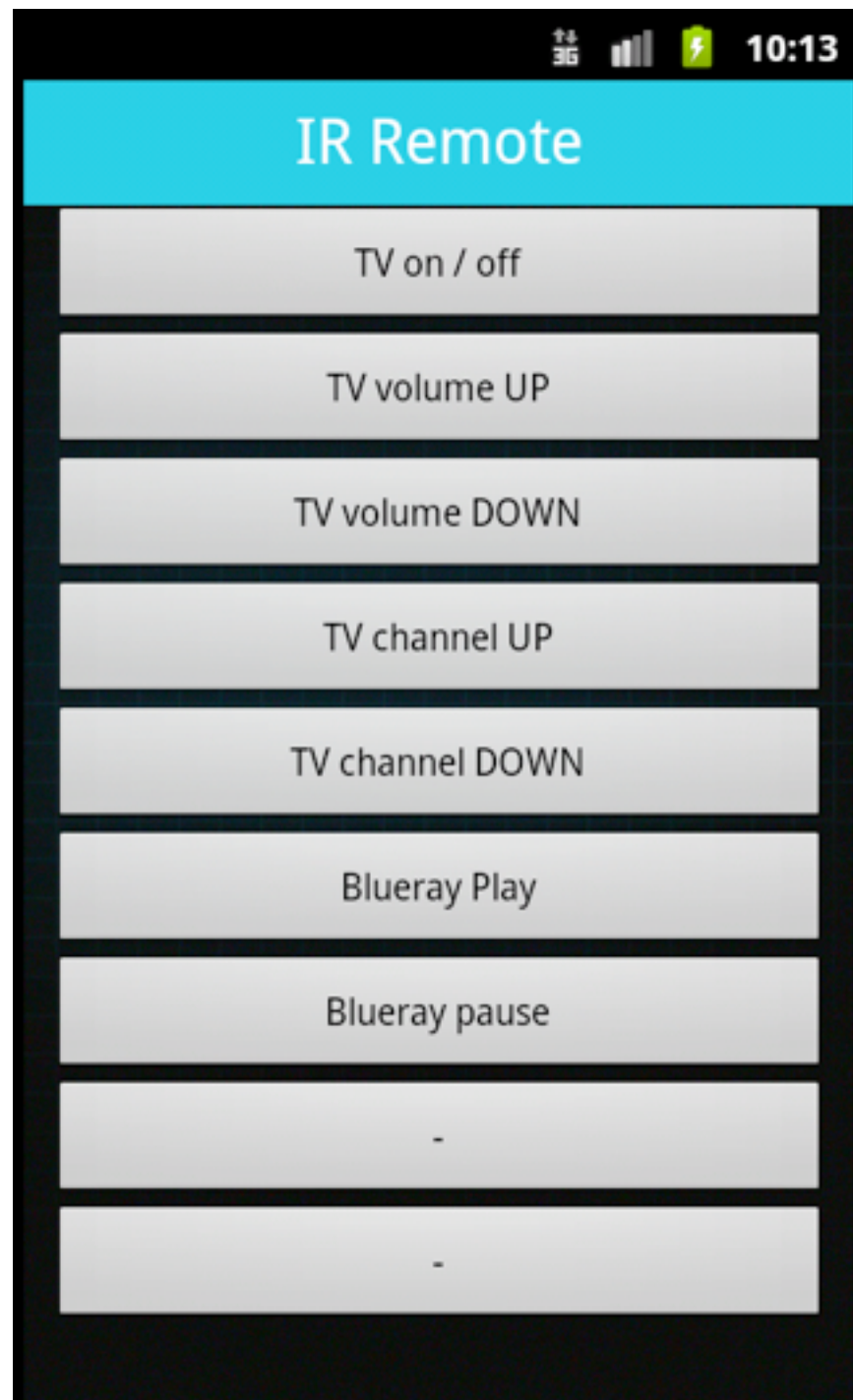


# 12. LED Dice



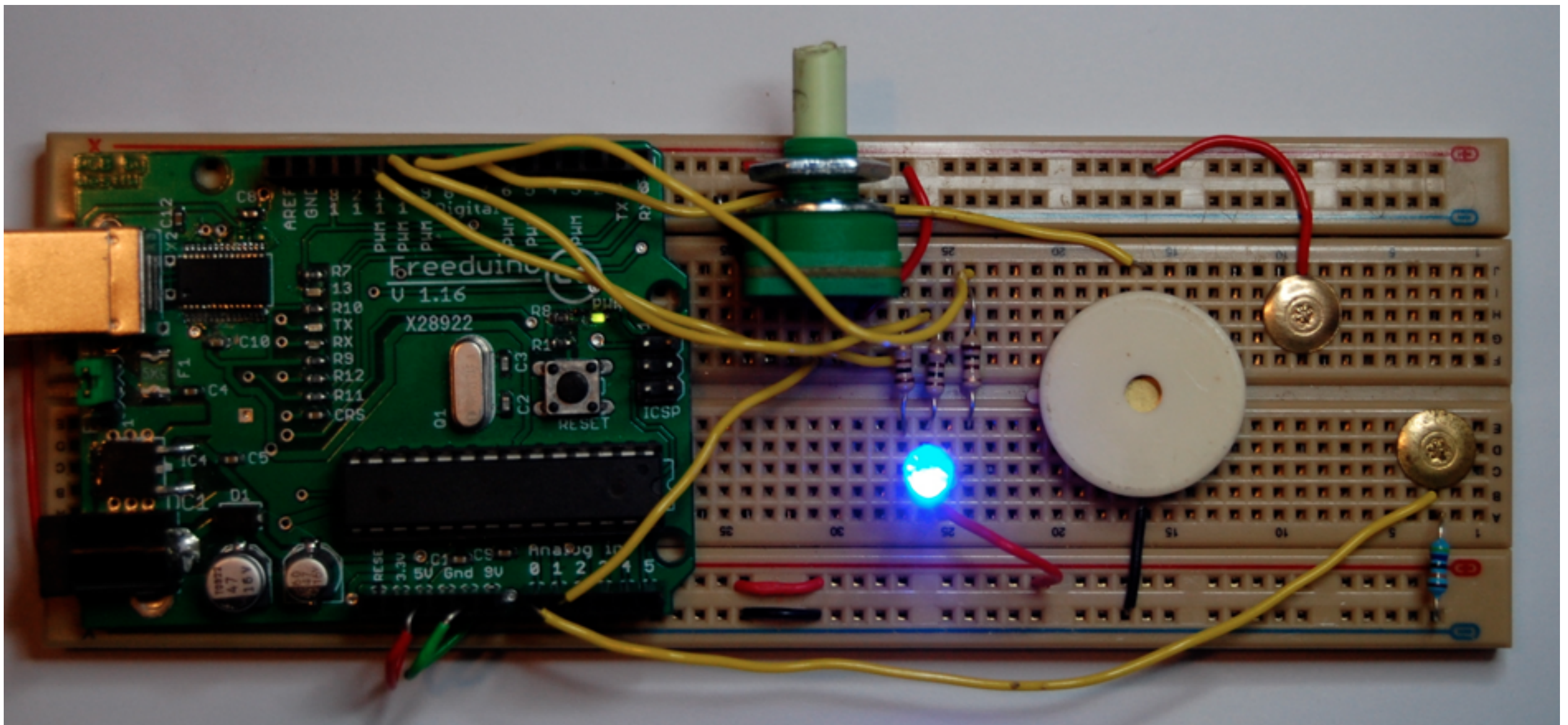
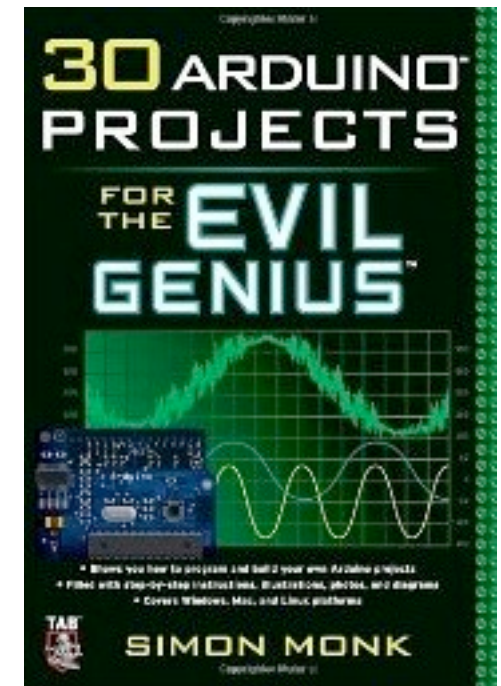


# I 3. Programmable IR Remote



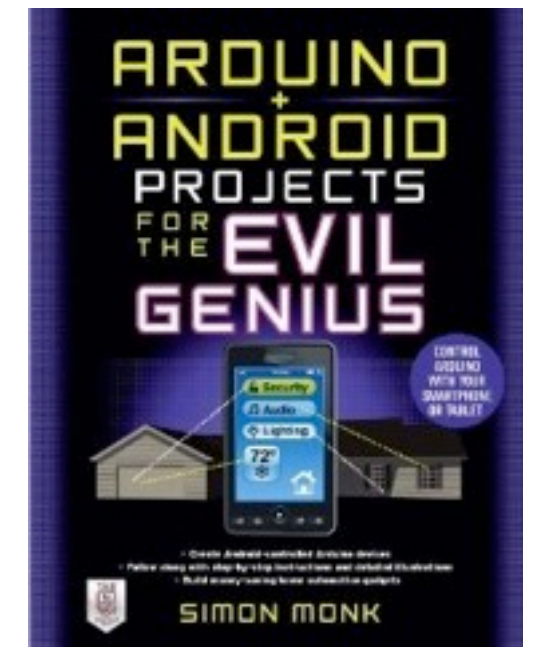
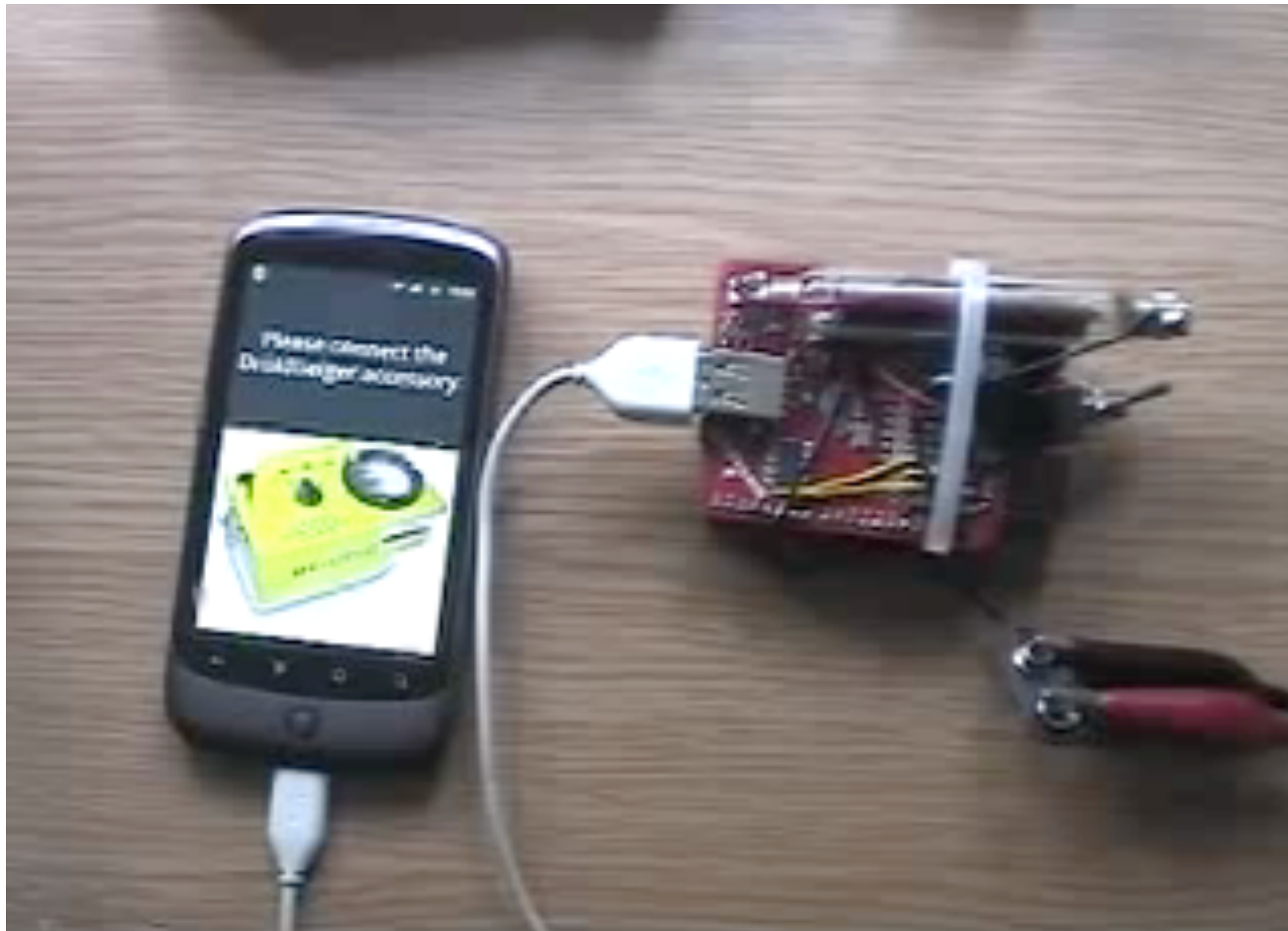


# I 4. Lie Detector





# 15. Geiger Counter



# 16. Oscilloscope

```
Project_18_Oscilloscope | Arduino 0022

Project_18_Oscilloscope

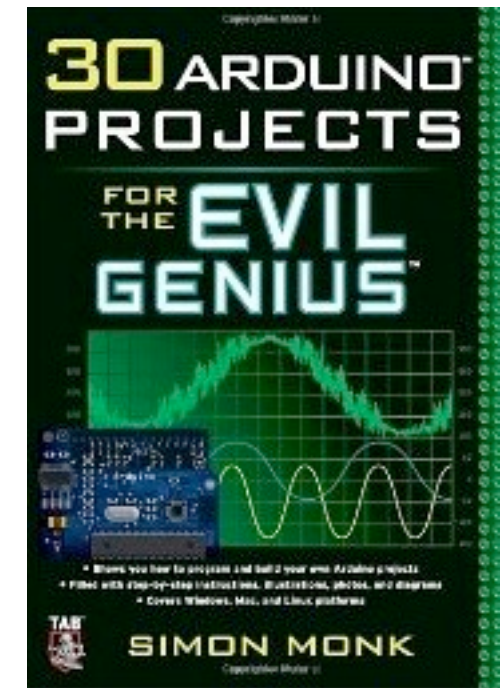
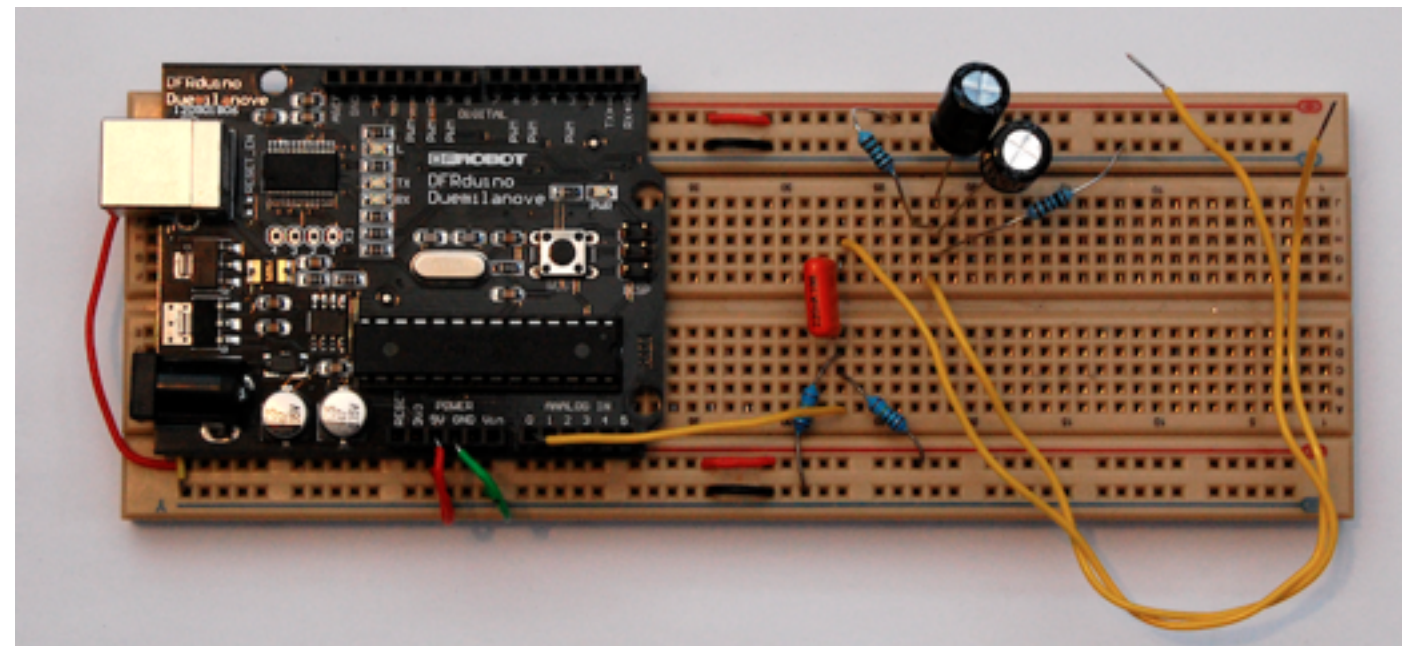
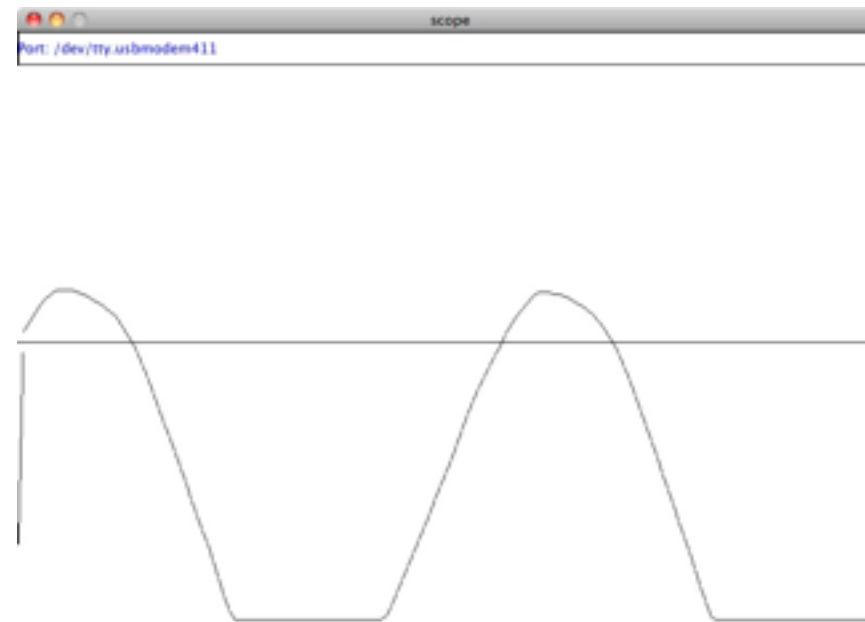
// Project 18 - Oscilloscope

#define CHANNEL_A_PIN 0

void setup()
{
  Serial.begin(115200);
  //Serial.begin(9600);
}

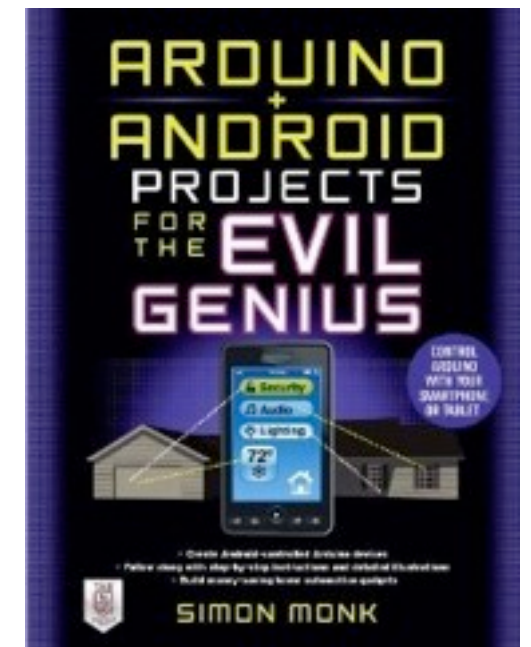
void loop()
{
  int value = analogRead(CHANNEL_A_PIN);
  value = (value >> 2) & 0xFF;
  Serial.print(value, BYTE);
  delayMicroseconds(100);
}
```

18

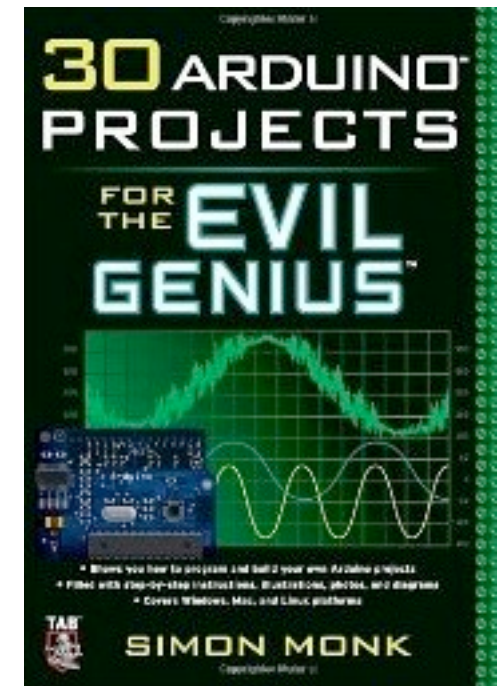




# 17. Android Light Show

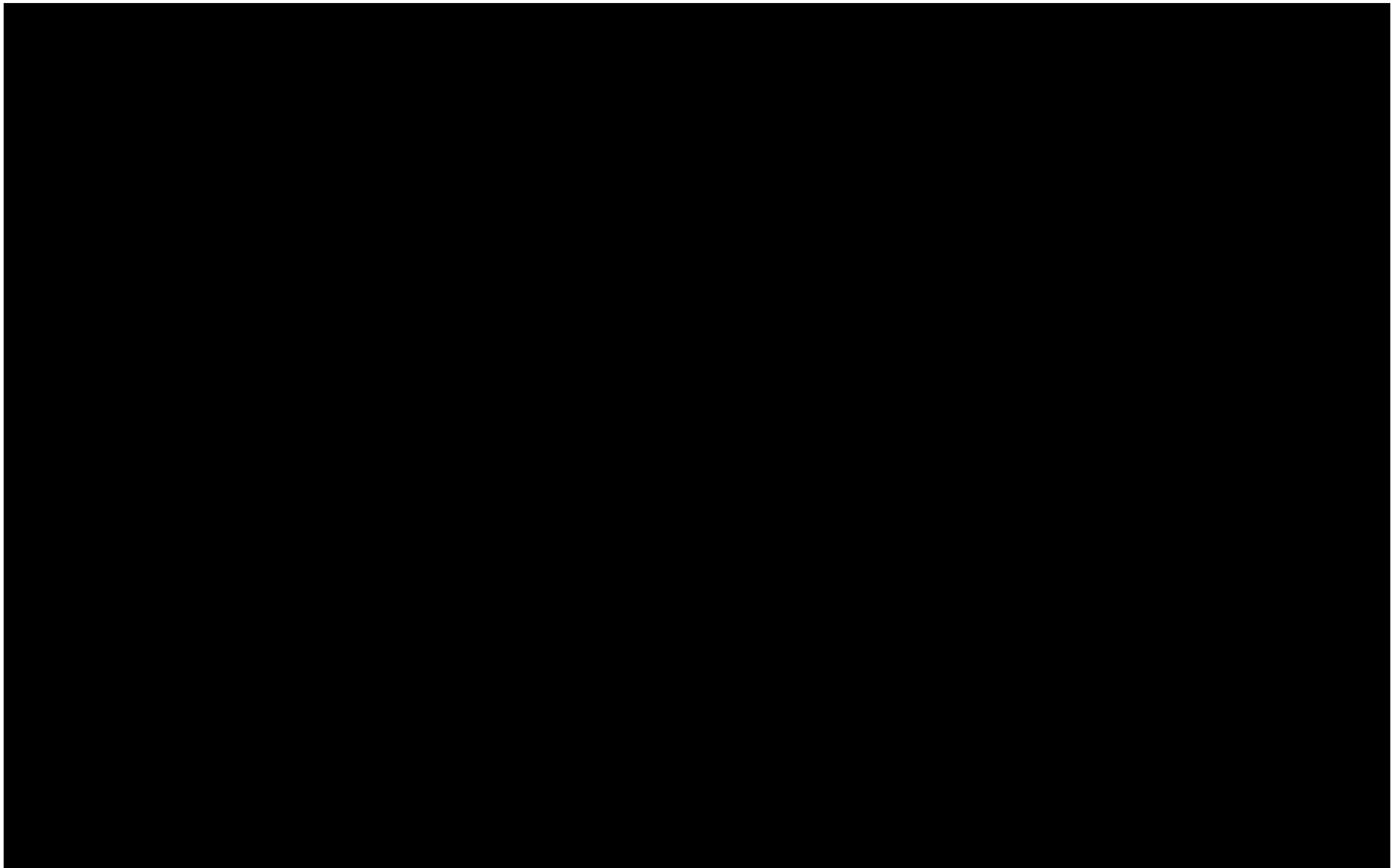


# I 8. Lilypad Binary Clock

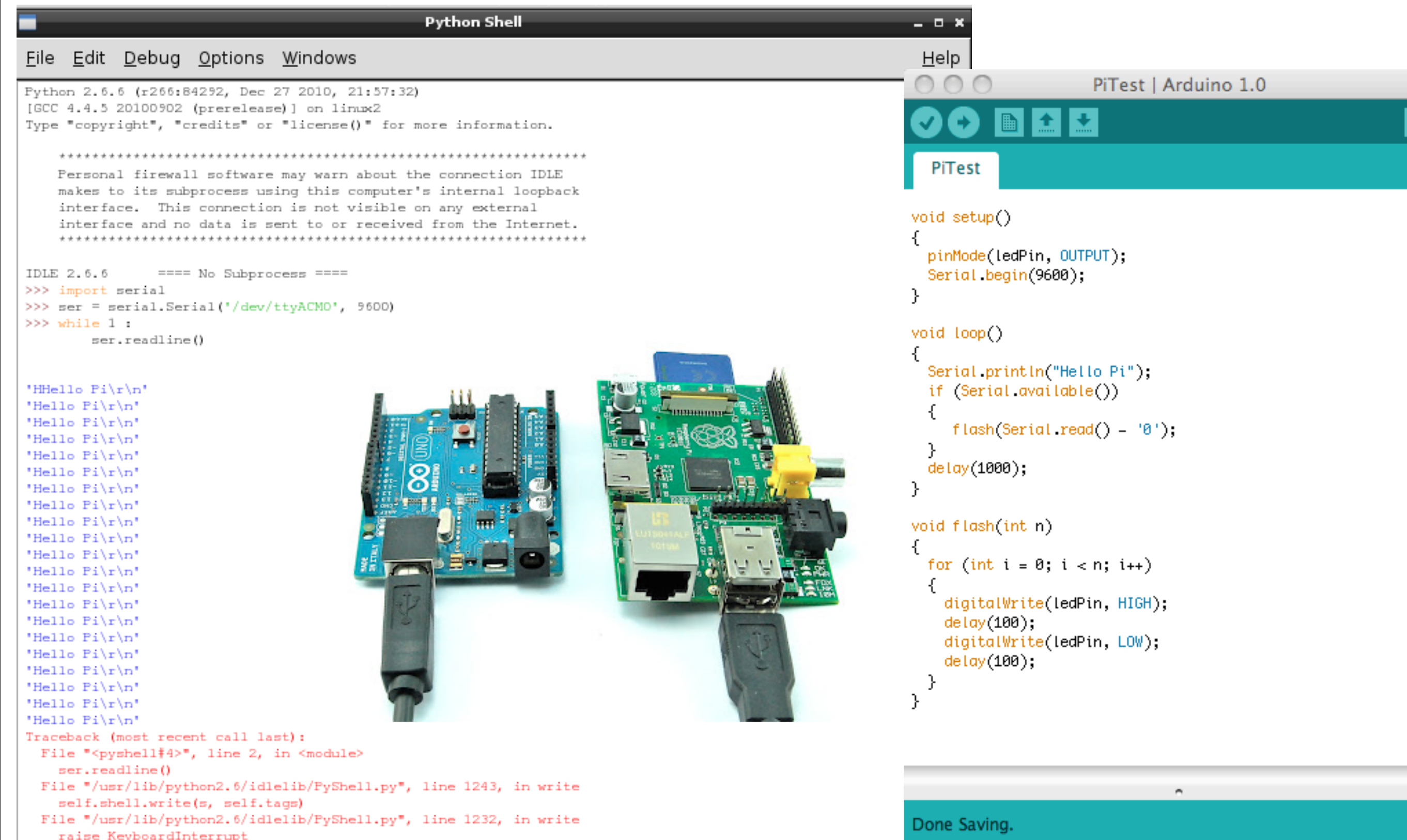




# 19. Hen House Door



# 20. Talk to a Raspberry Pi





# Resources

- Arduino Forum - [www.arduino.cc/forum](http://www.arduino.cc/forum)
- Element14 Arduino Community
- Arduino Playground - [www.arduino.cc/playground](http://www.arduino.cc/playground)
- My Arduino books - [www.simonmonk.org](http://www.simonmonk.org)
  - Programming Arduino
  - 30 Arduino Projects for the Evil Genius
  - Arduino + Android Projects for the Evil Genius
- Other books
  - Getting Started with Arduino
  - Arduino Cookbook

# Contact

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- Blog: [www.doctormonk.com](http://www.doctormonk.com)
- these slides are there now