physical computing .2 – Day 3

NCTU Taiwan
playaround workshop
microplayground

2008

kiilo ||| dusjagr

overview

Overview – Day 3

- Analog Inputs - Arduino

  read sensors

- Hack Toys

  open it

  hack the clock

- Control Toys with Arduino

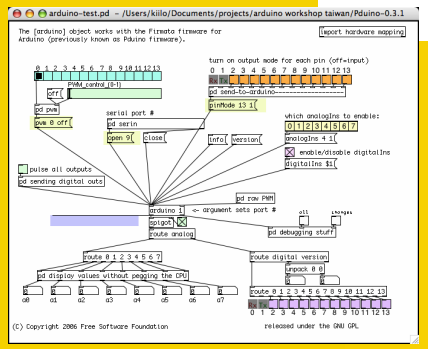
  control motors

  control recording unit

  send simple messages to computer and from computer

- Open Experiments and Help with Projects

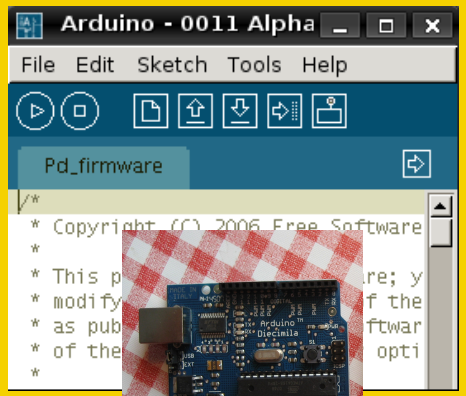
How to connect things – 2 different ways



Pduino-0.3.1/arduino-help.pd

usb

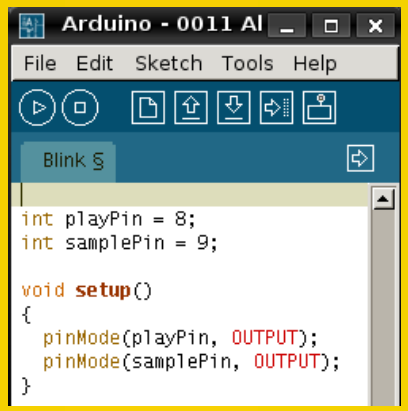
Pd_firmware.pde



Power & cables

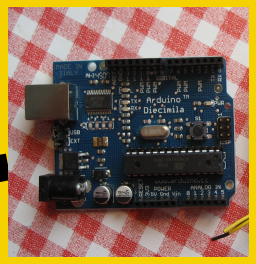
in/out

Blink.pde



Change and upload new code

usb power



Power & cables

in/out

battery power

physical computing .2

let's start !

Analog In – 1-Bit Music

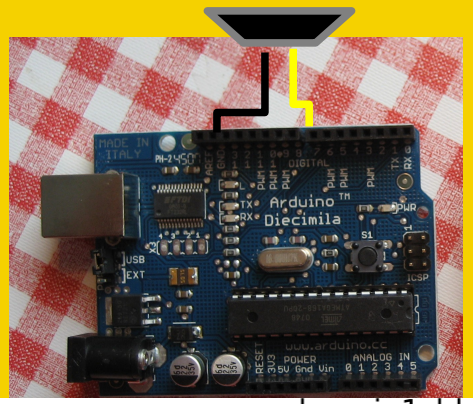
http://playaround.ftpaccess.cc/project/physical+computing+2/outline/3.day _1bitmusic.pde

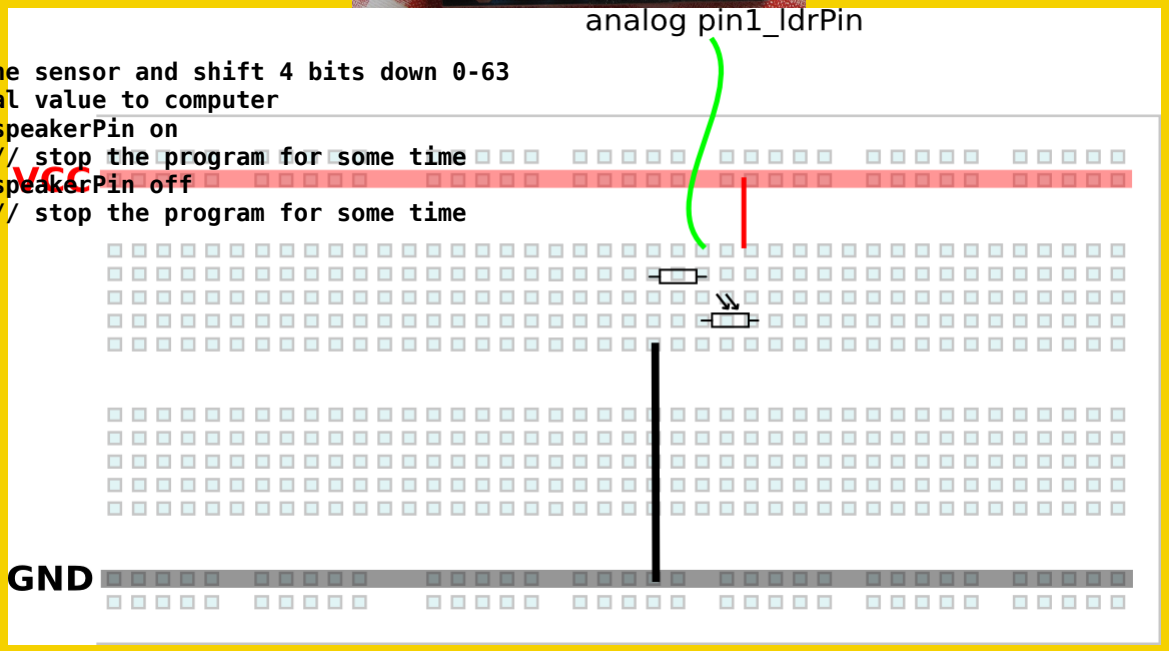
```
/*
 *  AnalogInput
 *
 *  1-bit music
 *  attach a speaker to pin 7 and GND
 *
 *  dusjagr 2008
 */

int ldrPin = 1;        // select the input pin for the potentiometer
int speakerPin = 7;    // select the pin for the speaker
int val = 0;           // variable to store the value coming from the sensor

void setup() {
  pinMode(speakerPin, OUTPUT);  // declare the speakerPin as an OUTPUT
  Serial.begin(9800);
}

void loop() {
  val = analogRead(ldrPin);        // read the value from the sensor and shift 4 bits down 0-63
  Serial.println (val);                        // send serial value to computer
  digitalWrite(speakerPin, HIGH);              // turn the speakerPin on
  delayMicroseconds(val);                                // stop the program for some time
  digitalWrite(speakerPin, LOW);               // turn the speakerPin off
  delayMicroseconds(val);                                // stop the program for some time
}
```





1-Bit Music

Tristan Perich

www.1bitmusic.com

Fredrik Oloffson

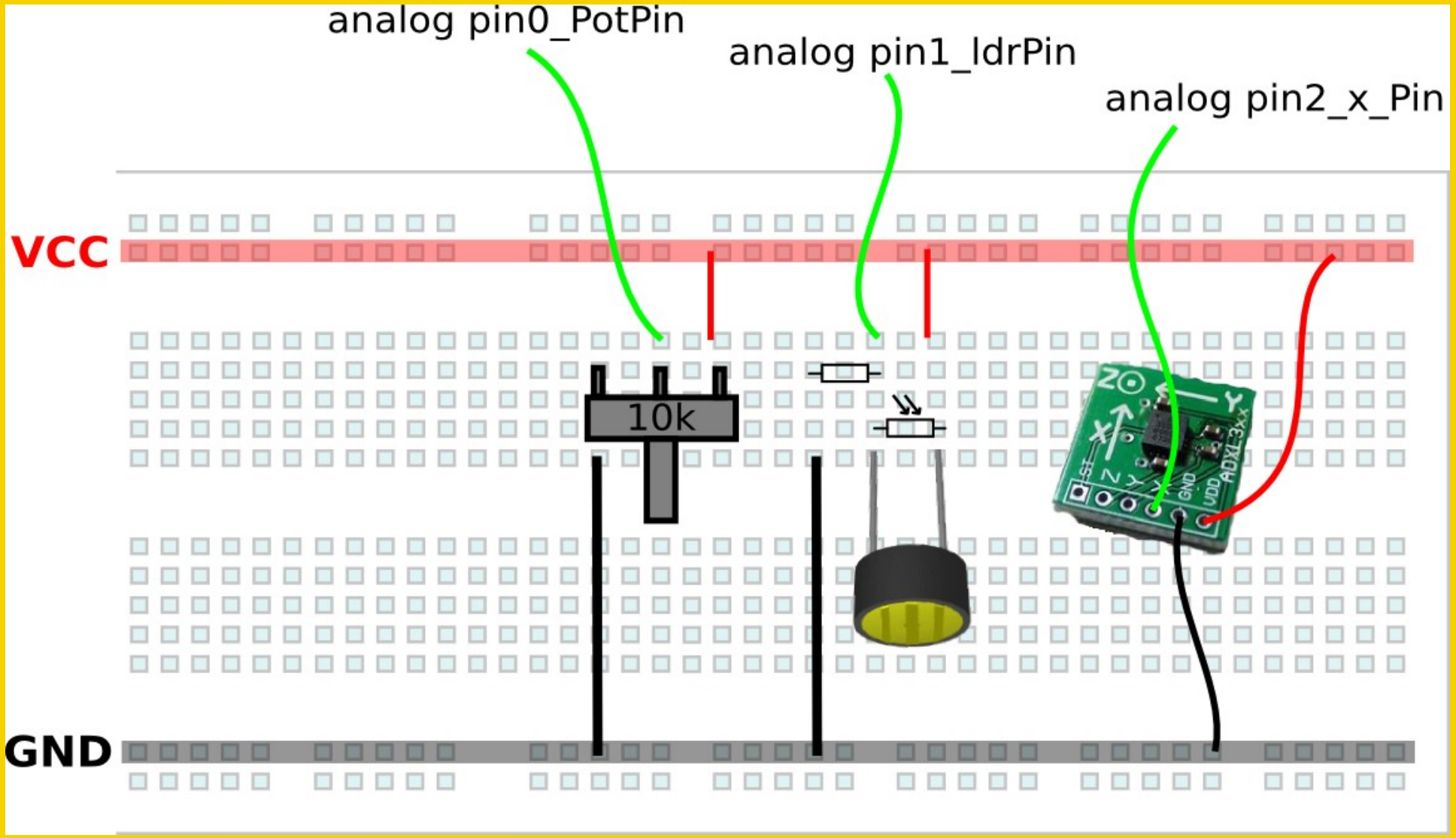
arduino workshop @ clubtransmediale

www.fredrikolofsson.com

or for some advanced chiptunes on microcontrollers

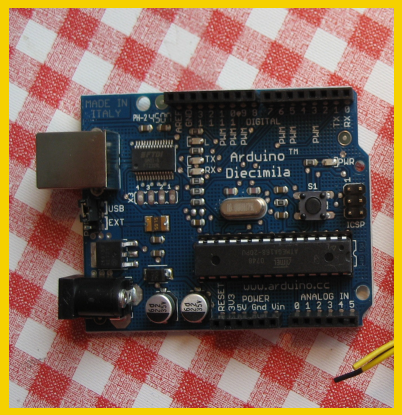
www.linusakesson.net

Other Sensors

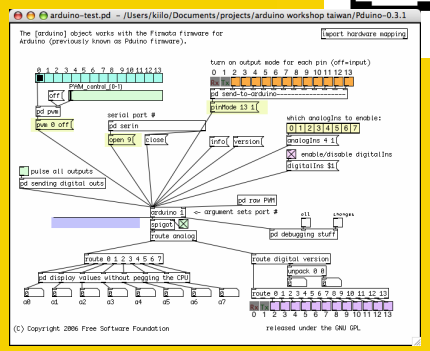


What to do with sensor data?

read sensor value



Send data to pd



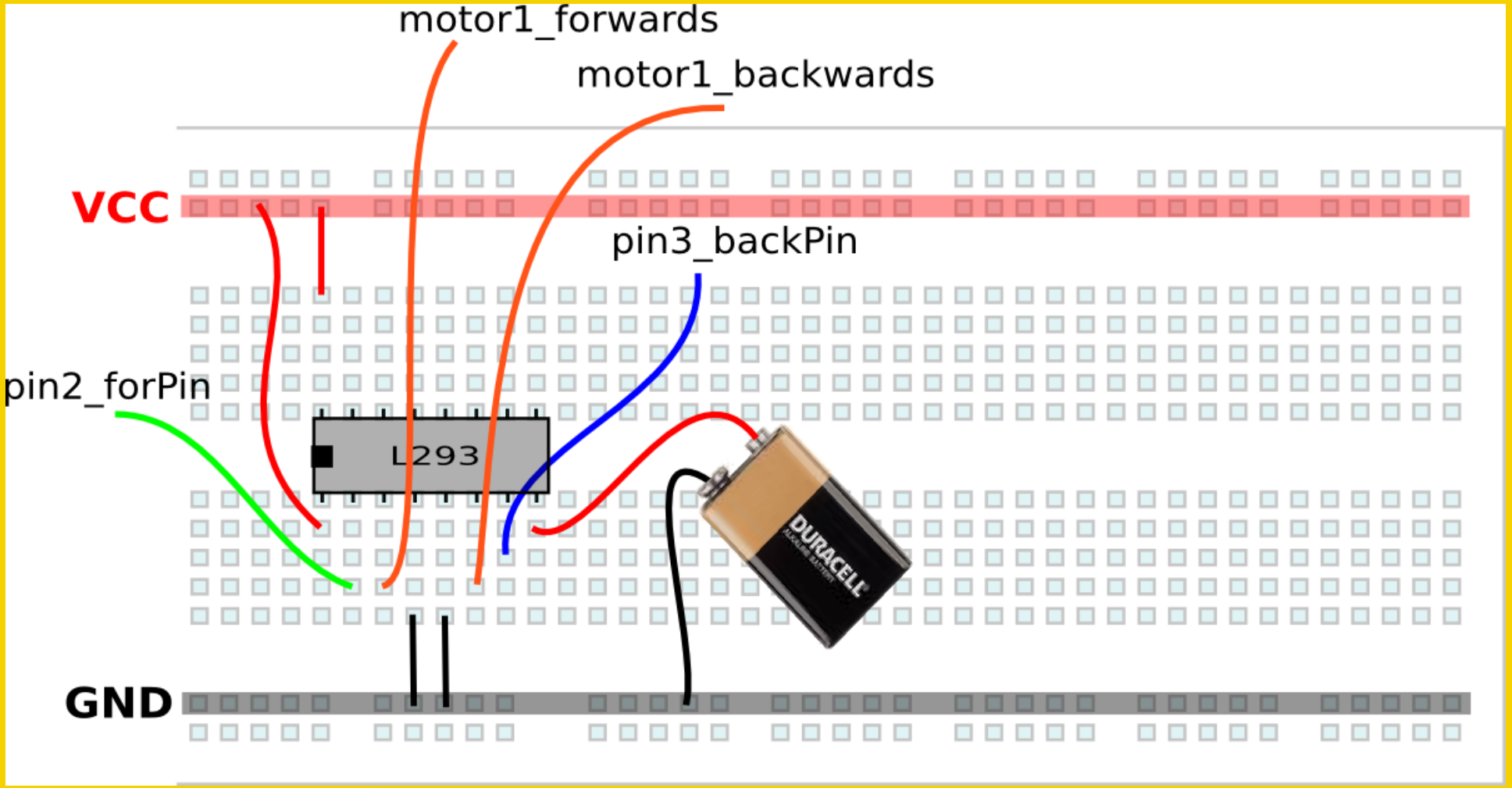
< or >

Use sensor data to control toy

physical computing .2

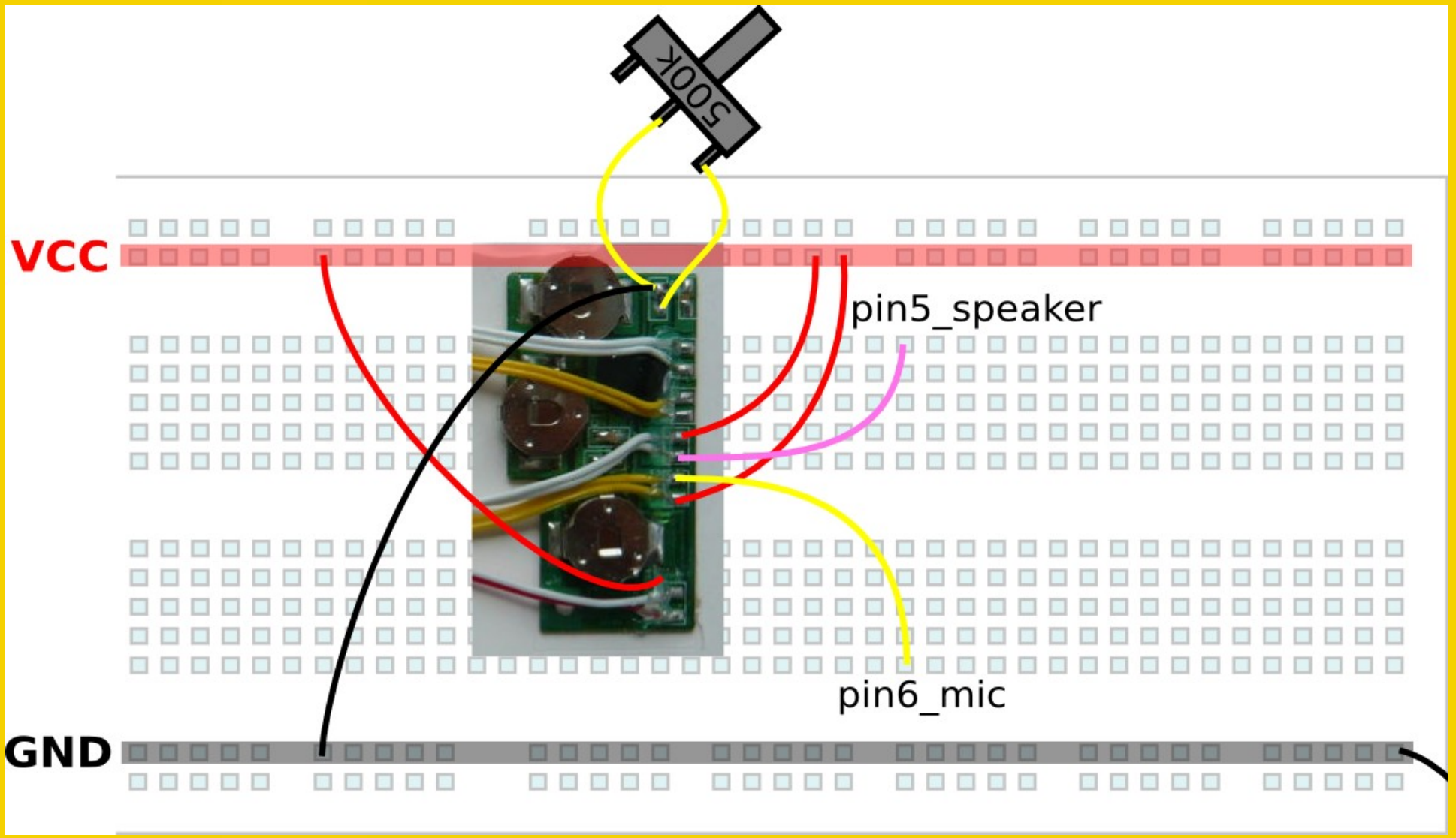
let's hack some Toys

Control Motors

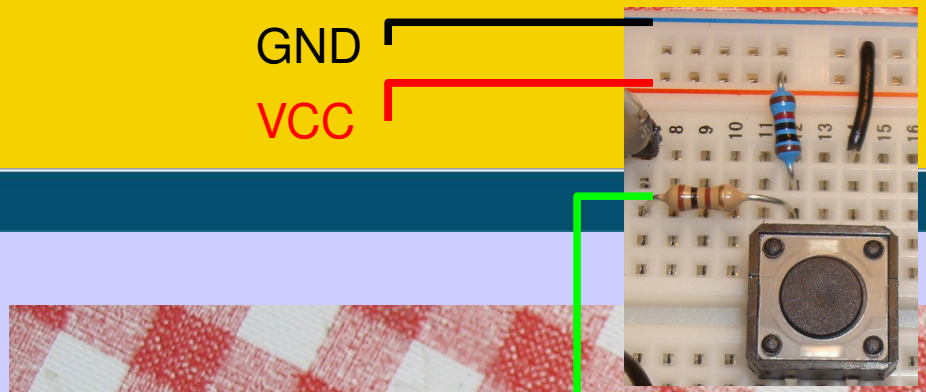


Control Recording Unit

http://playaround.ftpaccess.cc/project/physical+computing+2/outline/3.day recorder.pde



Digital In

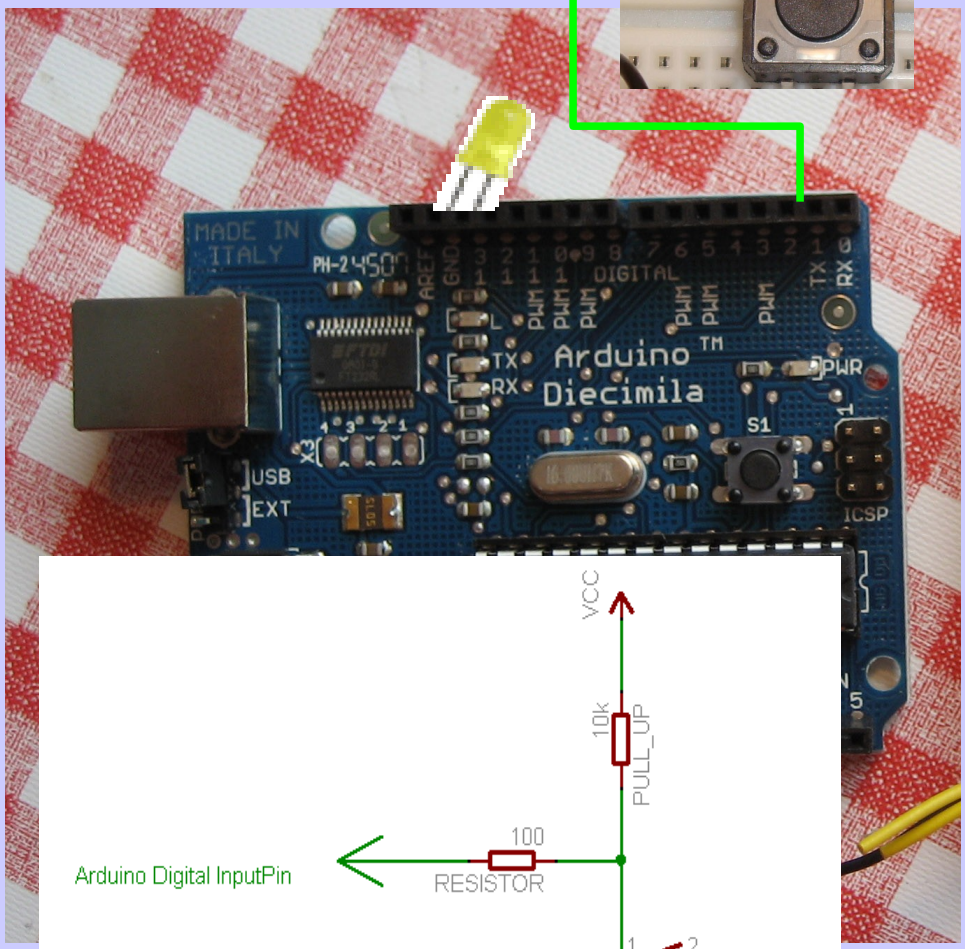



```
/*
 * Button
 * by DojoDave <http://www.0j0.org>
 *
 * Turns on and off a light emitting diode(LED) connected to digital
 * pin 13, when pressing a pushbutton attached to pin 7.
 *
 * http://www.arduino.cc/en/Tutorial/Button
 */

int ledPin = 13;                // choose the pin for the LED
int inputPin = 2;               // choose the input pin (for a pushbutton)
int val = 0;                    // variable for reading the pin status

void setup() {
  pinMode(ledPin, OUTPUT);      // declare LED as output
  pinMode(inputPin, INPUT);     // declare pushbutton as input
}

void loop(){
  val = digitalRead(inputPin);  // read input value
  if (val == HIGH) {            // check if the input is HIGH
    digitalWrite(ledPin, LOW);  // turn LED OFF
  } else {
    digitalWrite(ledPin, HIGH); // turn LED ON
  }
}
```



playaround fileserver

username: play
password: around

http://playaround.ftpaccess.cc/