2011 www.xbot.es Francisco Reinoso furrichip@gmail.com

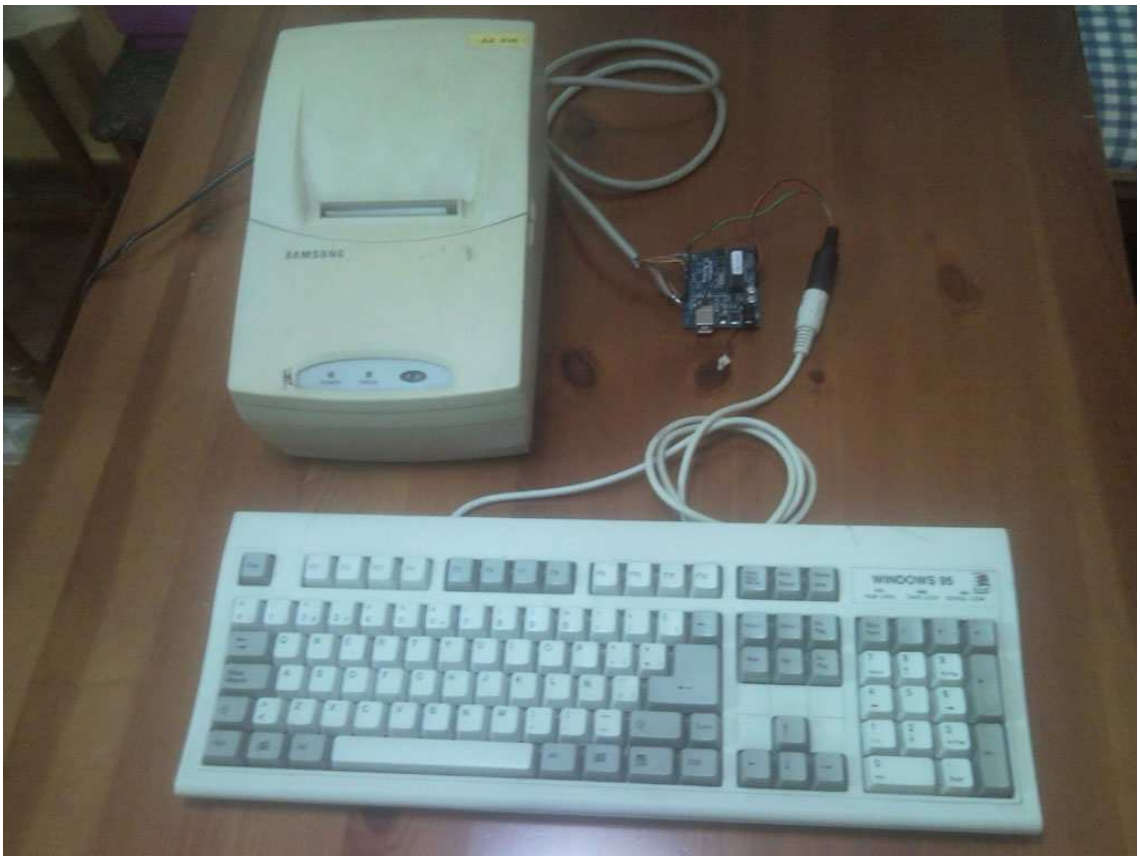
# Making a typewriter with an old keyboard and a dot matrix printer.

**(interfacing with arduino)**

This project shows how to recycle an old keyboard and a dot matrix printer to make a typewriter.

## What and how.

The idea is connect the keyboard to the printer with a basic and cheap interface, i have used Arduino because is a fast development board for this kind of projects and have a large community behind. The board read the keyboard (use a data/clock system) and transform this info about the character to the printer. Parallel format controlling the strobe.



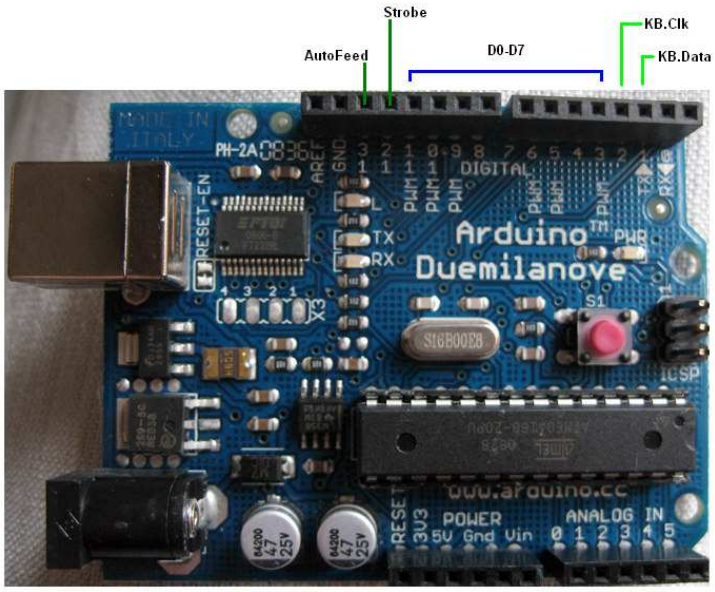

You can see the video here:

**http://www.youtube.com/watch?v=08t44T94SnE**

**Hardware.**

Is very basic too, a keyboard adapter with clock, data, power and GND (figure-1), a printer adapter with 8 data bits, strobe and GND (figure-2) all this

Connected to Arduino as this.




AT keyboard connector (DIN5)

| Connector Pin # | Purpose |
|---|---|
| Pin 1 | KBDCLK (clock) |
| Pin 2 | KBDAT (data) |
| Pin 3 | KBRST (reset, not used) |
| Pin 4 | GND |
| Pin 5 | VCC (+5V) |

http://www.bbdsoft.com/keyboard.html

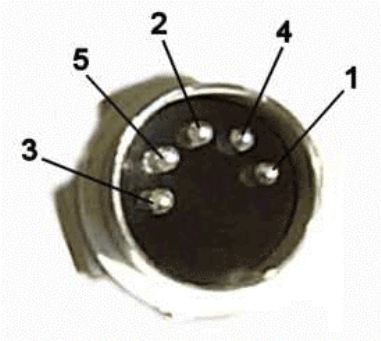



Figure-1

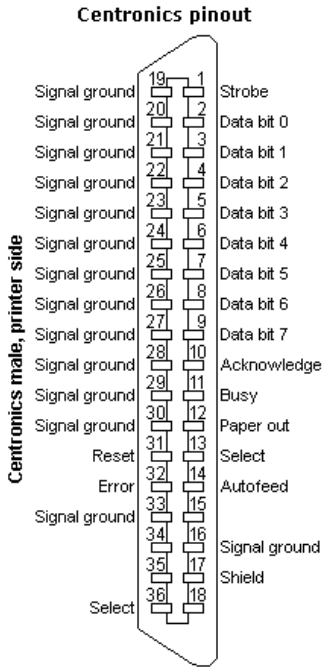



Figure-2

## Software.

```
// Typewriter with an old AT Keyboard and a Dot Matrix printer.
// 2011 www.xbot.es
// Francisco Reinoso "furri"

#include <PS2Keyboard.h> // library to use a PS2Keyboard with Arduino
#include <string.h>
#include <stdio.h>

#define KBD_CLK_PIN  3
#define KBD_DATA_PIN 2
#define d0  4
#define d1  5
#define d2  6
#define d3  7
#define d4  8
#define d5  9
#define d6 10
#define d7 11
#define strobe 12
#define autofd 13

PS2Keyboard keyboard;

int caracter = 0;

void setup() {
  keyboard.begin(KBD_DATA_PIN);
  pinMode(d0, OUTPUT);
  pinMode(d1, OUTPUT);
  pinMode(d2, OUTPUT);
  pinMode(d3, OUTPUT);
  pinMode(d4, OUTPUT);
  pinMode(d5, OUTPUT);
  pinMode(d6, OUTPUT);
  pinMode(d7, OUTPUT);
  pinMode(strobe, OUTPUT);
  pinMode(autofd, OUTPUT);
  digitalWrite(autofd,HIGH);
  digitalWrite(strobe,HIGH);
  Serial.begin(9600);
  delay(1000);
}

#define is_printable(c) (!(c&0x80))   // don't print if top bit is set

void imprime(int letra)
{
// decode character into 8 bits
if (letra >= 128) { letra = letra - 128; digitalWrite(d0,HIGH); } else { digitalWrite(d0,LOW); }
if (letra >= 64) { letra = letra - 64; digitalWrite(d1,HIGH); } else { digitalWrite(d1,LOW); }
if (letra >= 32) { letra = letra - 32; digitalWrite(d2,HIGH); } else { digitalWrite(d2,LOW); }
if (letra >= 16) { letra = letra - 16; digitalWrite(d3,HIGH); } else { digitalWrite(d3,LOW); }
if (letra >= 8) { letra = letra - 8; digitalWrite(d4,HIGH); } else { digitalWrite(d4,LOW); }
if (letra >= 4) { letra = letra - 4; digitalWrite(d5,HIGH); } else { digitalWrite(d5,LOW); }
if (letra >= 2) { letra = letra - 2; digitalWrite(d6,HIGH); } else { digitalWrite(d6,LOW); }
if (letra >= 1) { digitalWrite(d7,HIGH); } else { digitalWrite(d7,LOW); }
// send the character to the printer
digitalWrite(strobe,LOW);
delayMicroseconds(2);
digitalWrite(strobe,HIGH);
}

void loop() {
  if(keyboard.available()) {
    byte c = keyboard.read();
    if ( c == 13 ) { Serial.print(c); imprime(10); }
    else
    {
      if ( is_printable(c) ) { Serial.print(c); imprime(c); } // don't print special characters
    }
  }
}
```