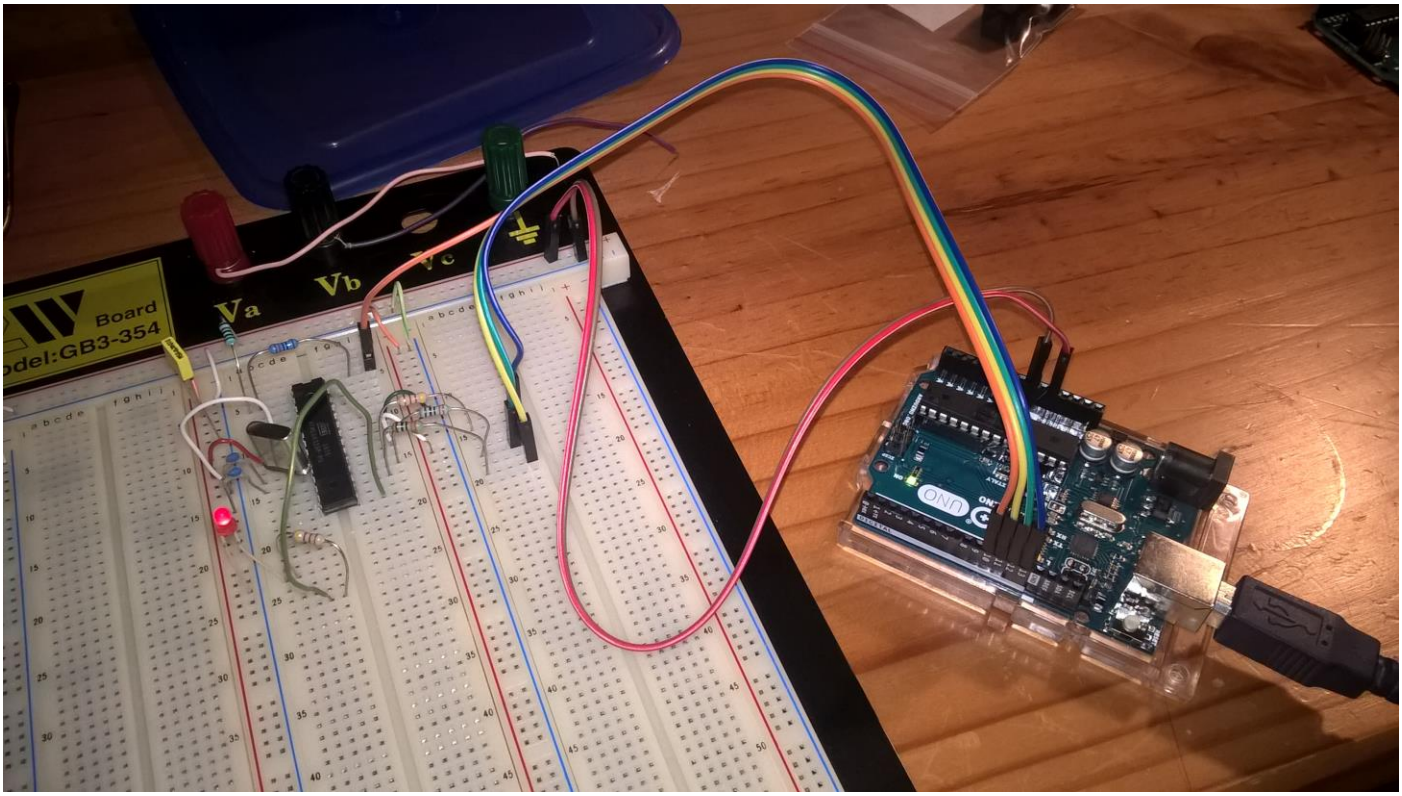
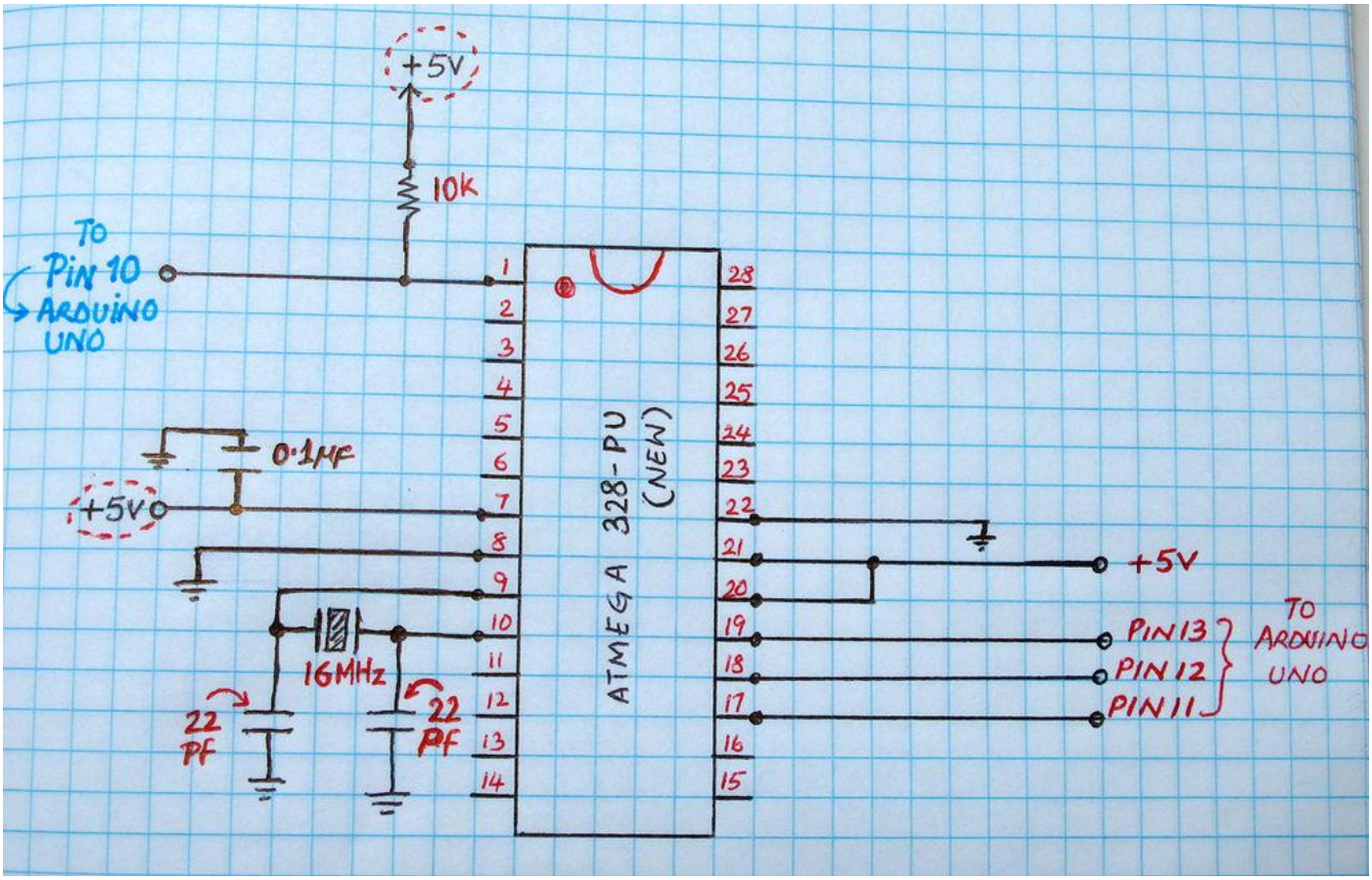
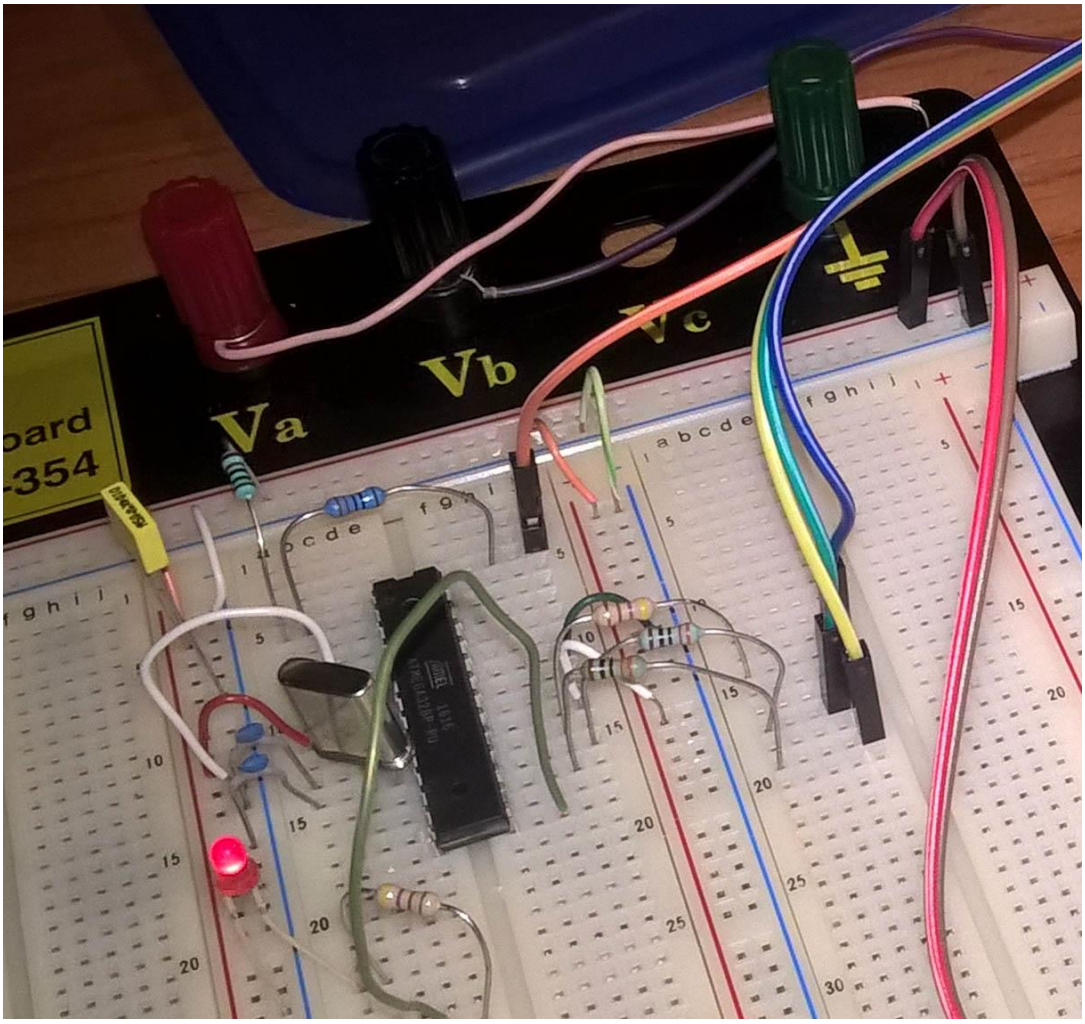
**Use Uno to program another AtMega 328PU with a bootloader:**

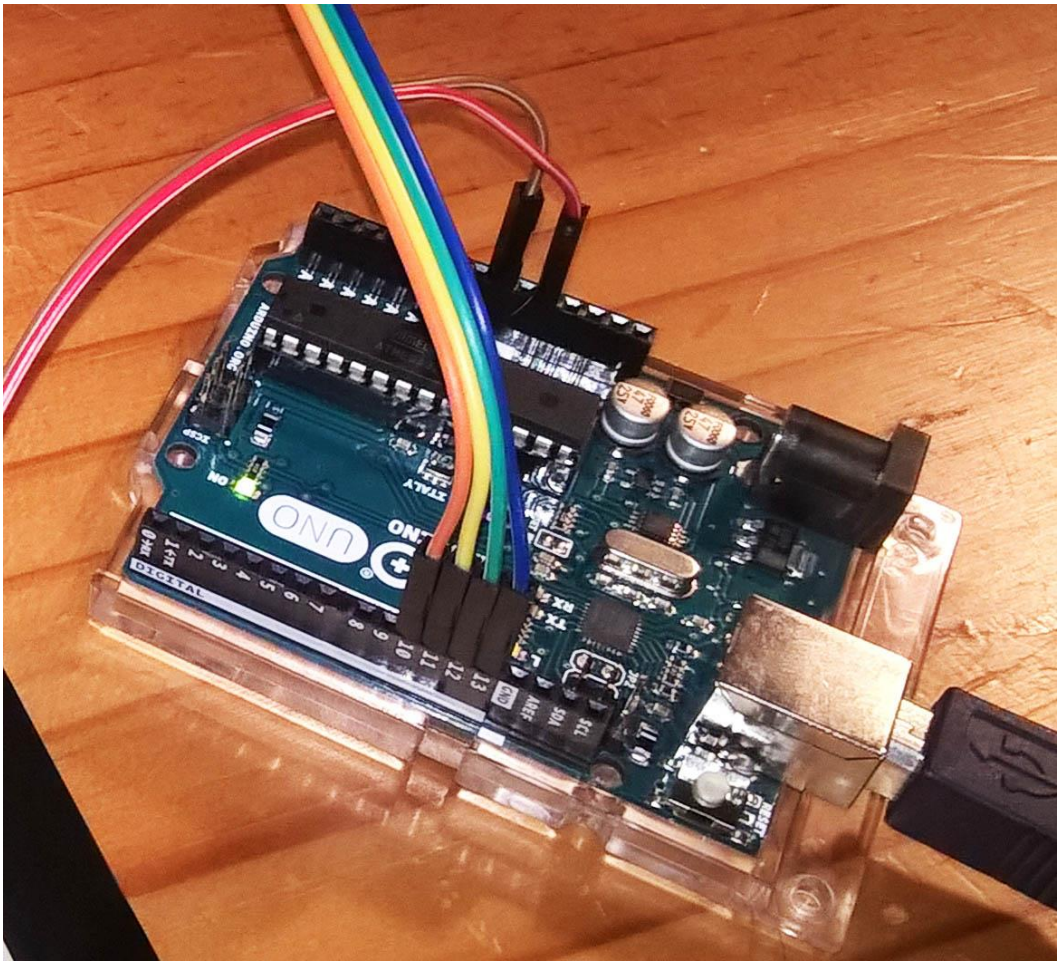


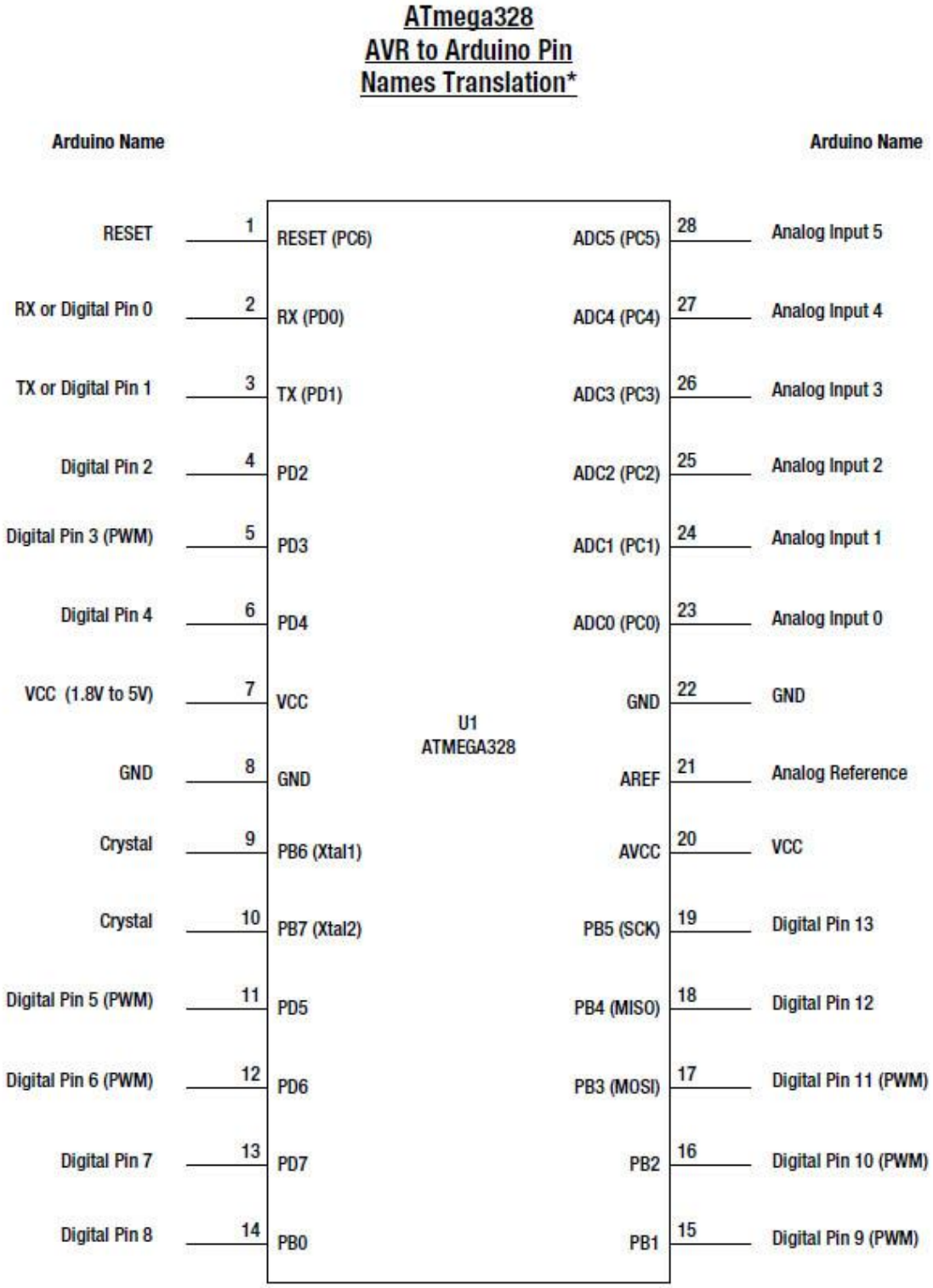

Build this circuit on breadboard – add 4 x 330 ohm resistors in-between pins 10, 11, 12, 13 on Uno and the breadboard pins 1, 17, 18, 19.




Do NOT connect to Uno as yet

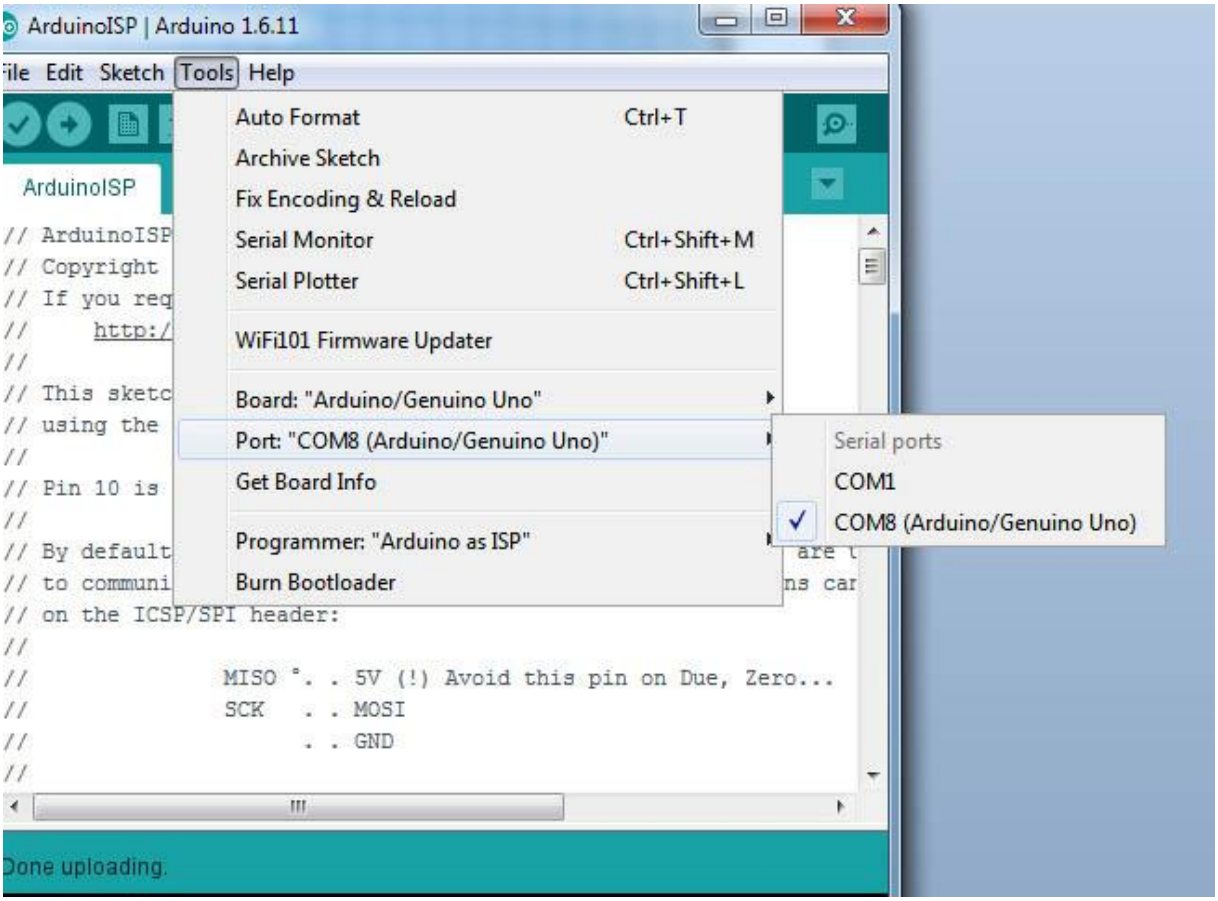

Va
Vb
Vc


UNO
DIGITAL

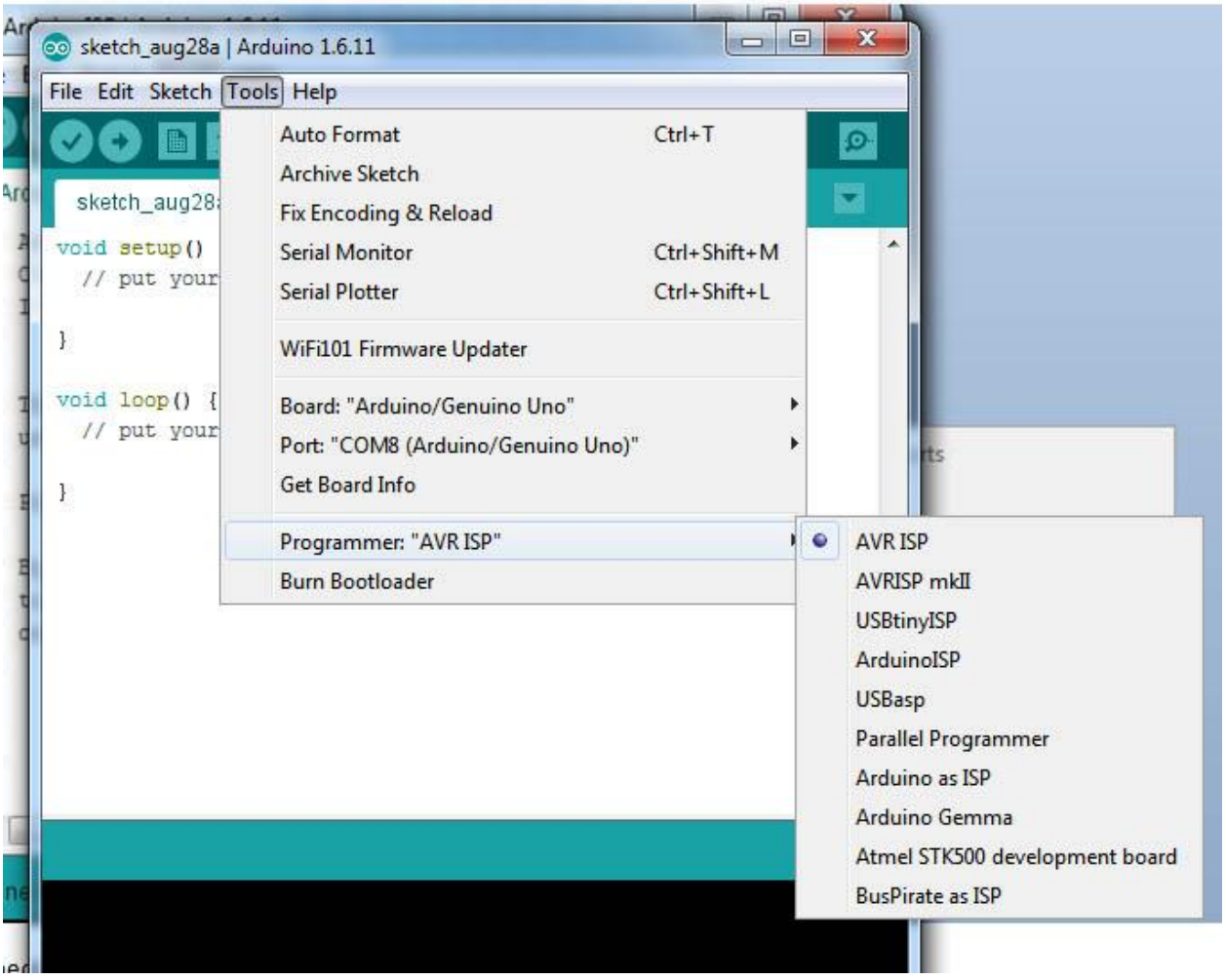



Connect Uno with an usb cable and start Arduino ide

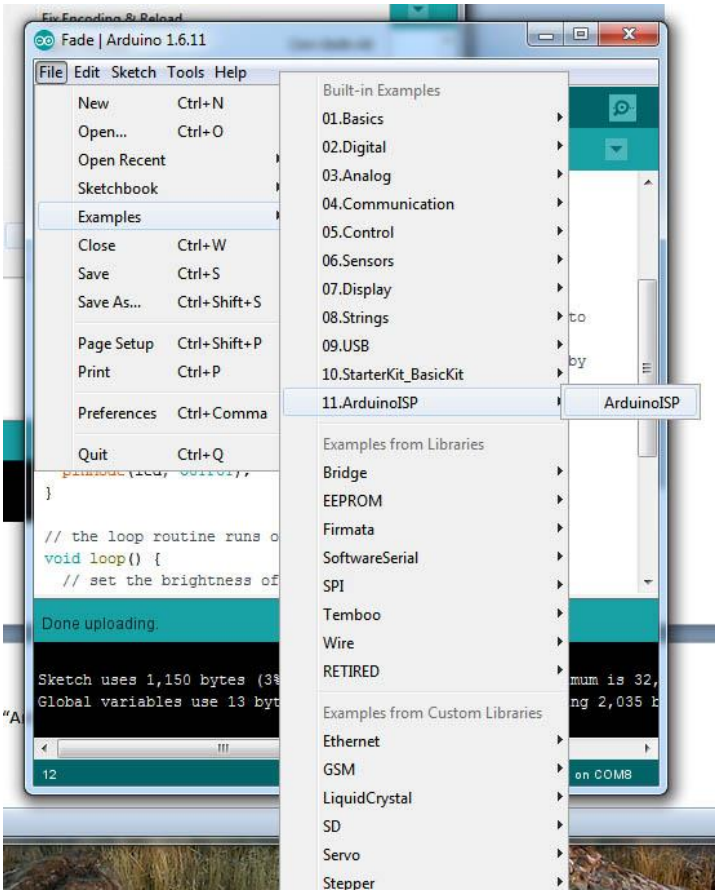
Check that correct com port is chosen (if another Uno is plugged in it will have a different com number)



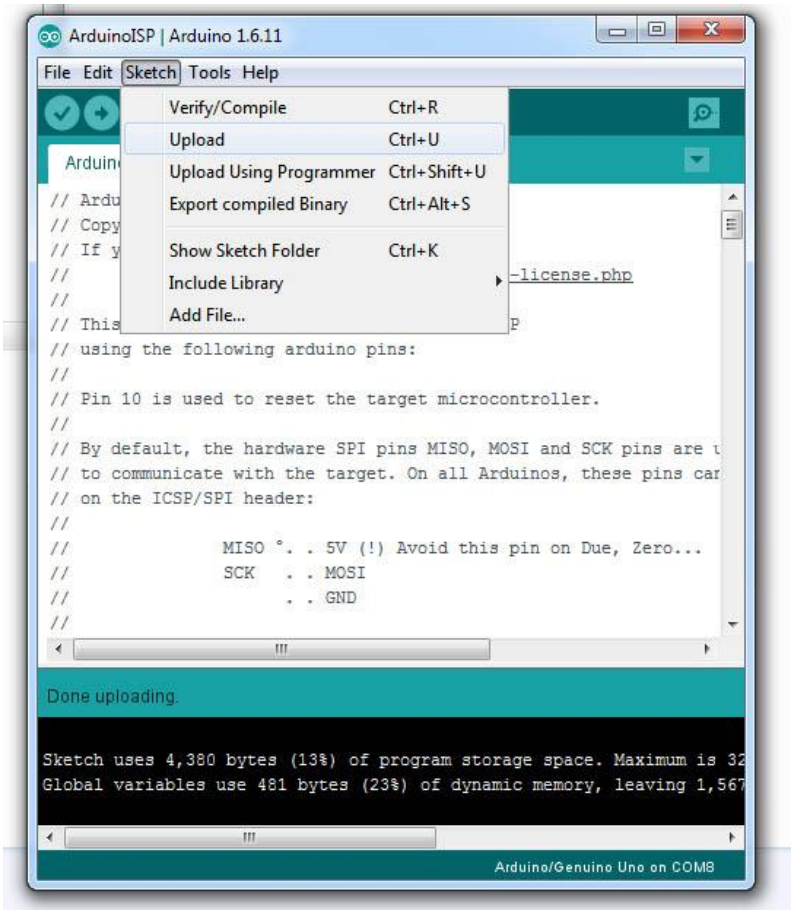

Check that under Programmer is set to the PC based Arduino IDE



Now select sketch “Arduino as ISP” under Examples

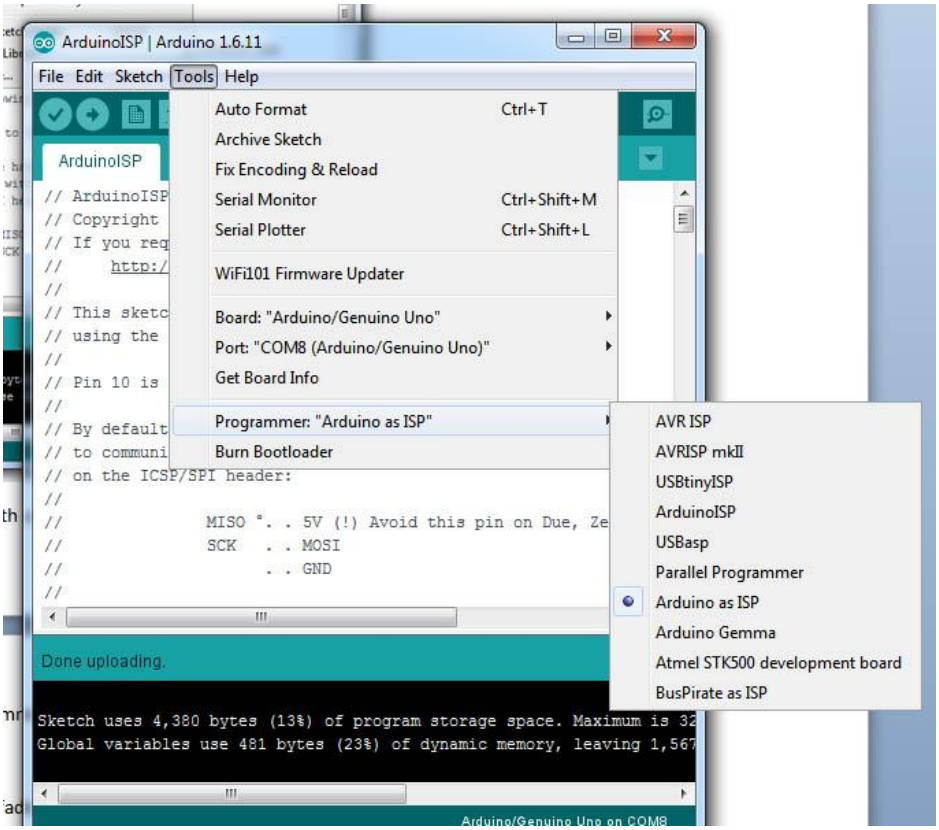



Make sure AVr ISP is still the programmer and then upload the sketch “Arduino as ISP” to the Uno

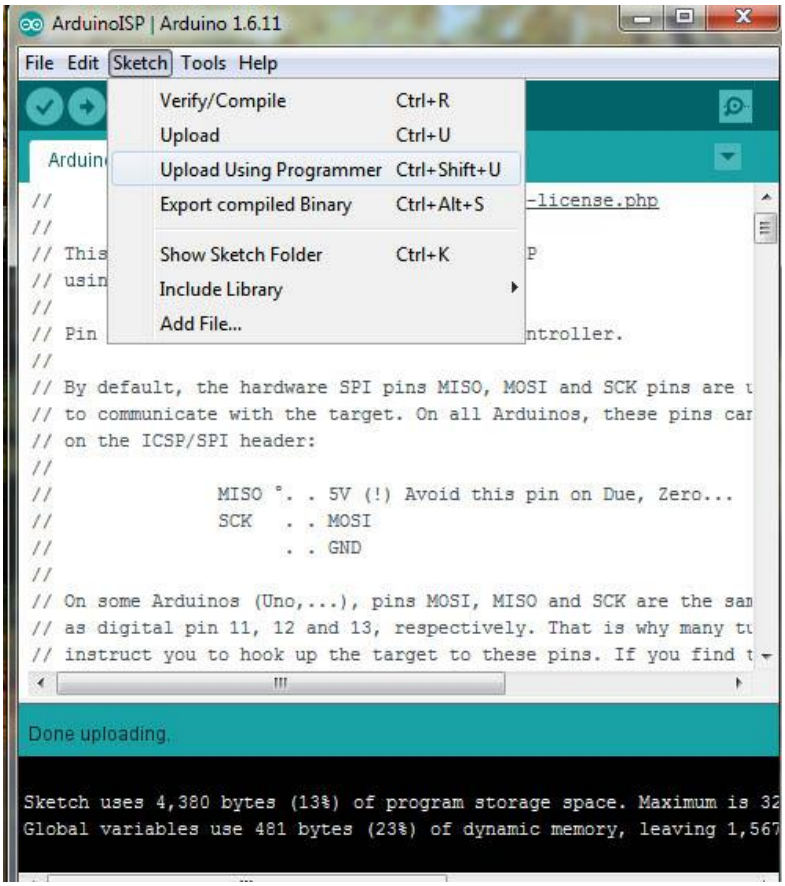



Then make the earth connection, then the +5v, then connect the 4 wires to pins 10, 11, 12, 13 of the uno

Change the programmer now to Arduino as ISSP




Select the sketch “fade” – note that it uses PWM 9 i.e pin 15 on the AtMega 328PU, and upload it “Using the Programmer”




Connect an LED via 470 ohm resistor between pin 15 on the AtMega 328PU and ground – it will fade up and down

Note that if the blink sketch is uploaded it uses pin P13 which is connected to the Uno pin 13 which can cause a conflict