Introduction to Arduino
Workshop by Varvara Guljajeva & Mar Canet Sola
19.11.2014 at TopConf, Tallinn

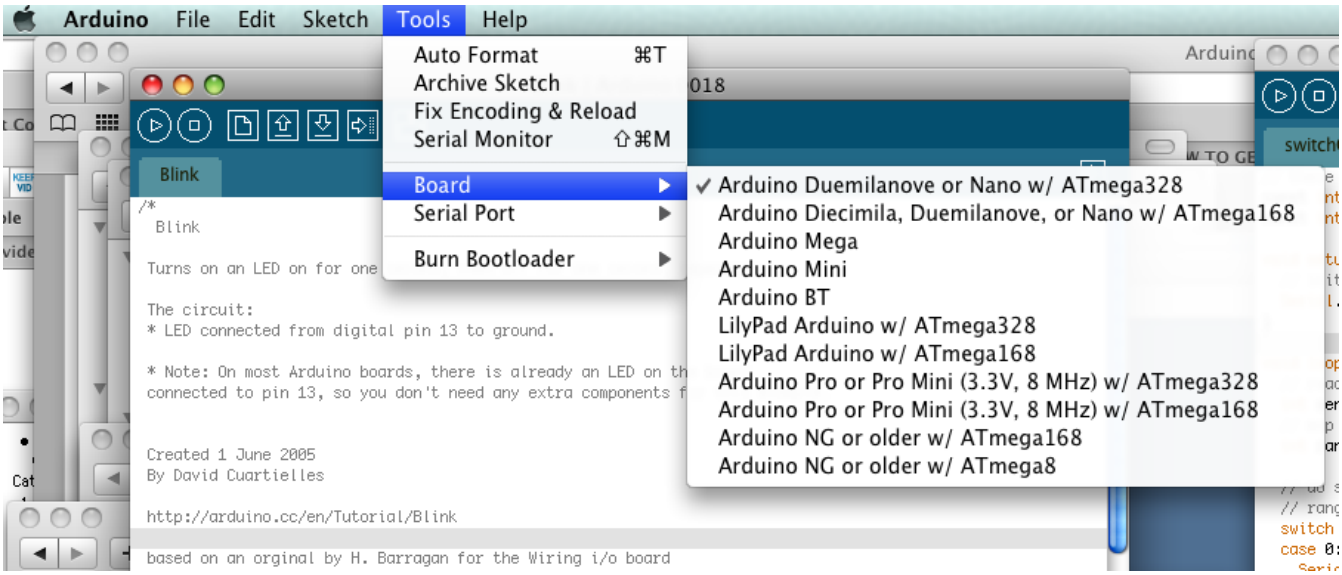
1. **What is Arduino?**

(https://vimeo.com/13781339)

INSTALL ARDUINO ENVIRONMENT

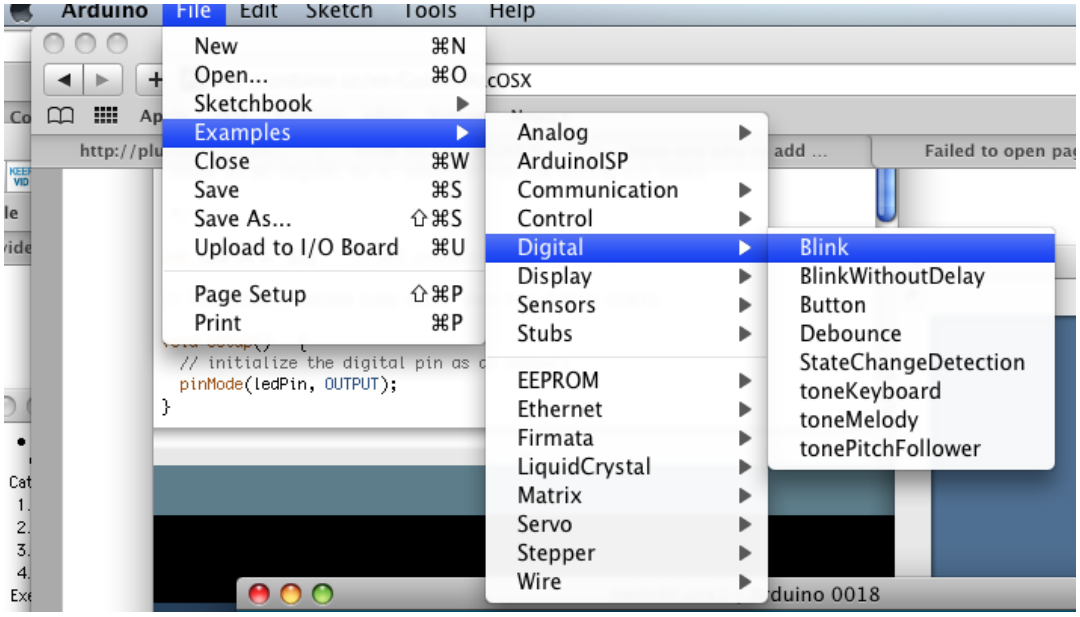
Arduino:

1. If you do not have Arduino program installed, do so by following this link: http://arduino.cc/en/Main/Software
2. Make sure that you have as well FTDI driver installed
3. connect Arduino to your computer
4. start Arduino program and select right BOARD and SERIAL under menu TOOLS

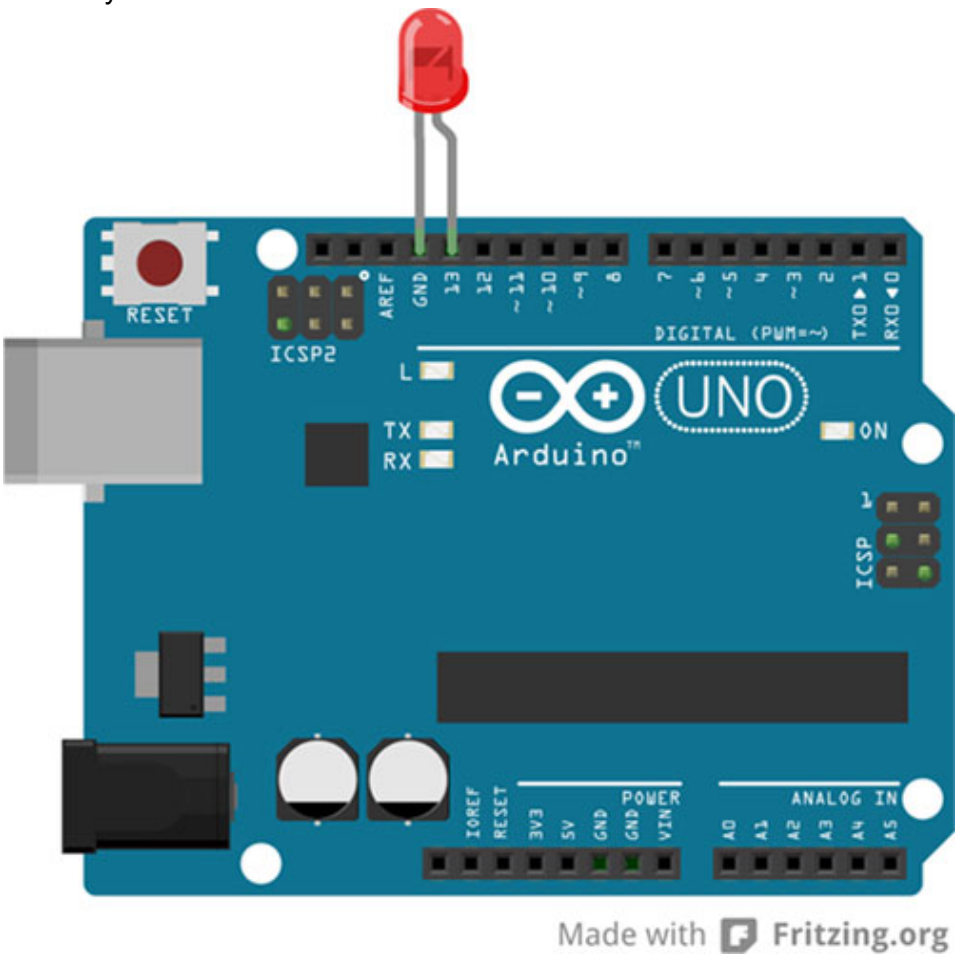


5. upload blink example in order to check that you did everything right (press Upload, second button in the upper left corner).

Varvara Guljajeva - varvarag@gmail.com - www.varvarag.info
Mar Canet Sola - mar.canet@gmail.com - www.mcanet.info



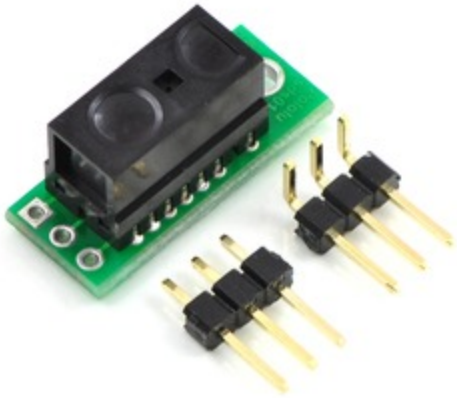
6. Insert LED to pin 13 and GND to ensure that everything is functioning as the code say.



7. Make the LED blink differently from the example one.

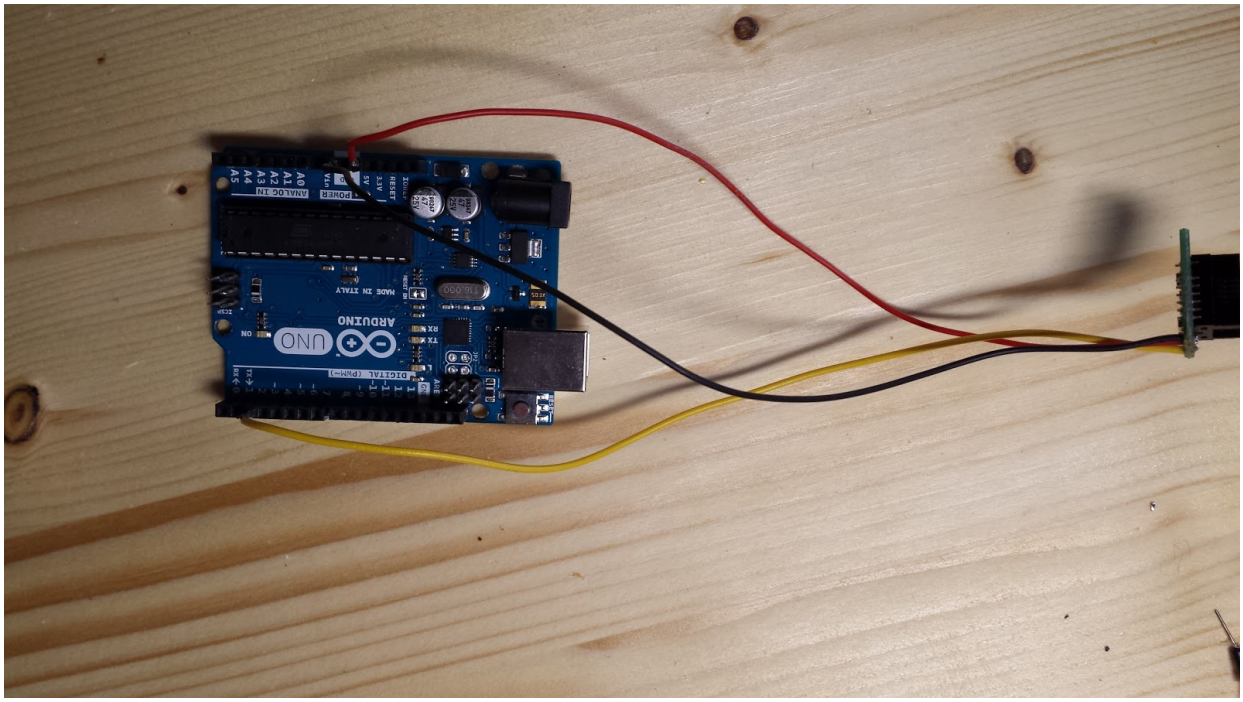
Varvara Guljajeva - varvarag@gmail.com - www.varvarag.info
Mar Canet Sola - mar.canet@gmail.com - www.mcanet.info

SHARP Distance sensor GP2Y0D805Z0F



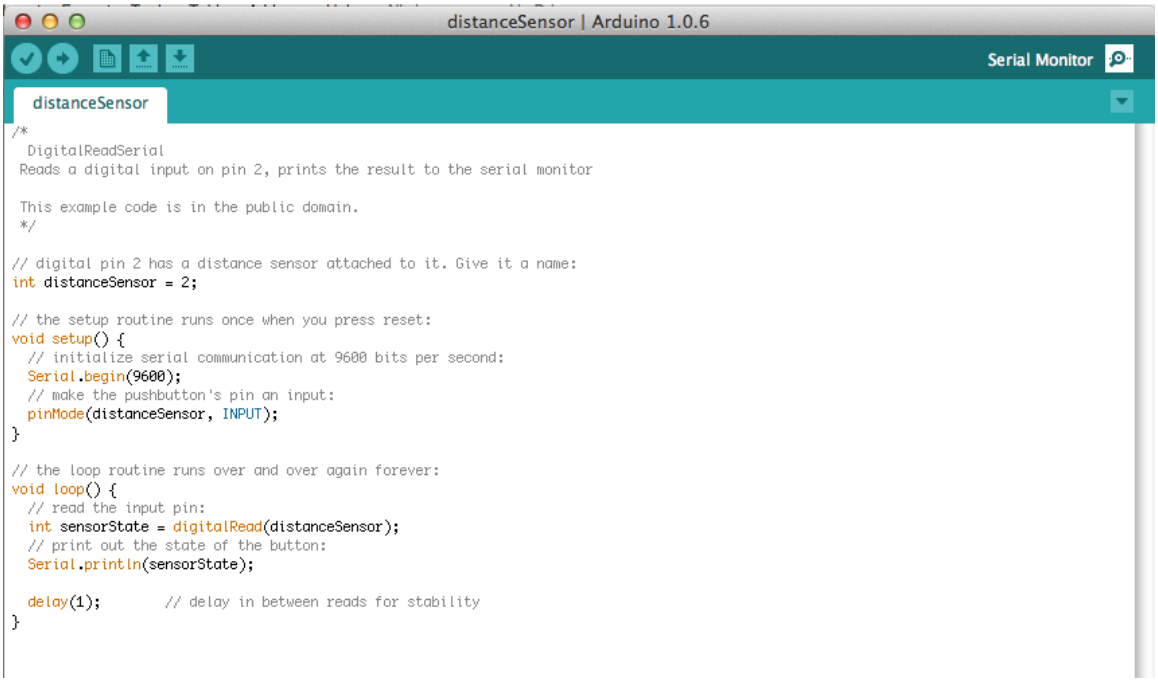
This small digital distance sensor detects objects between 0.5 cm and 5 cm (0.2″ and 2″) away. It gives LOW signal to Arduino when an object is detected in its range.

1. Connect sensor to Arduino: RED to pin 5V, BLACK to pin GND, and YELLOW to pin2.



2. upload distance sensor code to your arduino (the same way how you did for the LED).
   Code you find here:
   https://github.com/var-mar/workshop_topconf_introduction_arduino/tree/master/code
3. Open serial monitor (upper right corner) and see how it reacts of the objects in and out of it range.

Varvara Guljajeva - varvarag@gmail.com - www.varvarag.info
Mar Canet Sola - mar.canet@gmail.com - www.mcanet.info



Challenge:
Make the LED to light up when sensor detects an object in its range.

Varvara Guljajeva - varvarag@gmail.com - www.varvarag.info
Mar Canet Sola - mar.canet@gmail.com - www.mcanet.info

SERIAL COMMUNICATION
Receive serial values that Arduino is sending in Processing or any different programming environment.

1. Download and install Python
https://www.python.org/downloads/

2. Install the pySerial dependency: http://pyserial.sourceforge.net/pyserial.html
3. Run the code for read a sensor in python

PSS. close Arduino serial monitor before running Python code

receive_sensor.py | arduino_serial_led

```
1  import serial
2
3  ser = serial.Serial('COM3', 9600)
4  while True:
5      print ser.readline()
```

5. understand and modify the code

CHALLENGE
Use SimpleWrite example for lighting up LED.

Varvara Guljajeva - varvarag@gmail.com - www.varvarag.info
Mar Canet Sola - mar.canet@gmail.com - www.mcanet.info