**Hack 1: SoilGuru Tutorial**

Goal: Measure soil humidity and plot in a graph on a webserver.

Set up: A simple sensor made of nails which are connected to the Arduino. The Arduino than is connected to the computer which runs a Python script. The script reads them and outputs the measurements in a graph.

|  |  |  |
| --- | --- | --- |
| Arduino IDE  -simple sketch to loop and read Analog PIN (A1) 0 – 1023  -serial write sensor value | Python script  -fetch analog data from Arduino  -process data | Webserver (Django, Ror)  -import processed data  Push data visualization to graph |

**Hardware tutorial**

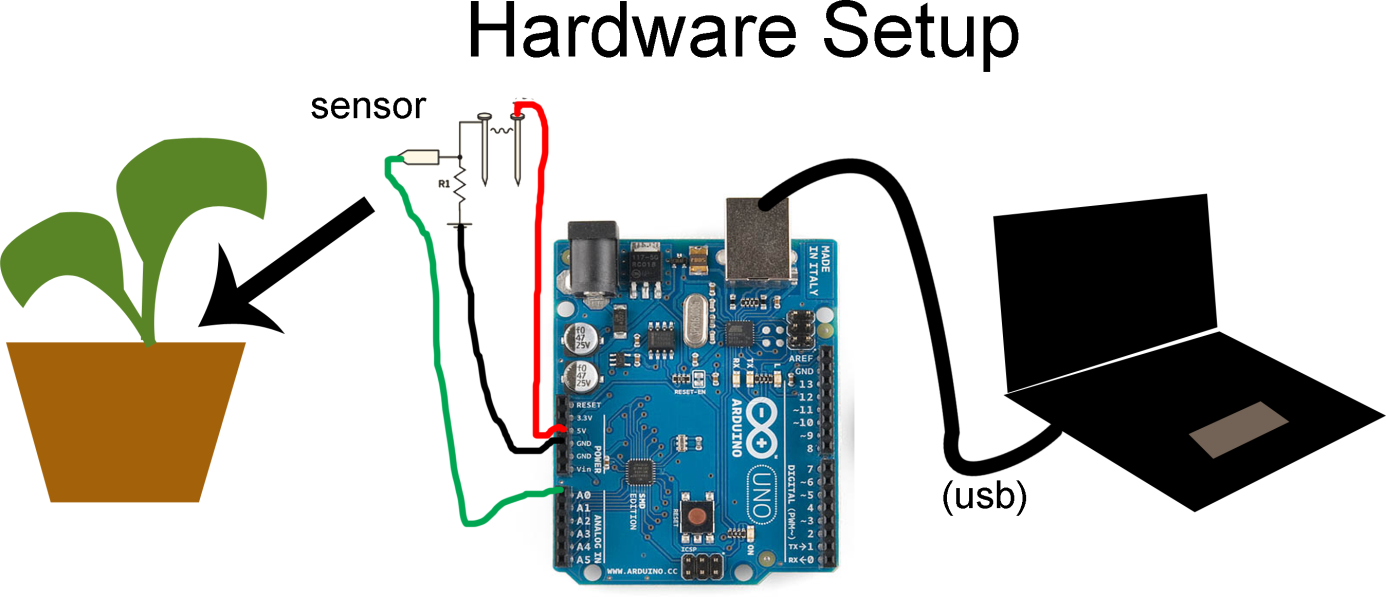
1. Make the soil humidity sensor:

Needed: two nails, wire, solder, 10kOhm, resistor and tools to get the job done.

Cut 2 pieces of wire, each 2’ long, and strip off the ends.

Wrap 1 end of each wire around the head of each nail.

Cover the wire-nail connection with a generous amount of solder.



1. Connect the sensor (on a breadboard) with a 10KOhm resistor or solder the resistor to the two wires. Make sure to do this closer to the side of the arduino than is shown in the picture, becuase you do not want to stick the resistor in the soil.
2. After connecting the sensor to the Arduino connect the Arduino to the computer via an USB cable.

**Software tutorial**

Arduino: when the hardware is connected properly. Upload the Arduino (Hyperlink) sketch.

Computer: open Python and install pyserial, the program ­­­which communicates with the Arduino.

More….

….