



Interfacing Force Sensitive Resistor to Arduino

By goks_lf (/member/goks_lf/) in Technology (/technology/) > Arduino (/technology/arduino/)

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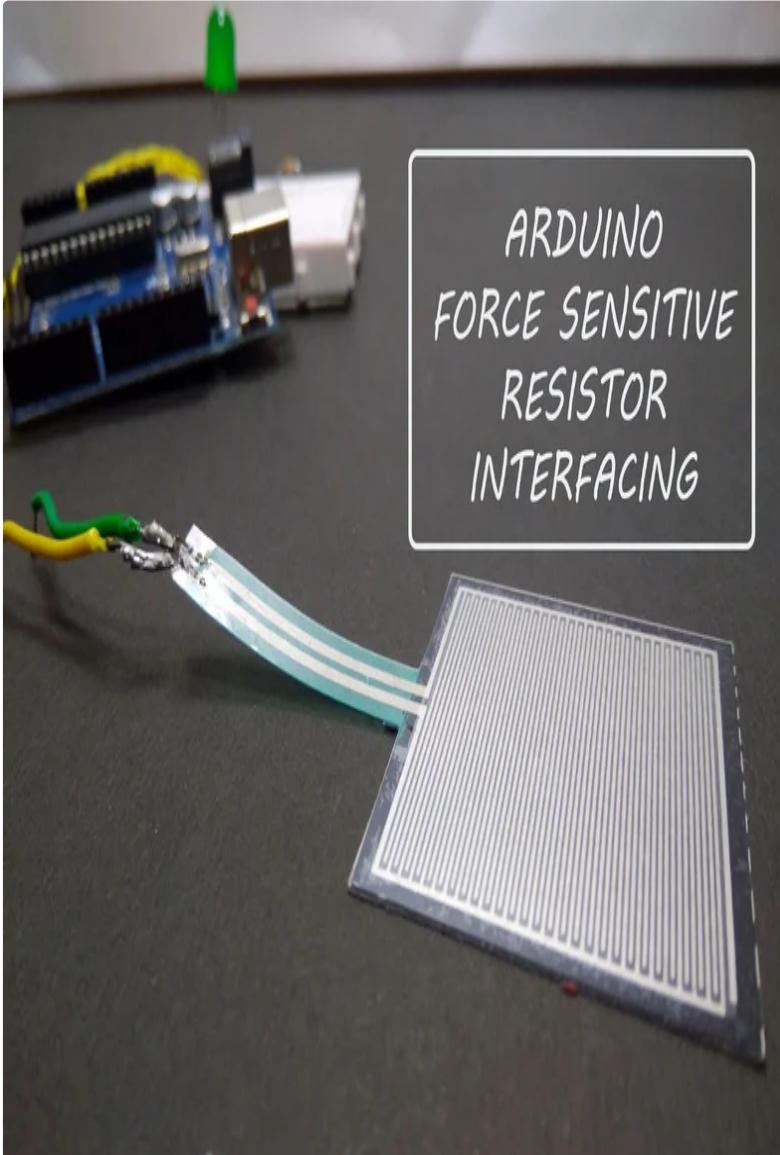
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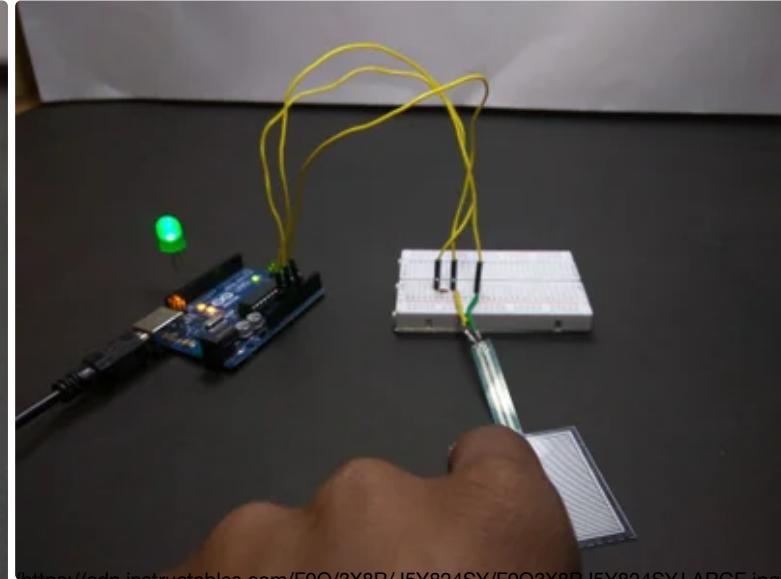


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ARDUINO
FORCE SENSITIVE
RESISTOR
INTERFACING



(/member/goks_lf/)
By **goks_lf**
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About: My team has developed a new product. PLEASE CHECK IT OUT ON INDIEGOGO AND SHOW YOUR SUPPORT.
CAMPAIGN LINK: <https://igg.me/p/2165733/x/17027489>. I'm a tech and food enthusiast and also a Soccer Player. I lo...

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An FSR(Force Sensitive Resistor) is a sensor that allows you to measure physical pressure, weight and squeezing. They are pretty much used in DIY electronics as they are available at low cost.

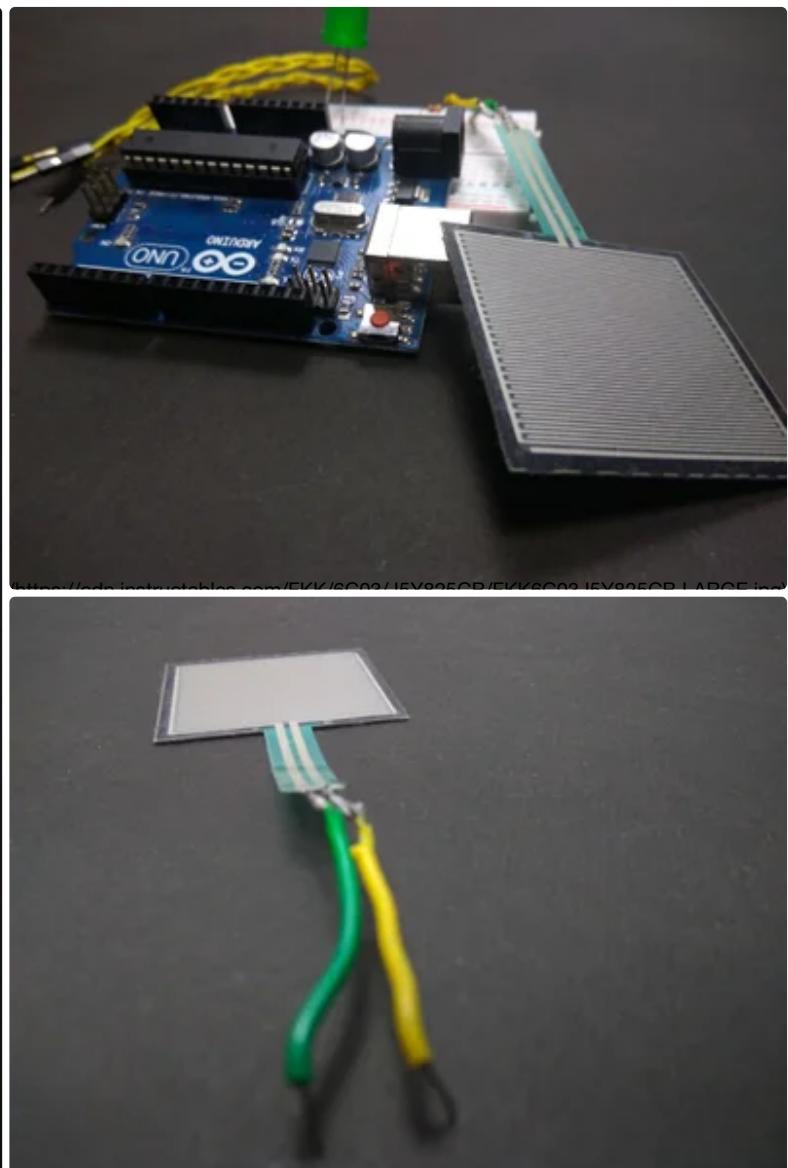
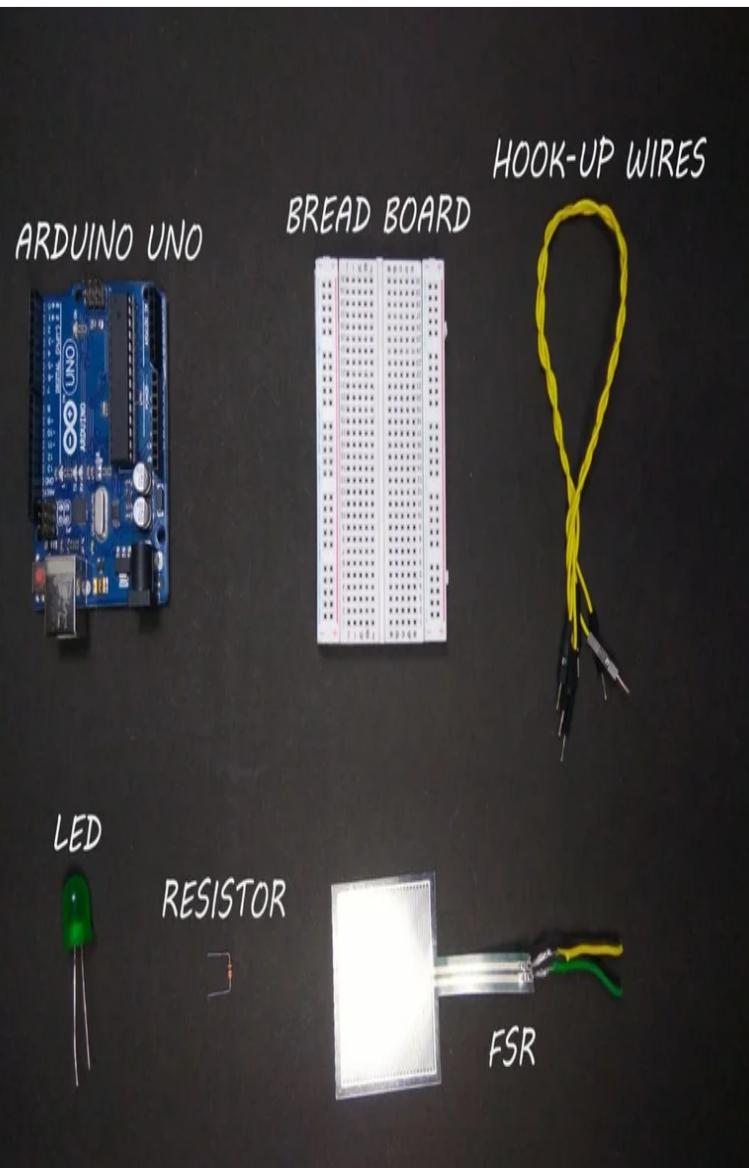
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Step 1: Components Required



For this project, you will need:

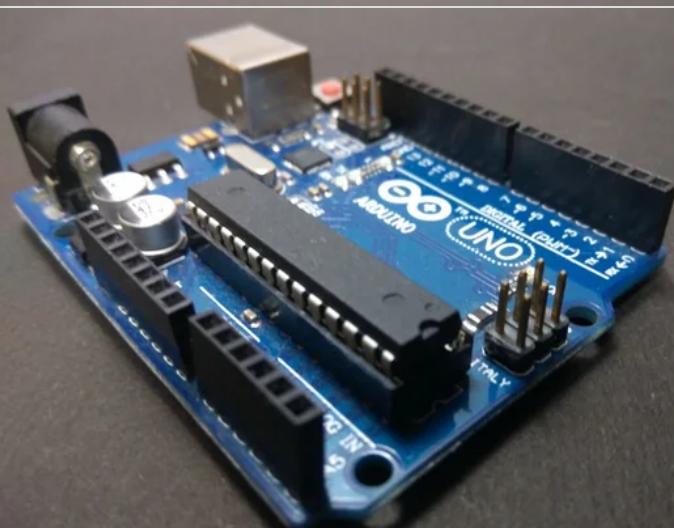
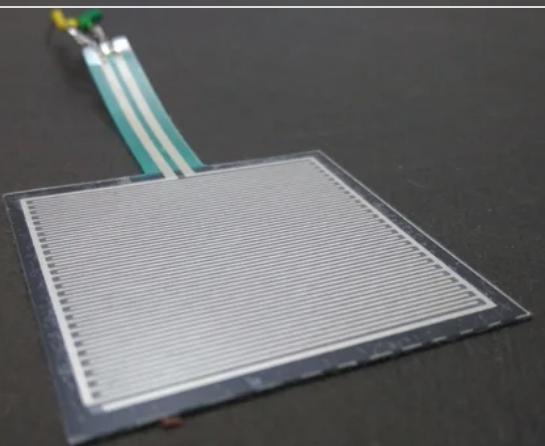
- Arduino Uno.
- FSR (Force Sensitive Resistor).
- 10K Resistor.
- Hook-up Wires.
- LED
- BreadBoard.

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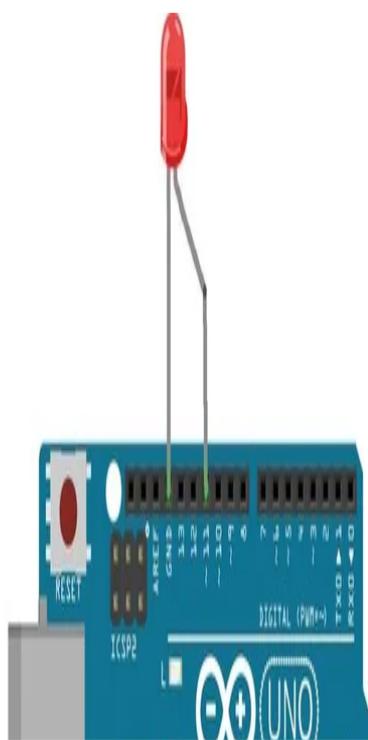


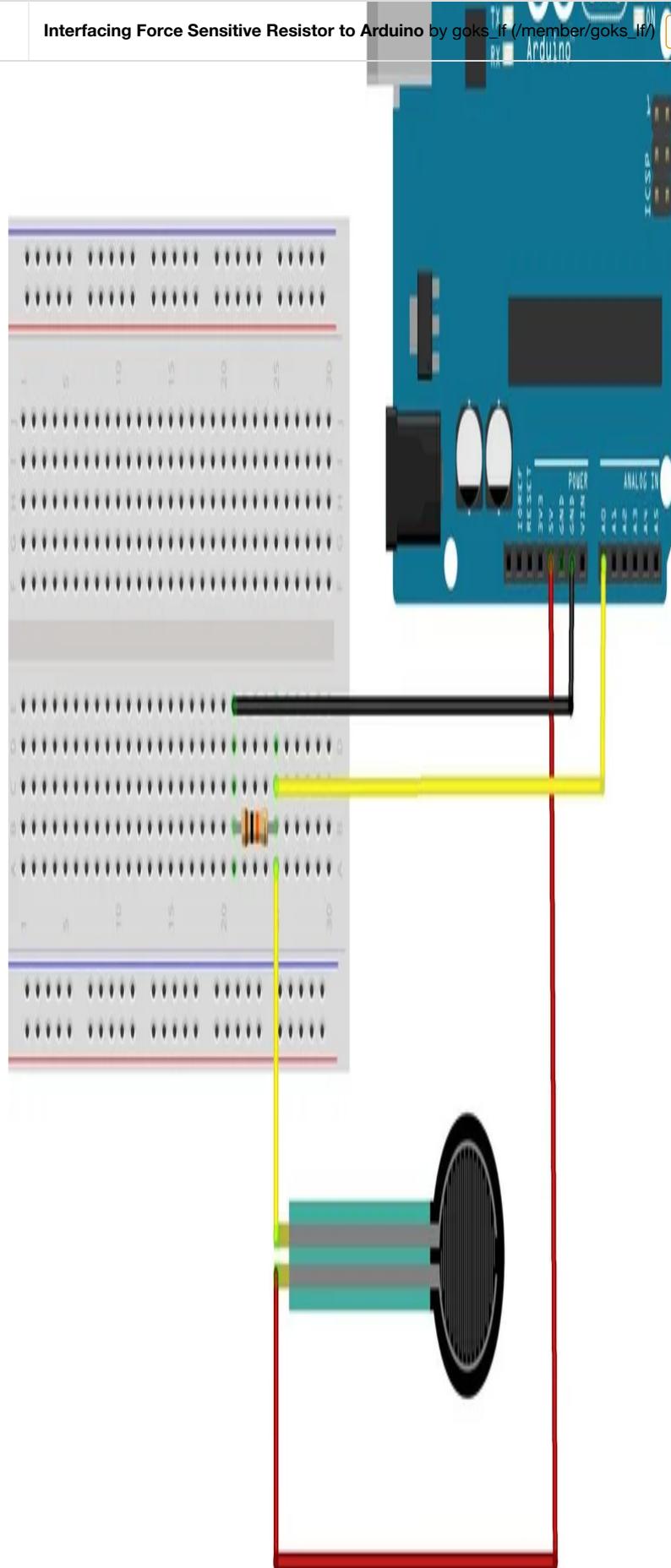
The FSR is made of 2 layers separated by a spacer. The more one presses, the more of those Active Element dots touch the semiconductor and that makes the resistance go down.

FSRs are basically a resistor that changes its resistive value (in ohms Ω) depending on **how much it is pressed**. These sensors are fairly low cost, and easy to use but they're rarely accurate. They also vary some from sensor to sensor perhaps 10%. So basically when you use FSRs you should only expect to get ranges of response. While FSRs can detect weight, they're a bad choice for detecting exactly how many pounds of weight are on them.

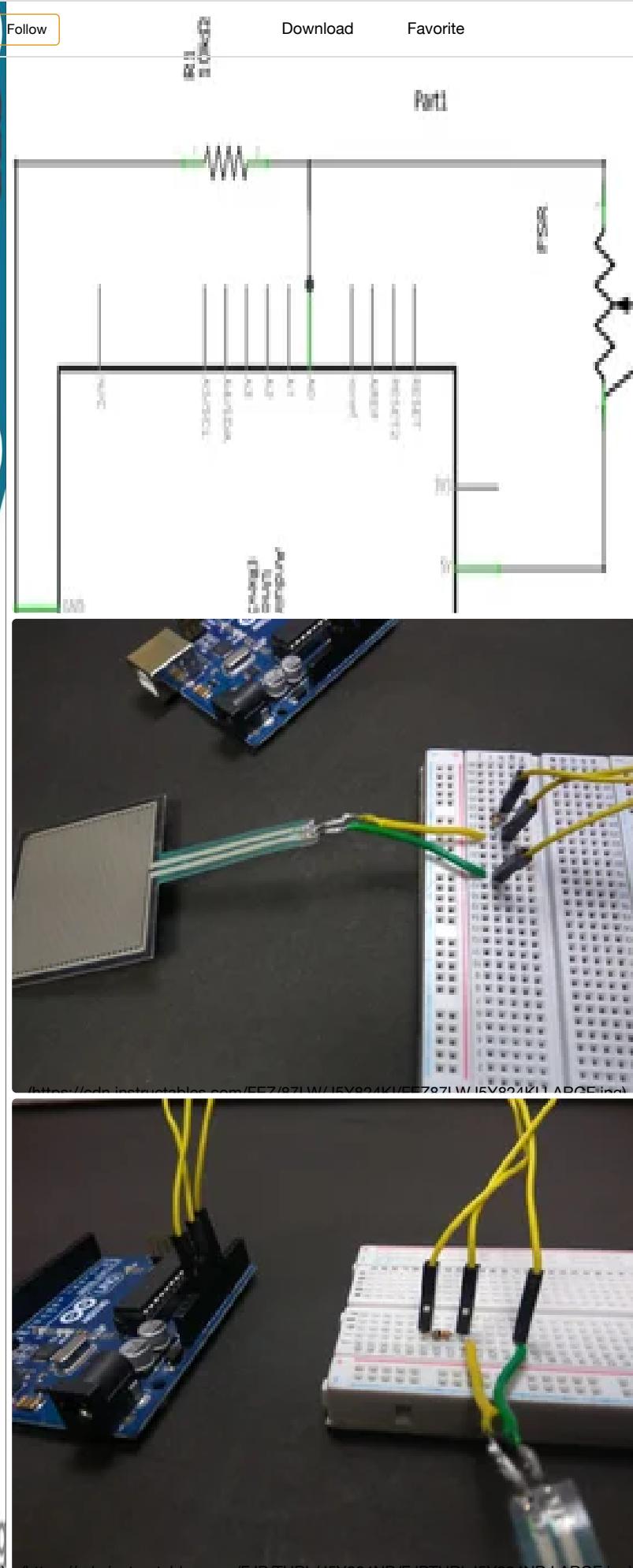
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Step 3: Connections





fritzing



- The FSR has two pins, one will be connected to 5V pin.
- The other to A0 directly and to Gnd pin via a resistor.

If you need to connect the LED and control it's brightness, then connect it across pin 13 and Gnd of the Arduino.

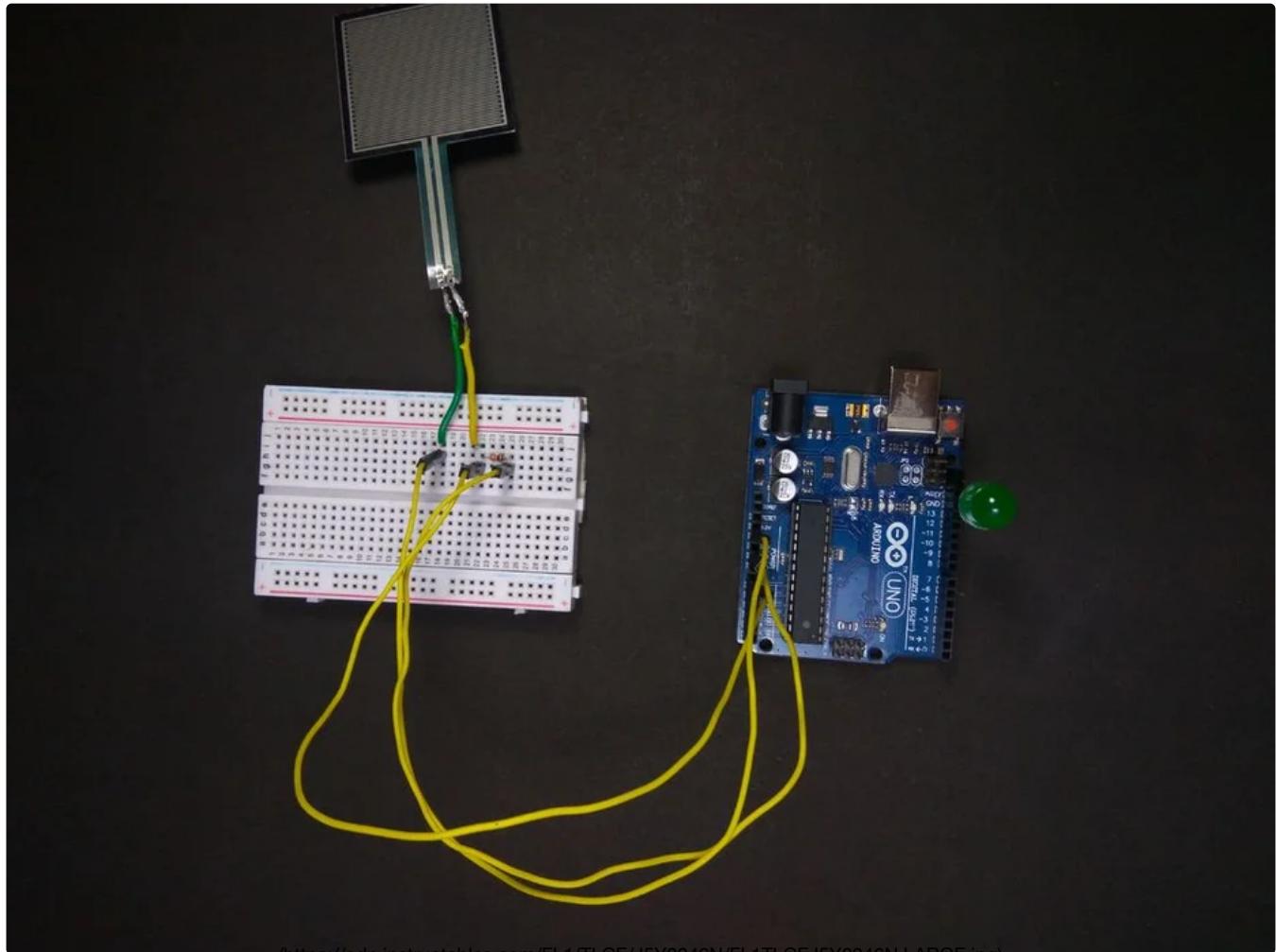
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Step 4: The Code



```

void setup(void) {
    Serial.begin(9600);
}

void loop(void) {
    fsrReading = analogRead(fsrPin);

    Serial.print("Analog reading = ");
    Serial.print(fsrReading);      // the raw analog reading

    if (fsrReading == 0) {
        Serial.println(" - No pressure");
    } else if (fsrReading < 10) {
        Serial.println(" - Light touch");
    } else if (fsrReading < 50) {
        Serial.println(" - Light squeeze");
    } else if (fsrReading < 150) {
        Serial.println(" - Medium squeeze");
    } else {
        Serial.println(" - Big squeeze");
    }
    delay(1000);
}

```

The above code is for simply reading the values. The below code can be used to change the brightness when you connect an LED across the Digital Pin 13 of the Arduino.

```

/* FSR testing sketch.
Connect one end of FSR to 5V, the other end to Analog 0.
Then connect one end of a 10K resistor from Analog 0 to ground
Connect LED from pin 13 through a resistor to ground

int fsrAnalogPin = 0; // FSR is connected to analog 0
int LEDpin = 11;      // connect Red LED to pin 11 (PWM pin)
int fsrReading;       // the analog reading from the FSR resistor divider
int LEDbrightness;

void setup(void) {
    Serial.begin(9600); // We'll send debugging information via the Serial monitor
    pinMode(LEDpin, OUTPUT);
}

void loop(void) {
    fsrReading = analogRead(fsrAnalogPin);
    Serial.print("Analog reading = ");
    Serial.println(fsrReading);

    // we'll need to change the range from the analog reading (0-1023) down to the range
    // used by analogWrite (0-255) with map!
    LEDbrightness = map(fsrReading, 0, 1023, 0, 255);
    // LED gets brighter the harder you press
    analogWrite(LEDpin, LEDbrightness);
}

```



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Step 5: The Result



The image shows two side-by-side Arduino serial monitor windows. Both windows have a light blue header bar with the text 'M7 (Arduino/Genuino Uno)' and a standard window control bar (minimize, maximize, close).

The left window displays a series of 'reading = 0 - No pressure' messages, indicating no input from the FSR.

The right window displays a series of messages showing increasing pressure values: 'reading = 0 - No pressure', 'reading = 194 - Big squeeze', 'reading = 283 - Big squeeze', 'reading = 231 - Big squeeze', 'reading = 0 - No pressure', 'reading = 0 - No pressure', 'reading = 0 - No pressure', 'reading = 296 - Big squeeze', 'reading = 290 - Big squeeze', 'reading = 281 - Big squeeze', 'reading = 284 - Big squeeze', 'reading = 293 - Big squeeze', 'reading = 239 - Big squeeze', and 'reading = 249 - Big squeeze'. These values correspond to the increasing pressure applied to the FSR.

Both windows have a bottom status bar with the text 'No line ending' and '9600 baud'.

Once you have uploaded the code, open up the serial monitor. You will see it display the values from the FSR. You can use these values to run different applications based on your projects. Like if you want to control an LEDs brightness upload the second code on to the Arduino.

That's All Folks !!! Stay Tuned For More !!

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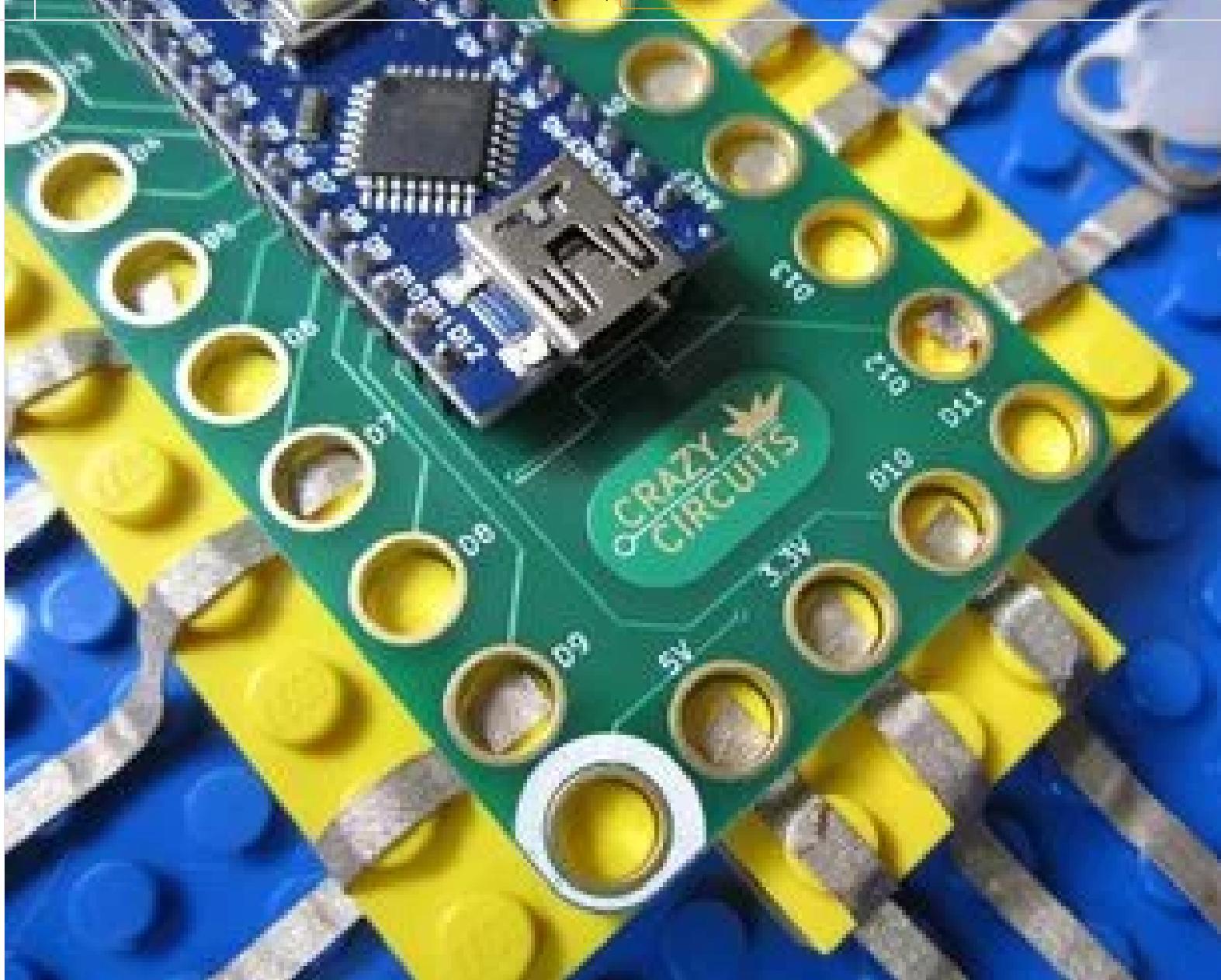
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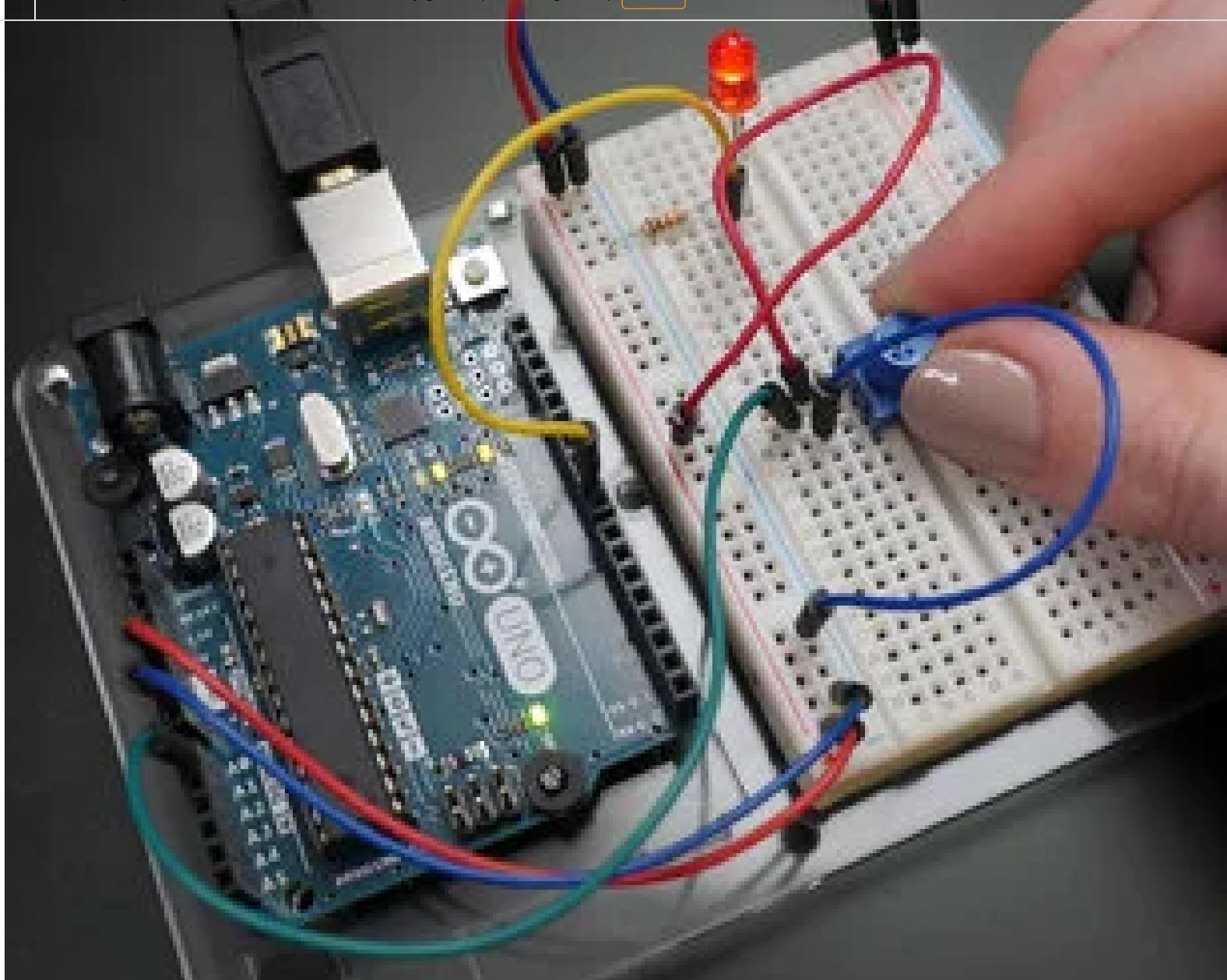
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(/member/Grumpy+Mike/) Grumpy Mike (/member/Grumpy+Mike/) 2 months ago

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You have no current limiting resistor in your LED. They havent been fitted on an Arduino since at least 2006. The resistor on the sensor is going to the wrong place, it should go to 5V not ground. It will never work the way you have drawn it.



(/member/ReneS82/) ReneS82 (/member/ReneS82/) Question 3 months ago

Answer

▲ Upvote



(/member/RodrigoC211/) RodrigoC211 (/member/RodrigoC211/) Question 7 months ago on Introduction

Answer

Upvote

Hi, how long can the cables connecting the FSR to the Arduino be? Does it alter the resistance? What if I need almost 10m cables connecting the sensor to the device? does it work still?



(/member/NazninS/) NazninS (/member/NazninS/) 9 months ago

Reply

Upvote

can anyone tell me what is the unit here?

The screenshot shows a serial monitor window with the title "Arduino Uno". It displays a series of lines of text representing FSR readings. The text is as follows:

```
- No pressure
- No pressure
4 - Big squeeze
3 - Big squeeze
1 - Big squeeze
- No pressure
- No pressure
- No pressure
6 - Big squeeze
0 - Big squeeze
1 - Big squeeze
4 - Big squeeze
3 - Big squeeze
9 - Big squeeze
9 - Big squeeze
```

Below the text, there is a status bar with the message "No line endings".

(<https://cdn.instructables.com/F8X/AA8I/JHGJGWWX/F8XAA8IJHGJGWWX.LARGE.jpg>)



(/member/Joacosurf/) Joacosurf (/member/Joacosurf/) 1 year ago

Reply

Upvote

Hi!

This looks interesting. I want to mesure the needed force generates by the buoyancy force of an submerge object. The buoyancy force must be higher that 80 N (as a example), how can I write my code for newton units? sorry but I' dont't know much coding

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