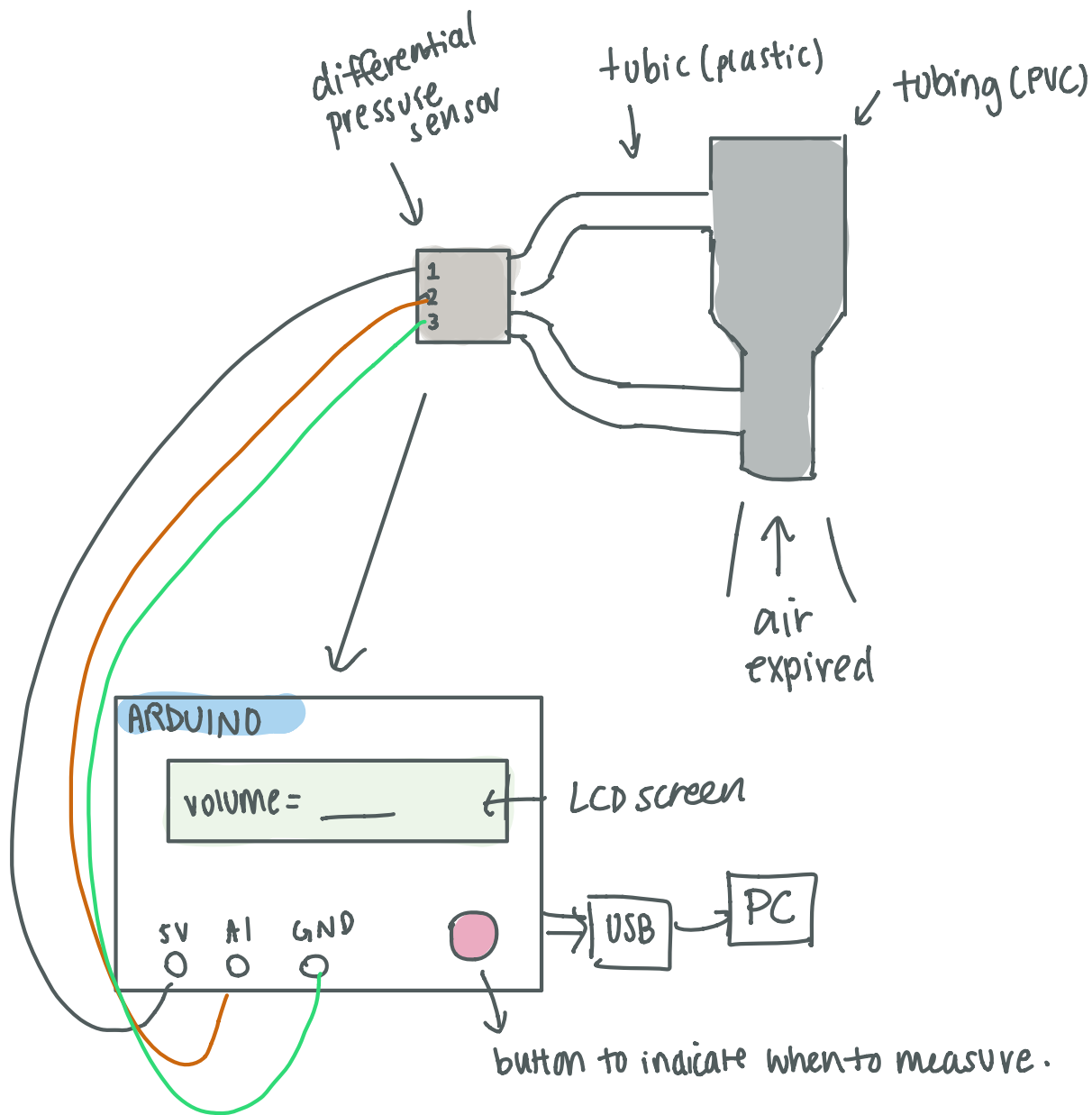


Spirometer Flowchart



Code

Analog signal from pressure sensor



Analog signal to arduino



Converts to digital value
So convert back to analog

Convert voltage → pressure

(check data sheet)



Convert units Psi → Pa if needed



Calculate mass flow from pressure

$$dP = \frac{\overset{\text{mass flow}}{W^2}}{2\rho} \cdot \left(\frac{1}{A_2^2} - \frac{1}{A_1^2} \right)$$

↓
kg/s



mass flow → volumetric flow

(divide by density)



find volume by manually
adding flow rate over time

(delay in arduino and
"integrate" over time)