Code structure:

At setup:

The program establishes connection with the LCD display via the preprocessed header file LiquidCrystal.h

Establishes the pin A1 on the Arduino to become our analog input pin from which the output voltage from the amplifier is read.

At the body of the code:

Establish variable and pin connections

Check whether any buttons are being pushed {

If the SELECT button is pressed

Calibration function is initialized

Instructions printed on LCD

Take analog read values at no weight and average

Take analog read values at 100g and average

Return the HIGH and LOW values}

If the LEFT button is pressed

Set zero function is initialized

Instead of taking no weight to be the LOW value for the map

LOW value of map is set to analog read of the current weight voltage

}

Printing the weight and flow rate {

Take analog read value from the pin

Map the value between the HIGH and LOW read values from the calibration function

Map that between no weight and 100g (meaning that beyond 100g the scale loses accuracy)

Take 20 readings over a second for the weight and calculate mean to account for fluctuations from equipment

LCD print that mean weight as the current weight to improve accuracy

Flow rate = (Current Weight – Previous Weight)/Time between readings

If the flow rate is above the threshold of $10cm^3/s$ then the flow rate is recorded as not being an anomaly

LCD print the flow rate

Delay of 50ms to the program so the barista may read any values displayed