int sensorInterrupt = 0;

int sensorInterrupt1 = 1;

int sensorInterrupt2 = 2;

int sensorPin1 = 2;

int sensorPin2 = 3;

int sensorPin3 = 4;

int solenoidValve1 = 8;

int solenoidValve2 = 9;

int solenoidValve3 = 10;

unsigned int SetPoint = 500; //mm

int state;

int firstVal, secondVal;

float calibrationFactor = 90;

volatile byte pulseCount = 0;

float flowRate = 0.0;

unsigned int flowMilliLitres = 0;

unsigned long totalMilliLitres = 0;

unsigned long oldTime = 0;

String input = "";

int counter = 0;

int lastIndex = 0;

void setup()

{

Serial.begin(9600);

pinMode(solenoidValve1 , OUTPUT);

pinMode(solenoidValve2 , OUTPUT);

pinMode(solenoidValve3 , OUTPUT);

pinMode(sensorPin1, INPUT);

pinMode(sensorPin2, INPUT);

pinMode(sensorPin3, INPUT);

digitalWrite(sensorPin1, HIGH);

attachInterrupt(sensorInterrupt, pulseCounter, FALLING);

digitalWrite(sensorPin2, HIGH);

attachInterrupt(sensorInterrupt1, pulseCounter, FALLING);

digitalWrite(sensorPin3, HIGH);

attachInterrupt(sensorInterrupt2, pulseCounter, FALLING);

}

void loop()

{

char state, lit, ch;

if (Serial.available() > 0) {

data = Serial.read();

for (int i = 0; i < data.length(); i++) {

if (data.substring(i, i + 1) == ",") {

firstVal = data.substring(0, i).toInt();

secondVal = data.substring(i + 1).toInt();

break;

}

}

Serial.println(firstVal);

Serial.println(secondVal);

}

if (firstVal == '1') {

digitalWrite(solenoidValve1, LOW);

if ((millis() - oldTime) > 1000)

{

detachInterrupt(sensorInterrupt);

flowRate = ((1000.0 / (millis() - oldTime)) \* pulseCount) / calibrationFactor;

oldTime = millis();

flowMilliLitres = (flowRate / 60) \* 1000;

totalMilliLitres += flowMilliLitres;

unsigned int frac;

Serial.print("Flow rate: ");

Serial.print(flowMilliLitres, DEC); // Print the integer part of the variable

Serial.print("mL/Second");

Serial.print("\t");

Serial.print("Output Liquid Quantity: ");

Serial.print(totalMilliLitres, DEC);

Serial.println("mL");

Serial.print("\t");

if (totalMilliLitres >= secondVal)

{

SetSolinoidValve();

}

pulseCount = 0;

attachInterrupt(sensorInterrupt, pulseCounter, FALLING);

}

firstVal = 0;

}

else if (firstVal == '2') {

digitalWrite(solenoidValve2, LOW);

if ((millis() - oldTime) > 1000)

{

detachInterrupt(sensorInterrupt1);

flowRate = ((1000.0 / (millis() - oldTime)) \* pulseCount) / calibrationFactor;

oldTime = millis();

flowMilliLitres = (flowRate / 60) \* 1000;

totalMilliLitres += flowMilliLitres;

unsigned int frac;

Serial.print("Flow rate: ");

Serial.print(flowMilliLitres, DEC); // Print the integer part of the variable

Serial.print("mL/Second");

Serial.print("\t");

Serial.print("Output Liquid Quantity: ");

Serial.print(totalMilliLitres, DEC);

Serial.println("mL");

Serial.print("\t");

if (totalMilliLitres >= secondVal)

{

SetSolinoidValve();

}

pulseCount = 0;

attachInterrupt(sensorInterrupt1, pulseCounter, FALLING);

}

firstVal = 0;

}

else if (firstVal == '3') {

digitalWrite(solenoidValve3, LOW);

if ((millis() - oldTime) > 1000)

{

detachInterrupt(sensorInterrupt2);

flowRate = ((1000.0 / (millis() - oldTime)) \* pulseCount) / calibrationFactor;

oldTime = millis();

flowMilliLitres = (flowRate / 60) \* 1000;

totalMilliLitres += flowMilliLitres;

unsigned int frac;

Serial.print("Flow rate: ");

Serial.print(flowMilliLitres, DEC); // Print the integer part of the variable

Serial.print("mL/Second");

Serial.print("\t");

Serial.print("Output Liquid Quantity: ");

Serial.print(totalMilliLitres, DEC);

Serial.println("mL");

Serial.print("\t");

if (totalMilliLitres >= secondVal)

{

SetSolinoidValve();

}

pulseCount = 0;

attachInterrupt(sensorInterrupt2, pulseCounter, FALLING);

}

firstVal = 0;

}

}

//Insterrupt Service Routine

void pulseCounter()

{

// Increment the pulse counter

pulseCount++;

}

void SetSolinoidValve()

{

digitalWrite(solenoidValve1, HIGH);

}