const int numReadings = 10; // number of elements in shift register

const int inputPin = 35; // input pin for microcontroller

float readings[numReadings]; // shift register that holds last n current readings, where n = numReadings

float total = 0; // the total of currents in shift register

float average = 0; // the average of last n current readings, where n = numReadings

float current = 0.0; // calculated current from sensor

int inputVal = 0; // raw input from sensor

int bias = 0; // input from sensor adjusted for zero-current bias

void setup() {

Serial.begin(115200); // initialize serial communication with computer

for (int i = 0; i < numReadings; i++) { // initialize all the readings to 0

readings[i] = 0;

}

}

void loop() {

for(int i = 1; i < numReadings; i++){ // shift register to the right || Ex: [X | Y | Z ] --> [X | X | Y]

readings[numReadings - i] = readings[numReadings - (i + 1)];

}

inputVal = analogRead(inputPin); // read raw input from sensor

bias = inputVal - (1850); // adjust reading for zero-current bias

current = bias/(165.0); // calculate current from sensor using known component sensitivity

readings[0] = current; // store new value in 0th index || Ex: [X | X | Y] --> [W | X | Y]

for (int i = 0; i < numReadings; i++){ // sum recent currents within shift register

total += readings[i];

}

average = total/numReadings; // find average value within shift register

total = 0; // zero total for next loop

Serial.println(average); // print average current to serial monitor

delay(10); // introduce delay to allow for settle time/stability

}