

11 Umerjanje (temperaturnega) senzorja

Zaradi različnih dejavnikov je potrebno senzorje predhodno umeriti. Umeritvene postopke pogosto podajo proizvajalci senzorjev, lahko pa ga storite sami. Preprost in univerzalen postopek je, da si zabeležite pare meritev vrednosti senzorja z merjenimi vrednostmi.

11.1 Umeritveni postopek

11.1.1 NALOGA: Umeritveni postopek

Naredite umeritveni postopek in predstavite tabelo s podatki.

T[°C] | U[V]

Program 1: Umerjanje senzorja.

```

1  const int TEMPERATURE_SENSOR = A0;
2  void wait_for_user_to_entry_data();
3  void print_average_value_of(int input_pin);
4
5  void loop() {
6      wait_for_user_to_entry_data();
7      print_average_value_of(TEMPERATURE_SENSOR);
8  }
9
10 void setup() {
11     Serial.begin(9600);
12     Serial.println("#####");
13     Serial.println("# INSTRUCTIONS:                #");
14     Serial.println("# 1. Insert temperature (example: 22.4) #");
15     Serial.println("# 2. then press ENTER                #");
16     Serial.println("# 3. repeat steps 1. and 2. ...      #");
17     Serial.println("# When you are done with calibration: #");
18     Serial.println("# 4. Copy data to spreadsheet.        #");
19     Serial.println("# 5. Add some polynome to the points. #");
20     Serial.println("# 6. Insert coeficients into file:    #");
21     Serial.println("#      'temperature.ino'              #");
22     Serial.println("#####");
23     Serial.print("T°[C]");Serial.println("\tADC Value");
24 }
25
26 void wait_for_user_to_entry_data(){
27     bool data_entry_is_complete = false;
28     while (!data_entry_is_complete){
29         if (Serial.available()){
30             char inChar = Serial.read();
31             if (inChar == '\n')
32                 data_entry_is_complete = true;
33             else
34                 Serial.print(inChar);
35         }
36     }
37 }
38
39 void print_average_value_of(int input_pin){
40     Serial.print("\t");
41     long ADC_value = 0;
42     for (int i = 0; i < 128; i++){
43         ADC_value += analogRead(input_pin);
44         delay(1);
45     }
46     float avg_ADC_val = (float)ADC_value/128;
47     Serial.println(avg_ADC_val);
48 }

```