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/*HW5_2: Mbed communicates with two TMP102 temperature sensor, and scales
 and displays readings to screen.                                        */
#include "mbed.h"
I2C tsensorOne(p9, p10);      //sda, scl
I2C tsensorTwo(p9, p10);
Serial pc(USBTX, USBRX);      //tx, rx
const int addrOne = 0x90;
const int addrTwo = 0x91;
char config_t1[3];
char config_t2[3];
char tOne_read[2];
char tTwo_read[2];
float tOne;
float tTwo;

int main() {
  config_t1[0] = 0x01;             //sensor1 set pointer reg to 'config register'
  config_t1[1] = 0x60;            //sensor1 config data byte1
  config_t1[2] = 0xA0;            //sensor1 config data byte2
  tsensorOne.write(addrOne, config_t1, 3);
  config_t1[0] = 0x00;              //sensor1 set pointer reg to 'data register'
  tsensorOne.write(addrOne, config_t1, 1);   //send to pointer 'read temp'

  config_t2[0] = 0x01;            //sensor2 set pointer reg to 'config register'
  config_t2[1] = 0x60;            //sensor2 config data byte1
  config_t2[2] = 0xA0;            //sensor2 config data byte2
  tsensorTwo.write(addrTwo, config_t2, 3);
  config_t2[0] = 0x00;             //set pointer reg to 'data register'
  tsensorTwo.write(addrTwo, config_t2, 1);   //send to pointer 'read temp'

  while(1) {
    wait(1);
    tsensorOne.read(addrOne, tOne_read, 2);       //read the two-byte temp data
    tOne = 0.0625 * (((tOne_read[0] << 8) + tOne_read[1]) >> 4);  //convert data
    pc.printf("Temp One = %.2f degC\n\r", tOne);

    wait(1);
    tsensorTwo.read(addrTwo, tTwo_read, 2);       //read the two-byte temp data
    tTwo = 0.0625 * (((tTwo_read[0] << 8) + tTwo_read[1]) >> 4);  //convert data
    pc.printf("Temp Two = %.2f degC\n\r", tTwo);
  }
}
```