LAB ASSIGNMENT-4

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LAB EXERCISE - Nucleo sensors shield

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In this exercise we will read the environmental sensors on the Nucleo sensors shield (X-NUCLEO-IKS01A1)

with the help of the ST Nucleo Sensor Shield library which is compatible with the MBED API.

Then we will send the measurements via USB to our PC using serial communication.

We can then display the results using a terminal emulation program (e.g. Termite).

At the same time the program blinks the on board LED to show alivness.

GOOD LUCK!

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#include "mbed.h"

#include "x\_cube\_mems.h"

DigitalOut led1(LED1);

// Create a Serial objects to communicate via USB

Serial pc(SERIAL\_TX, SERIAL\_RX);

float humidityvalue;

float pressurevalue;

float Cel;

float Far;

float kel;

AxesRaw\_TypeDef MAG\_Value;

AxesRaw\_TypeDef ACC\_Value;

AxesRaw\_TypeDef GYR\_Value;

Ticker ticker;

void call(void)

{

led1 = !led1;

}

int main() {

static X\_CUBE\_MEMS \*mems\_expansion\_board = X\_CUBE\_MEMS::Instance();

ticker.attach(call, 0.5);

while(1) {

mems\_expansion\_board->hts221.GetTemperature((float \*)&Cel);

mems\_expansion\_board->hts221.GetHumidity((float \*)&humidityvalue);

mems\_expansion\_board->lps25h.GetPressure((float \*)&pressurevalue);

kel=(Cel + 459.67) \* 0.555f;

Cel = (Cel \* 1.8f) + 32.0f;

pc.printf("Temp:%f C / %f F %f K \t", Cel, Far,kel);

pc.printf("Humidity %f \t ", humidityvalue);

pc.printf("Pressure %f \n", pressurevalue);

wait(3);

}

}

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