#include "mbed.h"

// Button

DigitalIn button(PB\_5);

//Define output bus for the RGB LED

DigitalOut led\_r(PB\_10);

DigitalOut led\_g(PA\_8);

DigitalOut led\_b(PA\_9);

//I2C interface

I2C temp\_sensor(I2C\_SDA, I2C\_SCL);

Serial pc(PA\_2, PA\_3);

//I2C address of temperature sensor DS1631

const int temp\_addr = 0x90;

char cmd[] = {0x51, 0xAA};

char read\_temp[2];

/\*----------------------------------------------------------------------------

MAIN function

\*----------------------------------------------------------------------------\*/

AnalogIn volume(PA\_0);

AnalogIn pitch(PA\_1);

PwmOut speaker(PB\_4);

Thread thread1;

Thread thread2;

Thread thread3;

void audio(){

while(1){

speaker = volume / 10;

speaker.period((3.125 - (3.0 \* (float)pitch)) / 1000.0);

wait\_ms(1);

}

}

void light(){

while(1) {

led\_r = !led\_r;

led\_g = !led\_g;

led\_b = !led\_b;

wait(1);

}

}

void temp(){

// Start Convert T command to the sensor

while(1) {

temp\_sensor.write(temp\_addr, &cmd[0], 1, 0);

wait(1);

temp\_sensor.write(temp\_addr, &cmd[1], 1, 1);

// Read the 16-bit temperature data

temp\_sensor.read(temp\_addr, read\_temp, 2, 0);

// Convert temperature to Celsius

float temp = (float((read\_temp[0] << 8) | read\_temp[1]) / 256);

// Send data

if (pc.writeable())

pc.printf("Temp: %f\r\n", temp);

}

}

void counter() {

int nb = 0;

while(1){

if (!button)

{

nb++;

if (pc.writeable())

pc.printf("Button: %d\r\n", nb);

wait(500);

}

}

}

int main(){

thread1.start(light);

thread2.start(temp);

thread3.start(counter);

audio();

}