#include "driverlib.h"

#include <string.h>

#include <stdio.h>

// DHT11 Pin

#define DHT\_PIN GPIO\_PORT\_P1, GPIO\_PIN0

// MQ2 and MQ7 Pins

#define MQ2\_PIN GPIO\_PORT\_P1, GPIO\_PIN1

#define MQ7\_PIN GPIO\_PORT\_P1, GPIO\_PIN2

// UART Configuration

const eUSCI\_UART\_Config uartConfig = {

EUSCI\_A\_UART\_CLOCKSOURCE\_SMCLK,

78, 2, 0, // Baud Rate 9600

EUSCI\_A\_UART\_NO\_PARITY,

EUSCI\_A\_UART\_LSB\_FIRST,

EUSCI\_A\_UART\_ONE\_STOP\_BIT,

EUSCI\_A\_UART\_MODE,

EUSCI\_A\_UART\_OVERSAMPLING\_BAUDRATE\_GENERATION

};

// Function Prototypes

void initUART(void);

void sendDataUART(const char\* data);

int readMQSensor(uint8\_t pin);

void readDHT(float\* temperature, float\* humidity);

void main(void) {

WDT\_A\_holdTimer(); // Stop Watchdog Timer

// Set up clock system

CS\_setDCOCenteredFrequency(CS\_DCO\_FREQUENCY\_12);

CS\_initClockSignal(CS\_SMCLK, CS\_DCOCLK\_SELECT, CS\_CLOCK\_DIVIDER\_1);

// Initialize GPIO for sensors

GPIO\_setAsInputPin(MQ2\_PIN);

GPIO\_setAsInputPin(MQ7\_PIN);

// Initialize UART

initUART();

// Variables for sensor readings

int mq2Value, mq7Value;

float temperature, humidity;

char buffer[64];

while (1) {

// Read sensor values

mq2Value = readMQSensor(GPIO\_PIN1);

mq7Value = readMQSensor(GPIO\_PIN2);

readDHT(&temperature, &humidity);

// Check for valid DHT readings

if (temperature == -1 || humidity == -1) {

sprintf(buffer, "DHT Error!\r\n");

} else {

// Format data into a string

sprintf(buffer, "%d,%d,%.2f,%.2f\n", mq2Value, mq7Value, temperature, humidity);

}

// Send data via UART

sendDataUART(buffer);

// Add a delay

\_\_delay\_cycles(12000000); // Delay ~1 second

}

}

// Initialize UART

void initUART(void) {

// Configure UART pins

GPIO\_setAsPeripheralModuleFunctionInputPin(GPIO\_PORT\_P1,

GPIO\_PIN2 | GPIO\_PIN3, GPIO\_PRIMARY\_MODULE\_FUNCTION);

// Initialize UART

UART\_initModule(EUSCI\_A0\_BASE, &uartConfig);

UART\_enableModule(EUSCI\_A0\_BASE);

}

// Send data via UART

void sendDataUART(const char\* data) {

while (\*data) {

UART\_transmitData(EUSCI\_A0\_BASE, \*data++);

}

}

// Read MQ Sensor (simply reads the analog value; replace with ADC code)

int readMQSensor(uint8\_t pin) {

// Dummy implementation

return 100; // Replace with actual ADC reading code

}

// Read DHT11 Sensor (replace with your DHT library implementation)

void readDHT(float\* temperature, float\* humidity) {

// Dummy values for DHT

\*temperature = 25.0; // Replace with actual DHT reading code

\*humidity = 60.0; // Replace with actual DHT reading code

}