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sbit Data at RA0_bit;
sbit DataDir at TRISA0_bit;
char message1[] = "Temp = 00.0 C";
char message2[] = "RH   = 00.0 %";
unsigned short TOUT = 0, CheckSum, i;
unsigned short T_Byte1, T_Byte2, RH_Byte1, RH_Byte2;

void StartSignal(){
    DataDir = 0;      // Data port is output
    Data     = 0;
    Delay_ms(25);
    Data     = 1;
    Delay_us(30);
    DataDir = 1;      // Data port is input
}

unsigned short CheckResponse(){
    TOUT = 0;
    TMR2 = 0;
    T2CON.TMR2ON = 1;      // start timer
    while(!Data && !TOUT);
    if (TOUT)return 0;
    else {
        TMR2 = 0;
        while(Data && !TOUT);
        if (TOUT) return 0;
        else{
            T2CON.TMR2ON = 0;
            return 1;
        }
    }
}

unsigned short ReadByte(){
    unsigned short num = 0, t;
    DataDir = 1;

    for (i=0; i<8; i++){
        while(!Data);
        TMR2 = 0;
        T2CON.TMR2ON = 1;
        while(Data);
        T2CON.TMR2ON = 0;
        /*
            For 10.0MHz clock, 1 machine cycle is 0.4 uS. So for 40 us, the
            TMR2 value should be 100
        */
        if(TMR2 > 100) num |= 1<<(7-i);  // If time > 40us, Data is 1
    }
    return num;
}

void interrupt(){
    if(PIR1.TMR2IF){
        TOUT = 1;
        T2CON.TMR2ON = 0; // stop timer
        PIR1.TMR2IF = 0; // Clear TMR0 interrupt flag
    }
}

unsigned char msg1[] = "No Response from the sensor";
unsigned char msg2[] = "Checksum Error! Trying Again...";

void main() {
    unsigned short check;

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PORTA = 0xFF;
PORTB = 0;
TRISB = 0x20;
TRISC = 0;
PORTC = 0;
TRISD = 0;
PORTD = 0;
ADCON1 = 0b10000111;
CMCON = 7;                                     // configure pins as input

INTCON.GIE = 1;    //Enable global interrupt
INTCON.PEIE = 1;   //Enable peripheral interrupt
// Configure Timer2 module
PIE1.TMR2IE = 1;   // Enable Timer2 interrupt
T2CON = 0;         // Prescaler 1:1, and Timer2 is off initially
PIR1.TMR2IF = 0;   // Clear TMR INT Flag bit
TMR2 = 0;

Lcd_Init();
Lcd_Cmd(_Lcd_Clear);
Lcd_Cmd(_LCD_CURSOR_OFF);

UART1_Init(9600);
Delay_ms(100);

do{
    Delay_ms(1000);
    StartSignal();
    check = CheckResponse();

    if (!check){
        Lcd_Cmd(_Lcd_Clear);
        Lcd_Out(1, 1, "No response");
        Lcd_Out(2, 1, "from the sensor");
        UART_Write_Text(msg1);
        UART1_Write(13);
        UART1_Write(10);
    }
    else{
        RH_Byte1 = ReadByte();
        RH_Byte2 = ReadByte();
        T_Byte1 = ReadByte();
        T_Byte2 = ReadByte();
        CheckSum = ReadByte();
        // Check for error in Data reception
        if (CheckSum == ((RH_Byte1 + RH_Byte2 + T_Byte1 + T_Byte2) & 0xFF)){
            message1[7] = T_Byte1/10 + 48;
            message1[8] = T_Byte1%10 + 48;
            message1[10] = T_Byte2/10 + 48;
            message2[7] = RH_Byte1/10 + 48;
            message2[8] = RH_Byte1%10 + 48;
            message2[10] = RH_Byte2/10 + 48;
            message1[11] = 178;    // Degree symbol use 223 if Greek letter appears
            Lcd_Cmd(_Lcd_Clear);
            Lcd_Out(1, 1, message1);
            Lcd_Out(2, 1, message2);
            UART_Write_Text(message1);
            UART1_Write(13);
            UART1_Write(10);
            UART_Write_Text(message2);
            UART1_Write(13);
            UART1_Write(10);
        }
        else{
            Lcd_Cmd(_Lcd_Clear);
            Lcd_Out(1, 1, "Checksum Error!");
            Lcd_Out(2, 1, "Trying Again...");
            UART_Write_Text(msg2);

```

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        UART1_Write(13);  
        UART1_Write(10);  
    }  
}  
}while(1);  
}
```