

Programming Embedded Systems 2016 / JB

Exercise 6 / 7/8.3.2016 / Deadline for submitting report 21.3.2016

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Equipment and tools

Equipment used:

- a) Texas Instruments LaunchPad **MSP430G2** development card
- b) Cables
- c) Own laptop

Task

This time, use two connected MSP430 in the following way. One MSP430 has a temperature sensor (NTC) connected and sends messages to the other one. The other one receives messages and sends back a "ACK" message. Requirements

- a) The MSP430 receiving should do the following
 - a. Blink on green per two second if temp <20
 - b. Blink two greens per two second if 20 < temp < 30 degrees
 - c. Blink three greens per two second if temp >30 degrees
- b) If no slave, the master should blink red continuously
- c) Error in the system, both should blink red continuously

```
MASTER          SLAVE
=====         =====
TX P1_2  --- RX P1_1
RX P1_1  --- TX P1_2
GND      --- GND
```

Set up serial port

```
#define TXD BIT2
#define RXD BIT
UCA0CTL1 |= UCSWRST; // **Initialize USCI state machine**
UCA0CTL1 |= UCSSEL_2; // SMCLK
UCA0CTL0 |= UCMSB; // SMCLK
UCA0BR0 = 0x68; // 1MHz 9600
UCA0BR1 = 0x00; // 1MHz 9600
UCA0MCTL = UCBS1; // Modulation

P1SEL |= RXD + TXD ; // P1.1 = RXD, P1.2=TXD
P1SEL2 |= RXD + TXD ; // P1.1 = RXD, P1.2=TXD

UCA0CTL1 &= ~UCSWRST; // **Take UART out of reset **

UC0IE |= UCA0RXIE; // Enable USCI_A0 RX interrupt
```

To send on port

```
UCA0TXBUF = byte;
```

Interrupt for receiving

```
__attribute__((interrupt(USCIAB0RX_VECTOR)))void USCI0RX_ISR(void)
{
    byte = UCAR0XBUF;
}
```