

Nov 29, 18 12:09

atMega48.c

Page 1/1

```

#include "uart_functions_m48.h"
#include "lm73_functions_skel.h"
#include "twi_master.h"
#include <avr/io.h>
#include <string.h>
#include <avr/interrupt.h>
#include <stdlib.h>
#include <util/delay.h>

char    lcd_string_array[3]; //holds a string to refresh the LCD
uint8_t i;                  //general purpose index

extern uint8_t lm73_wr_buf[2]; //.....
extern uint8_t lm73_rd_buf[2]; //.....

//*****
//          spi_init
//Initializes the SPI port on the megal28. Does not do any further
// external device specific initializations.
//*****
void spi_init(void){
    DDRB |= 0x07; //Turn on SS, MOSI, SCLK
    //mstr mode, sck=clk/2, cycle 1/2 phase, low polarity, MSB 1st,
    //no interrupts, enable SPI, clk low initially, rising edge sample
    SPCR=(1<<SPE) | (1<<MSTR);
    SPSR=(1<<SPI2X); //SPI at 2x speed (8 MHz)
} //spi_init

//*****
/*          main          */
//*****
int main ()
{
    uint16_t lm73_temp; //a place to assemble the temperature from the lm73

    spi_init(); //..... //initialize SPI
    init_twi(); //..... //initialize TWI (twi_master.h)
    uart_init();
    sei(); //enable interrupts before entering loop

    //set LM73 mode for reading temperature by loading pointer register
    lm73_wr_buf[0] = (&lm73_temp); //..... //load lm73_wr_buf[0] with temp
    erature pointer address
    twi_start_wr(LM73_WRITE, lm73_wr_buf, 2); //..... //start the TWI write
    process
    _delay_ms(2); //wait for the xfer to finish

    char test;
    while(1){ //main while loop
        _delay_ms(500); //tenth second wait
        twi_start_rd(LM73_READ, lm73_rd_buf, 2); //..... //read temperature
        data from LM73 (2 bytes)
        _delay_ms(2); //wait for it to finish
        lm73_temp = lm73_rd_buf[0]; //..... //save high temperature byte i
        nto lm73_temp
        lm73_temp = (lm73_temp<<8); //..... //shift it into upper byte
        lm73_temp |= lm73_rd_buf[1]; //..... //"OR" in the low temp byte t
        o lm73_temp
        itoa(lm73_temp>>7, lcd_string_array, 10); //..... //convert to st
        ring in array with itoa() from avr-libc
        //uart_puts(lcd_string_array);
        uart_putc(lcd_string_array[0]);
        uart_putc(lcd_string_array[1]);
        uart_putc(' ');
        uart_putc('\0');
    } //while
} //main

```