```
#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
//Initalizes the SPI port on the mega128. Does not do any further
// external device specific initalizations.
//*********************************************************************
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();//................. //initalize SPI
init_twi();//................. //initalize 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

    // Send message to atmega128, end with a ' ' character
    uart_putc(lcd_string_array[0]);
    uart_putc(lcd_string_array[1]);
    uart_putc(' ');
    uart_putc('\0');
} //while
} //main
```