/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

\*Filename : i2c1602\_lcd.c

\*Description : test iic 1602 lcd

\*Company : SunRobotics Technologies

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#include <stdio.h>

#include <wiringPi.h>

#include <wiringPiI2C.h>

#include <string.h>

int LCDAddr = 0x3f;//IIc LCD address

int BLEN = 1;//1--open backlight.0--close backlight

int fd;//linux file descriptor

//writ a word(16 bits) to LCD

void write\_word(int data){

int temp = data;

if ( BLEN == 1 )

temp |= 0x08;

else

temp &= 0xF7;

wiringPiI2CWrite(fd, temp);

}

//send command to lcd

void send\_command(int comm){

int buf;

// Send bit7-4 firstly

buf = comm & 0xF0;

buf |= 0x04; // RS = 0, RW = 0, EN = 1

write\_word(buf);

delay(2);

buf &= 0xFB; // Make EN = 0

write\_word(buf);

// Send bit3-0 secondly

buf = (comm & 0x0F) << 4;

buf |= 0x04; // RS = 0, RW = 0, EN = 1

write\_word(buf);

delay(2);

buf &= 0xFB; // Make EN = 0

write\_word(buf);

}

//send data to lcd

void send\_data(int data){

int buf;

// Send bit7-4 firstly

buf = data & 0xF0;

buf |= 0x05; // RS = 1, RW = 0, EN = 1

write\_word(buf);

delay(2);

buf &= 0xFB; // Make EN = 0

write\_word(buf);

// Send bit3-0 secondly

buf = (data & 0x0F) << 4;

buf |= 0x05; // RS = 1, RW = 0, EN = 1

write\_word(buf);

delay(2);

buf &= 0xFB; // Make EN = 0

write\_word(buf);

}

//initialize the lcd

void init(){

send\_command(0x33); // Must initialize to 8-line mode at first

delay(5);

send\_command(0x32); // Then initialize to 4-line mode

delay(5);

send\_command(0x28); // 2 Lines & 5\*7 dots

delay(5);

send\_command(0x0C); // Enable display without cursor

delay(5);

send\_command(0x01); // Clear Screen

wiringPiI2CWrite(fd, 0x08);

}

//clear screen

void clear(){

send\_command(0x01); //clear Screen

}

//Print the message on the lcd

void write(int x, int y, char data[]){

int addr, i;

int tmp;

if (x < 0) x = 0;

if (x > 15) x = 15;

if (y < 0) y = 0;

if (y > 1) y = 1;

// Move cursor

addr = 0x80 + 0x40 \* y + x;

send\_command(addr);

tmp = strlen(data);

for (i = 0; i < tmp; i++){

send\_data(data[i]);

}

}

void print\_info()

{

printf("\n");

printf("|\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*|\n");

printf("| IIC 1602 LCD test |\n");

printf("| -------------------------- |\n");

printf("| | LCD | | Pi |\n");

printf("| -------------------------- |\n");

printf("| | GND | connect to | GND |\n");

printf("| | VCC | connect to | 5V |\n");

printf("| | SDA | connect to | SDA.1 |\n");

printf("| | SCL | connect to | SCL.1 |\n");

printf("| -------------------------- |\n");

printf("| |\n");

printf("|\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*|\n");

printf("Program is running...\n");

printf("Press Ctrl+C to end the program\n");

}

int main(){

//init I2C

fd = wiringPiI2CSetup(LCDAddr);

init();

print\_info();

write(0, 0, "Hi man.Welcome ");

write(0, 1, "SunRobotics");

delay(3000);

clear();

while(1){

write(0,0,"This is Lesson13");

write(0,1,"IIC LCD Test");

delay(1000);

}

return 0;

}