#include <LPC214X.H>

#include "lcd.h"

#include "uart.h"

main()

{

VPBDIV=0X02; //set the clock speed for 30 mhz

PINSEL0=0X00000005; //selecting uart o port pins

IODIR1 |= 0X003F0000; //calling direction for lcd pins

uartini(); //calling uart inilization function

delay(50);

lcdini(); //calling lcd inilization function

delay(50);

cmd(0x80);

lcdstr("GAS LEAK DETECTION AND");

cmd(0xc0);

lcdstr("LOCATION SYSTEMS");

cmd(0x01); //lcd clear command

delay(100);

while(1)

{

if(!((IOPIN0)&(1<<6)))

{

cmd(0x01);

lcdstr("GAS-1 IS DETECTED");

sendstring("GAS-1 IS DETECTED\r\n");

}

else if(!(( IOPIN0)&(1<<7)))

{

cmd(0x01);

lcdstr("GAS-2 IS DETECTED");

sendstring("GAS-2 IS DETECTED\r\n");

}

else

{

cmd(0x01);

lcdstr("GAS-1 AND GAS-2");

cmd(0xc0);

lcdstr(" NOT DETECTED");

sendstring("NOT DETECTED\r\n");

}

}

}

#define LCD 0X003C0000

#define RS 0X00010000

#define EN 0X00020000

void lcdini(void);

void lcd\_display(unsigned char x);

void cmd(unsigned char x);

void lcdstr(unsigned char \*str);

void delay(int count);

void lcdini() // lcd initilization function

{

cmd(0X02); // to initialize LCD in 4-bit mode.

cmd(0X28); //to initialize LCD in 2 lines, 5X7 dots and 4bit mode.

cmd(0x0e); // cursor ON

cmd(0X06);

cmd(0X01); // clear lcd

cmd(0X80); // cursor indicating first line first position

}

//-----------------------------------------------------------------

void lcd\_display(unsigned char x) // lcd display funtion

{

unsigned int temp; //initilize variable

delay(700); // calling delay

IOCLR1 |= RS;

IOCLR1 |= EN;

IOCLR1 |= LCD;

temp=(x>>4)&0x0f; // rotating value of x by 4 and anding with 0x0f

IOSET1 |=(temp<<18); //put value of temp at on lcd pins

IOSET1 |=RS; // set re pin

IOSET1 |=EN; // set enable pin

delay(10); // hault for some time

IOCLR1 |=EN; // clear enable pin

delay(1000); // calling delay function

IOCLR1 |= RS;

IOCLR1 |= EN;

IOCLR1 |= LCD;

temp=x&0x0f; // anding value of x with 0x0f

IOSET1 |=(temp<<18); // putting value of temp on lcd data pin

IOSET1 |=RS; // set re pin

IOSET1 |=EN; // set enable pin

delay(10); // hault for some time

IOCLR1 |=EN; // clear enable pin

delay(100); // calling delay function

}

//---------------------------------------------------------------------

void cmd(unsigned char x) // lcd command funtion

{

unsigned int temp; //initilize variable for msb

IOCLR1 |= RS;

IOCLR1 |= EN;

IOCLR1 |= LCD;

temp=(x>>4)&0x0f; // rotating value of x by 4 and anding with 0x0f

IOSET1 |=(temp<<18); //put value of temp at on lcd pins

IOCLR1 |=RS; // clear re pin

IOSET1 |=EN; // set enable pin

delay(100); // hault for some time

IOCLR1 |=EN; // clear enable pin

delay(100); // calling delay function

IOCLR1 |= RS;

IOCLR1 |= EN;

IOCLR1 |= LCD;

temp=x&0x0f; // anding value of x with 0x0f

IOSET1 |=(temp<<18); // putting value of temp on lcd data pin

IOCLR1 |=RS; // clear re pin

IOSET1 |=EN; // set enable pin

delay(100); // hault for some time

IOCLR1 |=EN; // clear enable pin

delay(100); // calling delay function

}

//---------------------------------------------------------------------

void lcdstr(unsigned char \*str) // funtion to write sting on lcd

{

while(\*str!='\0') // check str for NULL

{

lcd\_display(\*str); // write one characture from string

str++; // increament string

}

}

//------------------------------------------------------------------------

void delay(int count)

{

int j=0,i=0;

for(j=0;j<count;j++)

{

for(i=0;i<500;i++);

}

}

//---------------------------------------------------------------------------------------------

void uartini(void);

void transmituart0(unsigned char val);

unsigned char receiveuart0(void);

void sendstring(unsigned char \*str);

void uartini()

{

U0LCR=0x83; //8-N- 1, enable divisors

U0DLL=0xC3; //9600 baud (9615)

U0DLM=0x00;

U0LCR=0x03; //8-N-1, disable divisors

}

//------------------------------------------------------------------------

void transmituart0(unsigned char val) //sends a byte through Uart

{

while(!(U0LSR & 0x20)); // checking TXD Buffer Empty

U0THR =val; // Write Character

}

//---------------------------------------------------------------------------

unsigned char receiveuart0(void)

{

while(!(U0LSR & 0x01)); // Wait RXD Receive Data Ready

return(U0RBR); // Get Receice Data & Return

}

//---------------------------------------------------------------------------

void sendstring(unsigned char \*str) //Sends a string of data through UART1

{

unsigned int i=0;

while(str[i]!='\0')

{

transmituart0(str[i]);

i++;

}

}