**Lcd**

#include <p18f4520.h>

#include <delays.h>

#pragma config OSC = HS // High-speed oscillator

#pragma config WDT = OFF // Watchdog Timer disabled

#pragma config LVP = OFF // Low-voltage Programming disabled

#pragma config PBADEN = OFF

#define rs LATCbits.LATC0

#define en LATCbits.LATC1

/\*

Delay10KTCYx(1)4mS

Delay10KTCYx(2)8mS

\*/

void lcdcmd1(unsigned char command)

{

LATCbits.LATC2 = (command) & 0x1; //RC2=1

LATEbits.LATE0 = (command >> 1 ) & 0x1; //RE0=1

LATEbits.LATE1 = (command >> 2) & 0x1; //RE1=0

LATEbits.LATE2 = (command >> 3 ) & 0x1; //RE2=0

en=0;

rs=0;

Delay10KTCYx(1);

en=1;

Delay10KTCYx(1);

en=0;

Delay10KTCYx(1);

}

void lcdcmd(unsigned char value)

{

/\*

exmple value command =0x38 =>

Require to send command lik this Way:

highernibble = 0 0 1 1 | 0 0 0 0

D7 D6 D5 D4 | D3 D2 D1 D0

RE2 RE1 RE0 RC2

lowernibble = 1 0 0 0 | 0 0 0 0

D7 D6 D5 D4 | D3 D2 D1 D0

here D0-D3 is not used because of 4-Bit DATA LINES

So we have to send data(0x3 & 0x8) on D4-D7 Data lines two times

\*/

char lowernibble=0,highernibble=0;

//Exmaple Value =0x38

lowernibble = value & 0x0f; //lowernibble = 0x08

highernibble = value & 0xf0; //highernibble = 0x30

highernibble = (highernibble >>4) & 0x0f ; //highernibble = 0x03

lcdcmd1(highernibble);

lcdcmd1(lowernibble);

Delay10KTCYx(2);

}

void lcddata1(unsigned char data)

{

//data = 0x38=>0x03,0x08 nibble

LATCbits.LATC2 = (data) & 0x1; //RC2=1

LATEbits.LATE0 = (data >> 1 ) & 0x1; //RE0=1

LATEbits.LATE1 = (data >> 2) & 0x1; //RE1=0

LATEbits.LATE2 = (data >> 3 ) & 0x1; //RE2=0

rs=1;

Delay10KTCYx(1);

en=0;

Delay10KTCYx(1);

en=1;

Delay10KTCYx(1);

en=0;

Delay10KTCYx(1);

}

void lcddata(unsigned char value)

{

/\*

exmple value command =0x38 =>

Require to send command lik this Way:

highernibble = 0 0 1 1 | 0 0 0 0

D7 D6 D5 D4 | D3 D2 D1 D0

RE2 RE1 RE0 RC2

lowernibble = 1 0 0 0 | 0 0 0 0

D7 D6 D5 D4 | D3 D2 D1 D0

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So we have to send data(0x3 & 0x8) on D4-D7 Data lines two times

\*/

char lowernibble=0,highernibble=0;

//Exmaple Value =0x38

lowernibble = value & 0x0f; //lowernibble = 0x08

highernibble = value & 0xf0; //highernibble = 0x30

highernibble = (highernibble >>4) & 0x0f ; //highernibble = 0x03

lcddata1(highernibble);

lcddata1(lowernibble);

Delay10KTCYx(2);

}

void lcdinit()

{

//Configure OutPut Pin

TRISEbits.RE0 = 0 ; //OUTPUT DIR OF RE0

TRISEbits.RE1 = 0 ; //OUTPUT DIR OF RE1

TRISEbits.RE2 = 0 ; //OUTPUT DIR OF RE2

TRISCbits.RC0 = 0 ; //OUTPUT DIR OF RC0

TRISCbits.RC1 = 0 ; //OUTPUT DIR OF RC1

TRISCbits.RC2 = 0 ; //OUTPUT DIR OF RC2

//Make Output Value =0 to all Pins

PORTEbits.RE0 = 0;

PORTEbits.RE1 = 0;

PORTEbits.RE2 = 0;

PORTCbits.RC0 = 0;

PORTCbits.RC1 = 0;

PORTCbits.RC1 = 0;

//Commands for LCD Init

Delay10KTCYx(1);

lcdcmd(0x03);

Delay10KTCYx(1);

lcdcmd(0x03);

Delay10KTCYx(2);

lcdcmd(0x03);

Delay10KTCYx(2);

lcdcmd(0x02);

Delay10KTCYx(2);

lcdcmd(0x28);

lcdcmd(0x08);

lcdcmd(0x0c);

lcdcmd(0x06);

}

void main (void)

{

lcdinit();

while(1)

{

//Line1 Sending Data=SPJ

lcdcmd(0x80) ; //Line1,1st Position

lcddata('S');

lcdcmd(0x81) ;

lcddata('P');

lcdcmd(0x82) ;

lcddata('J');

lcdcmd(0x83) ;

lcddata(' ');

Delay10KTCYx(1);

}

}