Interfacing of LCD to PIC 18F4520

**C program to display HELLO on LCD using 8 bit data transfer mode on PORDD**

#include <p18f4520.h>  
  
#pragma config OSC = HS    // High-speed oscillator  
#pragma config WDT = OFF   // Watchdog Timer off  
#pragma config LVP = OFF   // Low-voltage programming off  
#pragma config PWRT = OFF  // Power-up timer off  
#pragma config DEBUG = OFF // Debug mode off  
  
// Define LCD control and data ports  
#define ldata PORTD  
#define rs PORTEbits.RE0  
#define rw PORTEbits.RE1  
#define en PORTEbits.RE2  
  
// Function prototypes  
void lcdcmd(unsigned char value);  
void lcddata(unsigned char value);  
void msdelay(unsigned int itime);

void main(void)  
{  
    TRISD = 0x00;   // Set PORTD as output (data)  
    ADCON1=0x0F;  
    TRISE = 0x00;   // Set PORTB as output (control)  
     
    msdelay(15);   // Initial delay  
     
    // Initialize LCD  
    lcdcmd(0x38);   // 16x2 LCD, 8-bit mode, 2 lines  
msdelay(15);  
lcdcmd(0x0E);   // LCD on, cursor on  
msdelay(15);  
lcdcmd(0x01);   // Clear display  
msdelay(15);  
lcdcmd(0x06);   // Shift cursor right  
msdelay(15);  
lcdcmd(0x80);   // Set cursor to the first position  
msdelay(15);  
lcddata('H');  
msdelay(50);  
lcddata('E');  
msdelay(50);  
lcddata('L');  
msdelay(50);  
lcddata('L');  
msdelay(50);  
lcddata('0');  
msdelay(50);  
      
}  
  
// Function to send command to LCD  
void lcdcmd(unsigned char value)  
{  
    ldata = value;  
    rs = 0;    // Command mode  
    rw = 0;    // Write mode  
    en = 1;    // Enable on  
    msdelay(1); // Small delay  
    en = 0;    // Enable off  
}  
// Function to send data to LCD  
void lcddata(unsigned char value)  
{  
    ldata = value;  
    rs = 1;    // Data mode  
    rw = 0;    // Write mode  
    en = 1;    // Enable on  
    msdelay(1); // Small delay  
    en = 0;    // Enable off  
}  
// Function for millisecond delay  
void msdelay(unsigned int itime)  
{  
    unsigned int i, j;  
    for(i = 0; i < itime; i++)  
        for(j = 0; j < 135; j++);  // Approximate delay for 1ms  
}

**Code: Interfacing of LCD using 4bit data transfer mode**

#include <p18f4520.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

void msdelay(unsigned int itime);

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;

msdelay(10);

en=1;

msdelay(10);

en=0;

msdelay(10);

}

void lcdcmd(unsigned char value)

{

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);

}

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;

msdelay(10);

en=0;

msdelay(10);

en=1;

msdelay(10);

en=0;

msdelay(10);

}

void lcddata(unsigned char value)

{

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);

msdelay(10);

}

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

lcdcmd(0x01);

msdelay(10);

lcdcmd(0x02);

msdelay(10);

lcdcmd(0x08);

lcdcmd(0x0c);

lcdcmd(0x06);

}

void main (void)

{

lcdinit();

while(1)

{

//Line1 Sending Data=SPJ

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

lcddata('H');

lcdcmd(0x81) ;

lcddata('E');

lcdcmd(0x82) ;

lcddata('L');

lcdcmd(0x83) ;

lcddata('L ');

lcdcmd(0x84) ;

lcddata('L ');

lcdcmd(0x85) ;

lcddata('O ');

msdelay(10);

}

}

void msdelay(unsigned int itime)

{

unsigned int i,j;

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

for(j=0;j<1275;j++);

}

