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/*
 * File:Interfacing LM35 with PIC16F877A
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 */
#include <xc.h>
#define _XTAL_FREQ 20000000
__CONFIG(FOSC_HS & WDTE_OFF & PWRTE_OFF & BOREN_OFF & LVP_ON & CPD_OFF & WRT_OFF & CP_OFF);
#define EN PORTDbits.RD2// defining Ports
#define RW PORTDbits.RD1
#define RS PORTDbits.RD0
unsigned int a,b,c,d,e,f;// defining variables
unsigned int temp,adc;
float  Temp,temperature,adc1;

void delay (unsigned int i)// calling delay function
{
while(i--);
}
void lcd_command(unsigned char a)//calling LCD COMMAND function
{
PORTC=a;
EN=1;
RS=0;
RW=0;
delay(500);
EN=0;
}
void chr(unsigned char b)
{
PORTC=b;
EN=1;
RS=1;
RW=0;
delay(500);
EN=0;
}
void str(const char *d,char n)
{
char o;
for(o=0;o<n;o++)
{
chr(d[o]);
delay(500);
}
}
void lcd_intialise()
{
lcd_command(0x38);//LCD Command for 8 bit mode
lcd_command(0x06);//LCD Command for Auto Increment
lcd_command(0x0c);//LCD Command
lcd_command(0x01);//LCD Command for clear screen
}
void interrupt adc_conv()//function for Analog to Digital conversion
{
   if(PIR1bits.ADIF==1) //ADIF Flag will become HIGH
   {
    adc=(ADRESH<<8);   // temp =  0x 0000 0000 0000 0000  & (ADRESH<<8) = 0x 0000 0011 0000 0000 & temp = 0x 0000 0011 0000 0000
adc=adc+ADRESL;   // temp =  0x 0000 0011 1111 1111
    PIR1bits.ADIF=0; //clearing the ADIF flag
   }
}

void main(void)
{
   INTCONbits.GIE=1;//global interrupt bit enable
    INTCONbits.PEIE=1;//peripheral interrupt bit enable
    PIE1bits.ADIE=1;//Analog to Digital converter  bit  enable

TRISD=0X00;//set PortD as OUTPUT
TRISC=0X00;//set PortC as OUTPUT

PORTC=PORTD=0X00;//initial value for port C and D are LOW
lcd_intialise();//LCD Initialization function

lcd_command(0x80);//command for display on First raw first column
str("TEMP:=",6);//display string with 6 character

    ADCON0=0X41;//control Register configuration
    ADCON1=0X8E;
    while(1)
{
      ADCON0=ADCON0|(0X04);//Enable GO/Done bit of ADCON for ADC Conversion
        adc1 = adc / 2.046;  // temperature value finding
         temperature = adc1 * 100;
         Temp =temperature/100;// fetching decimal place numbers
        lcd_command(0x89);    // 0123
a=(int)temperature/10;   // 012
b=(int)temperature%10;  // 3
c=a%10;        // 2
d=a/10;       // 01
e=d%10;       // 1
f=d/10;       // 0
chr(f+0x30);
chr(e+0x30);
        chr('.');
chr(c+0x30);
chr(b+0x30);
        if (Temp >22)// if Temp more than 20 Deg Centigrade
            {PORTDbits.RD3=1;}// Turn ON the LED connected on RD3 pin
        else// else
            PORTDbits.RD3=0;  // Turn OFF the LED connected on RD3 pin
    }
    return;
}
```