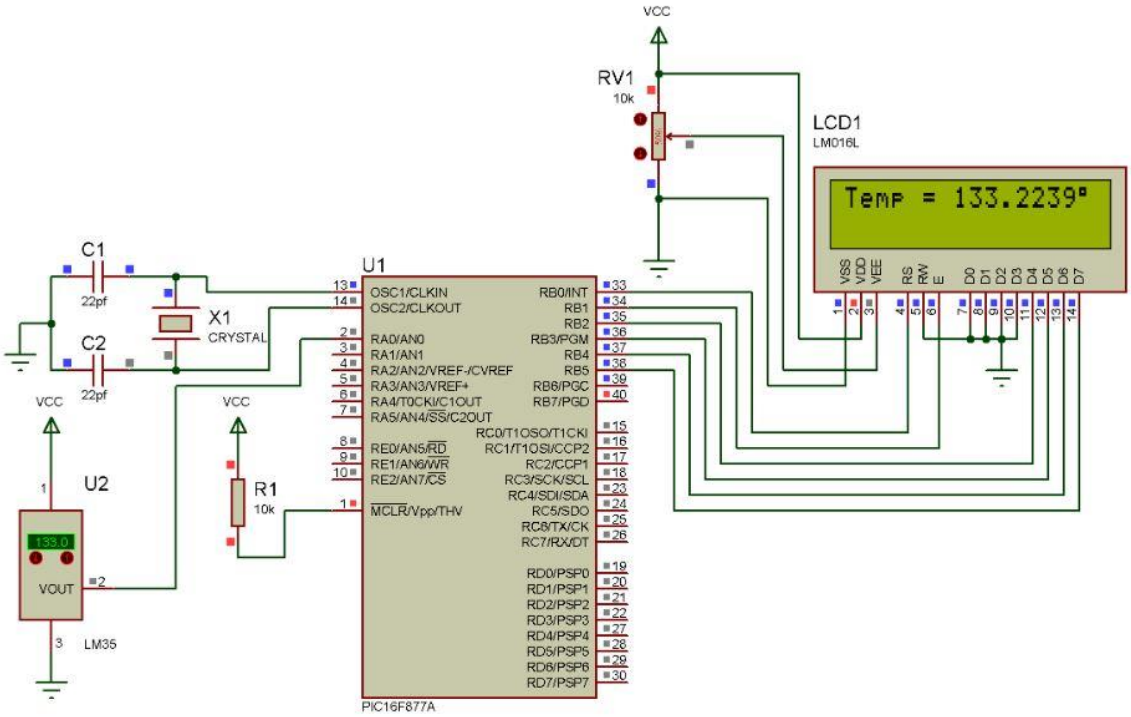
Experiment Name: LM35 Temperature Sensor Data Read and Display Using LCD Module

LM35 Temperature Sensor:

- LM35 is a temperature measuring device having an analog output voltage proportional to the temperature.
- It provides output voltage in Centigrade (Celsius). It does not require any external calibration circuitry.
- The sensitivity of LM35 is 10 mV/degree Celsius. As temperature increases, output voltage also increases. E.g. 250 mV means 25°C.

- It is a 3-terminal sensor used to measure surrounding temperature ranging from -55 °C to 150 °C.
- LM35 gives temperature output which is more precise than thermistor output.

Circuit Diagram:



MikroC Code:

```
// LCD module connections
sbit LCD_RS at RB0_bit;
sbit LCD_EN at RB1_bit;
sbit LCD_D4 at RB2_bit;
sbit LCD_D5 at RB3_bit;
sbit LCD_D6 at RB4_bit;
sbit LCD_D7 at RB5_bit;

sbit LCD_RS_Direction at TRISB0_bit;
sbit LCD_EN_Direction at TRISB1_bit;
```

```
sbit LCD_D4_Direction at TRISB2_bit;
sbit LCD_D5_Direction at TRISB3_bit;
sbit LCD_D6_Direction at TRISB4_bit;
sbit LCD_D7_Direction at TRISB5_bit;
// End LCD module connections

char display[16]="";

void main()
{
unsigned int result;
float volt,temp;

trisb=0x00;
trisa=0xff;
adcon1=0x80;
lcd_init();
lcd_cmd(_lcd_clear);
lcd_cmd(_LCD_CURSOR_OFF);

        while(1)
        {
                result=adc_read(0);
                volt=result*4.88;
                temp=volt/10;

                lcd_out(1,1,"Temp = ");

                floattostr(temp,display);
                lcd_out_cp(display);
                lcd_chr(1,16,223); //print at pos(row=1,col=13) "°" =223 =0xdf
                lcd_out_cp("  C"); //celcius
        }

}
```