

# Program for connection of LCD with PIC18

```
#include<pic18f4550.h>

#include<stdio.h>

#define LCD_RS PORTAbits.RA0

#define LCD_EN PORTAbits.RA1

void delay()

{
    for(int i = 0; i < 10; i++)
        for(int j=0;j<100;j++);
}

void SendInstruction(unsigned char command)
{
    LCD_RS = 0;           // RS low : Instruction
    PORTB = command;
    LCD_EN = 1;           // EN High
    delay();
    LCD_EN = 0;           // EN Low; command sampled at EN falling edge
    delay();
}

void SendData(unsigned char data)
{
    LCD_RS = 1;           // RS HIGH : DATA
    PORTB = data;
    LCD_EN = 1;           // EN High
    delay();
    LCD_EN = 0;           // EN Low; data sampled at EN falling edge
    delay();
}
```

```

void main()
{
    ADCON1 = 0x0F;           //Digital output
    TRISB=0;                 // PORTB as output
    TRISAbits.TRISA0=0;      // For register select pin
    TRISAbits.TRISA1=0;      // For Enable pin
    SendInstruction(0x38);    //8 bit mode, 2 line,5x7 dots
    SendInstruction(0x01);    //Clear display
    for(int i=0;i<100;i++)
        delay();
    SendInstruction(0x80);    //set address to 1st line
    char *msg1="welcome";
    while(*msg1!='\0')
    {
        SendData(*msg1);     //Display msg1
        msg1++;
    }
    for(int i=0;i<100;i++)
        delay();
    SendInstruction(0xC0);    //set address to 2nd line
    char *msg2="to PICT";
    int i=0;
    while(msg2[i]!='\0')
    {
        SendData(msg2[i]);    //Display msg1
        i++;
    }
    for(int i=0;i<100;i++)
        delay();
    while(1);
}

```

## Program for Temperature sensor using LCD

```
#include <pic18f4550.h>

#include <stdio.h>

#define LCD_EN LATAbits.LA1
#define LCD_RS LATAbits.LA0
#define LCDPORT LATB

unsigned char str[16];

void lcd_delay(unsigned int time)
{
    unsigned int i , j ;
    for(i = 0; i < time; i++)
    {
        for(j=0;j<100;j++);
    }
}

void SendInstruction(unsigned char command)
{
    LCD_RS = 0;           // RS low : Instruction
    LCDPORT = command;
    LCD_EN = 1;           // EN High
    lcd_delay(10);
    LCD_EN = 0;           // EN Low; command sampled at EN falling edge
    lcd_delay(10);
}

void SendData(unsigned char lcddata)
```

```

{
    LCD_RS = 1;           // RS HIGH : DATA
    LCDPORT = lcddata;
    LCD_EN = 1;           // EN High
    lcd_delay(10);
    LCD_EN = 0;           // EN Low; data sampled at EN falling edge
    lcd_delay(10);
}

```

```

void InitLCD(void)

```

```

{
    ADCON1 = 0x0F;        //Digital output
    TRISB = 0x00;         //set data port as output
    TRISAbits.RA0 = 0;    //RS pin
    TRISAbits.RA1 = 0;    // EN pin
    SendInstruction(0x38); //8 bit mode, 2 line,5x7 dots
    SendInstruction(0x06); //entry mode
    SendInstruction(0x0C); //Display ON cursor OFF
    SendInstruction(0x01); //Clear display
    SendInstruction(0x80); //set address to 0
}

```

```

void LCD_display(unsigned int row, unsigned int pos, unsigned char *ch)

```

```

{
    if(row==1)
        SendInstruction(0x80 | (pos-1));
    else
        SendInstruction(0xC0 | (pos-1));
    while(*ch)
        SendData(*ch++);
}

```

```

void ADCInit(void)
{
    TRISEbits.RE2 = 1;           //ADC channel 7 input
    ADCON1 = 0b00000111;        //Ref voltages Vdd & Vss; AN0 - AN7 channels Analog
    ADCON2 = 0b10101110;        //Right justified; Acquisition time 4T; Conversion clock Fosc/64
}

```

```

unsigned short Read_Temp(void)
{
    ADCON0 = 0b00011101;    //ADC on; Select channel;
    GODONE = 1;              //Start Conversion
    while(GO_DONE == 1 );    //Wait till A/D conversion is complete
    return ADRES;            //Return ADC result
}

```

```

int main(void)
{
    unsigned int temp;
    InitLCD();                //Initialize LCD
    ADCInit();                //Initialize ADC
    LCD_display(1,1,"Temperature:");    //Display text
    while(1)
    {
        temp = Read_Temp();    //Store temperature
        temp = ((temp * 500) / 1023); //Convert temperature to readable output
        sprintf(str,"%d'C ",temp);
        LCD_display(2,1,str);    //Print temperature value
        lcd_delay(9000);
    }
    return 0;
}

```