

```

1  #include<lpc214x.h>
2  #include<stdio.h>
3  #define adc_sel 27 //for pinssel
4  #define clkdiv 8
5  #define ch0 0
6  #define burst_mode 16
7  #define pdn 21
8  #define start 24
9  #define done 31
10 #define lcdport IO0SET
11 #define lcdportclr IOCLR0
12 #define rs 12
13 #define en 13
14 #define TEMP_PIN (1<<29) //P0.29 as Input to Temperature Sensor
15 #define TEMP_PIN_DIR (1<<26) //Bit 27:26 of PINSEL1 register
16 #define _PDN_BIT 1<<21
17 #define _ADCR_START_MASK 7<<24
18 #define _ADCR_SEL_MASK 0x000000FF
19 #define _ADC0_START 1<<24
20
21 void delay(int t)
22 {
23     int i,j;
24     for(i=0;i<t;i++)
25         for(j=0;j<5000;j++);
26 }
27 void cmnd()
28 {
29     lcdportclr=(1<<rs);
30     //lcdportclr = (1<<rw);
31     lcdport = (1<<en);
32     delay(40);
33     lcdportclr=(1<<en);
34 }
35 void lcdcmd(char ch)
36 {
37     lcdport = ((ch&0xf0)<<13);
38     cmnd();
39     lcdportclr = ((ch&0xf0)<<13);
40
41     lcdport = (((ch<<4)&0xf0)<<13);
42     cmnd();
43     lcdportclr = (((ch<<4)&0xf0)<<13);
44 }
45
46 void daten()
47 {
48     lcdport=(1<<rs);
49     //lcdportclr = (1<<rw);
50     lcdport = (1<<en);
51     delay(40);
52     lcdportclr=(1<<en);
53 }
54
55 void lcddata(char ch)
56 {
57     lcdport = ((ch&0xf0)<<13);
58     daten();
59     lcdportclr = ((ch&0xf0)<<13);
60
61     lcdport = (((ch<<4)&0xf0)<<13);
62     daten();
63     lcdportclr = (((ch<<4)&0xf0)<<13);
64 }
65
66 void lcdstring(char *str)
67 {
68     int j;
69     for(j=0;str[j]!='\0';j++)
70     {
71         lcddata(str[j]);
72     }

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73     }
74     void lcd_init()
75     {
76         lcdcmd(0x02);
77         lcdcmd(0x28);
78         lcdcmd(0x01);
79         lcdcmd(0x0e);
80     }
81
82     void io_init()
83     {
84         IODIR1=(1<<16);
85         PINSEL0=0x00000000;
86         IODIR0=0xFFFF;
87     }
88     void Adc0Init(unsigned char clk)
89     {
90         PCONP |= 0x00001000; //Power on the A/D converter 0
91         //configure the A/D control register of A/D 0
92         AD0CR=((unsigned long)(clk+1)<<8) | _PDN_BIT ;
93     }
94     unsigned int Adc0Read(unsigned char channel)
95     {
96         static unsigned val;
97         AD0CR &= ~(_ADCR_START_MASK|_ADCR_SEL_MASK); //stop the A/D converter by masking the
98                                                     //start bits and channel selection bit
99         AD0CR |=((unsigned long)(1)<<channel); //Select the A/D channel
100        AD0CR |=_ADC0_START;
101        while(!(AD0GDR & (0x80000000))); //Wait for the conversion to get over
102                                           //by monitoring the 28th bit of A/D data register
103        AD0CR &= ~(_ADCR_START_MASK|_ADCR_SEL_MASK); //Stop the conversion by masking the start bits
104
105        val = AD0GDR;
106        val = (val>>6 & 0x03FF); //Extract A/D result
107        return(val);
108    }
109    int main()
110    {
111        float temperature=0.0;
112        char result[5];
113        PINSEL1 |= TEMP_PIN_DIR; //Bit 27:26 of PINSEL1 register
114        IODIR0 &= ~(TEMP_PIN); //Select the AD0.2 of P0.29 as Input
115
116        io_init();
117        lcd_init();
118        lcdcmd(0x84);
119        lcdstring("Temperature");
120        Adc0Init(10);
121
122        while(1)
123        {
124
125            temperature = (((float)Adc0Read(4)/1023.0)*3.3*100);
126            lcdcmd(0xc5);
127            sprintf(result,"%f",temperature);
128            lcdstring(result);
129            lcddata(0xDF); //for degree character
130            lcddata('C');
131            delay(100);
132            if(temperature>=0 && temperature <=70)
133            {
134                IOCLR1=(1<<16);
135            }
136            if(temperature>=70 && temperature<=150)
137            {
138                IOSET1=(1<<16);
139            }
140        }
141    }

```