

```

1 //=====
2 //
3 // Step 40-1
4 // Temp measure
5 // Upper Limit Lower Limit Setting
6 // JP2 (2-3) / JP3 (2-3) / JP4 (2-3) / JP5 (2-3) / JP6 (2-3)
7 // JP7 (2-3) Beep
8 //=====
9 #include "mbed.h"
10 #include "TextLCD.h"
11
12 TextLCD lcd(p17, p12, p27, p28, p29, p30); // rs, e, d4-d7
13 AnalogIn ain15(p15); // Analog In P15 <= LM35D
14 DigitalIn swL(p18); // JP2 (2-3)
15 DigitalIn swU(p19); // JP3 (2-3)
16 DigitalIn swD(p20); // JP4 (2-3)
17 DigitalIn swR(p21); // JP5 (2-3)
18 DigitalIn swE(p22); // JP6 (2-3)
19 DigitalOut led1(LED1);
20 DigitalOut led4(LED4);
21 PwmOut beep(p23); // JP7 (2-3)
22
23 Ticker tik; // recurring interrupt
24 float tmp; // ondo
25
26 int tikFlg = 0;
27 float tmp_U = 32.5;
28 float tmp_L = 25.5;
29 char buf[] = "U=32.5 L=25.5"; // LCD設定用
30 float freq_U = 1000;
31 float freq_L = 500;
32 int x = 2;
33 int fBeep = 0; // Beep Flag
34 //=====
35 // Ticker
36 //=====
37 void attime(void)
38 {
39     tikFlg = 1;
40 }
41
42 //=====
43 // Main
44 //=====
45 int main(void)
46 {
47     int mode = 0;
48
49     swL.mode(PullUp); // Pull Up
50     swU.mode(PullUp); // Pull Up
51     swD.mode(PullUp); // Pull Up
52     swR.mode(PullUp); // Pull Up
53     swE.mode(PullUp); // Pull Up
54
55     lcd.cls();
56     lcd.locate(0, 0); // x, y
57     // Upper Lower Setting
58     lcd.printf("U=%2.1f L=%2.1f", tmp_U, tmp_L);
59     tik.attach(&attime, 1); // 1s -> call attime
60
61     while(1)
62     {
63         if( tikFlg == 1 )
64         {
65             tikFlg = 0;
66             // lcd.locate(0, 0);

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67 // Upper Lower Setting
68 // lcd.printf("U=%2.1f L=%2.1f", tmp_U, tmp_L);
69
70 //-----
71 // Temp
72 //-----
73 tmp = ain15 * 330; // ( ain15 / 10mV ) * 3.3V = ain15 * 330 mbed:0-
>3.3V --- 0.0->1.0
74 lcd.locate(0, 1);
75 lcd.printf("Temp=%4.1fdeg", tmp);
76
77 if( tmp_U <= tmp && fBeep == 0)
78 {
79     beep.period(1.0/freq_U);
80     beep.write(0.5); //Duty
81     fBeep = 1;
82 }
83 else if( tmp_L >= tmp && fBeep == 0)
84 {
85     beep.period(1.0/freq_L);
86     beep.write(0.5); //Duty
87     fBeep = 1;
88 }
89 else
90 {
91     fBeep = 0;
92     beep.write(0.0);
93 }
94 }
95 //-----
96 // Enter SW
97 //-----
98 if( swE == 0 )
99 {
100     mode = 1;
101     led1 = 1;
102     lcd.cursor(1);
103     // Upper Lower Setting
104     x = 2;
105     lcd.character(x, 0, buf[x]);
106     lcd.character(x-1, 0, buf[x-1]);
107     while(swE == 0 );
108 }
109
110 while( mode == 1 )
111 {
112     //-----
113     // Left SW
114     //-----
115     if( swL == 0 )
116     {
117         led4 = 1;
118         if( x>2 )
119             x--;
120         lcd.character(x, 0, buf[x]);
121         lcd.character(x-1, 0, buf[x-1]);
122         while(swL == 0);
123         led4 = 0;
124     }
125
126     //-----
127     // Right SW
128     //-----
129     else if( swR == 0 )
130     {
131         led4 = 1;

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132         if( x<12 )
133             x++;
134         lcd.character(x,0,buf[x]);
135         lcd.character(x-1, 0, buf[x-1]);
136         while(swR == 0);
137         led4 = 0;
138     }
139     //-----
140     // Up SW
141     //-----
142     else if( swU == 0 )
143     {
144         if( buf[x] >= 0x30 && buf[x] < 0x39 )
145             buf[x]++;
146         lcd.character(x,0,buf[x]);
147         lcd.character(x-1, 0, buf[x-1]);
148         while(swU == 0 );
149     }
150     //-----
151     // Down SW
152     //-----
153     else if( swD == 0 )
154     {
155         if( buf[x] > 0x30 && buf[x] <=0x39 )
156             buf[x]--;
157         lcd.character(x,0,buf[x]);
158         lcd.character(x-1, 0, buf[x-1]);
159         while(swD == 0 );
160     }
161     //-----
162     // Enter SW
163     //-----
164     else if( swE == 0 )
165     {
166         lcd.cursor(0);
167         mode = 0;
168         led1 = 0;
169         tmp_U = float(buf[2] & 0x0F)*10 + float(buf[3] & 0x0F) + float(buf[5] &
0x0F)/ 10.0;
170         tmp_L = float(buf[9] & 0x0F)*10 + float(buf[10] & 0x0F) + float(buf[12]
& 0x0F)/ 10.0;
171         lcd.locate(0, 0);                // x,y
172         // Upper Lower Setting
173         lcd.printf("U=%4.1f L=%4.1f", tmp_U, tmp_L);
174         while(swE == 0 );
175     }
176     //-----
177     wait(0.2);
178 }
179 }
180 }

```