

```

1 //=====
2 //
3 // Step 41
4 // Clock -> LCD use Ticker
5 // Temp measure
6 // 照度計測Illuminance
7 //
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 AnalogIn ain16( p16 ); // Analog In P16 <= NJ7502L
15
16 Ticker tik; // recurring interrupt
17 float tmp; // ondo
18 float phTr; // Photo Transistor
19 int tikFlg = 0;
20
21 //-----
22 // Ticker
23 //-----
24 void attime(void)
25 {
26     tikFlg = 1;
27 }
28
29 //-----
30 // Main
31 //-----
32 int main(void)
33 {
34     lcd.cls();
35     lcd.locate(0, 0); // x, y
36
37     //-----
38     // RTC check
39     //-----
40     time_t now_time = time(NULL); // today
41     struct tm *s_tm = localtime(&now_time);
42     if(s_tm->tm_year < 118 ) // since 1900
43     { // RTC set
44         struct tm t;
45         t.tm_sec = 0; // 0-59
46         t.tm_min = 0; // 0-59
47         t.tm_hour = 10; // 0-23
48         t.tm_mday = 1; // 1-31
49         t.tm_mon = 7-1; // 0-11
50         t.tm_year = 118; // year since 1900
51
52         set_time(mktime(&t)); // Write RTC
53     }
54
55     tik.attach(&attime, 1); // 1s -> call attime
56     double adt15 = 0.0;
57     double adt16 = 0.0;
58
59     while(1)
60     {
61         if( tikFlg == 1 )
62         {
63             tikFlg = 0;
64             now_time = time(NULL); // today
65             s_tm = localtime(&now_time);
66             lcd.locate(0, 0);

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67 |         lcd.printf("%02d/%02d %02d:%02d:%02d", s_tm->tm_mon+1, s_tm->tm_mday, s_tm-
68 | >tm_hour, s_tm->tm_min, s_tm->tm_sec);
69 |         adt15 = 0;
70 |         adt16 = 0;
71 |         for( int i=0; i<1000; i++ )
72 |         {
73 |             adt15 += ain15.read();
74 |             adt16 += ain16.read();
75 |         }
76 |         //-----
77 |         // Temp
78 |         //-----
79 |         tmp = adt15/1000.0 * 330;
80 |         //lcd.locate(0,1);
81 |         //lcd.printf("Temp=%4.1fdeg", tmp);
82 |         //-----
83 |         // Illuminance
84 |         //-----
85 |         phTr = adt16/1000.0 * 10000;
86 |         lcd.locate(0,1);
87 |         lcd.printf("T=%4.1f L=%7.2f", tmp, phTr);
88 |
89 |     }
90 | }
91 |

```