```
//=============================================
//
// Step 41-1
// Clock -> LCD use Ticker
// Temp measure
// Illuminance
//
//=============================================
#include "mbed.h"
#include "TextLCD.h"

TextLCD lcd(p17, p12, p27, p28, p29, p30);    // rs, e, d4-d7
AnalogIn ain15(p15,"tmp_dat");   // Analog In P15 <= LM35D
AnalogIn ain16(p16,"ill_dat");   // Analog In P16 <= NJ7502L
Serial pc(USBTX, USBRX);         // tx, rx
DigitalOut  led1(LED1);

Ticker  tik;          // recurring interrupt
float   tmp;           // ondo
float   phTr;          // Photo Transistor
int     tikFlg = 0;

//---------------------------------------------
// Ticker
//---------------------------------------------
void attime(void)
{
    tikFlg = 1;
}

//---------------------------------------------
// Main
//---------------------------------------------
int main(void)
{
    lcd.cls();
    lcd.locate(0, 0);               // x,y

    //---------------------------------
    // RTC check
    //---------------------------------
    time_t now_time = time(NULL);             // today
    struct tm *s_tm = localtime(&now_time);
    if(s_tm->tm_year < 117 )    // since 1900
    { // RTC set
        struct tm t;
        t.tm_sec = 0;           // 0-59
        t.tm_min = 0;           // 0-59
        t.tm_hour = 10;         // 0-23
        t.tm_mday = 1;          // 1-31
        t.tm_mon = 7-1;         // 0-11
        t.tm_year = 117;        // year since 1900

        set_time(mktime(&t));   // Write RTC
    }

    tik.attach(&attime,1);      // 1s -> call attime

    while(1)
    {
        if( tikFlg == 1 )
        {
            tikFlg = 0;
            now_time = time(NULL);   // today
            s_tm = localtime(&now_time);
            lcd.locate(0, 0);
```

```
67              lcd.printf("%02d/%02d %02d:%02d:%02d", s_tm->tm_mon+1, s_tm->tm_mday, s_tm->tm_hour, s_tm->tm_min, s_tm->tm_sec);
68
69              //-------------------------
70              // Temp
71              //-------------------------
72              tmp = ain15 * 330;
73              //lcd.locate(0,1);
74              //lcd.printf("Temp=%2.1fdeg", tmp);
75              //-------------------------
76              // Illuminance
77              //-------------------------
78              phTr = ain16 * 10000;
79              lcd.locate(0,1);
80              lcd.printf("T=%2.1f L=%7.2f", tmp,phTr);
81
82              if( phTr > 5000 )
83              {
84                  led1 = 1;
85                  pc.printf("very bright light!!¥r¥n");
86                  led1 = 0;
87              }
88              else if( phTr > 1000 )
89              {
90                  led1 = 1;
91                  pc.printf("bright light¥r¥n");
92                  led1 = 0;
93              }
94              else if( phTr > 500 )
95              {
96                  led1 = 1;
97                  pc.printf("dim light¥r¥n");
98                  led1 = 0;
99              }
100             else if( phTr > 100 )
101             {
102                 led1 = 1;
103                 pc.printf("dark¥r¥n");
104                 led1 = 0;
105             }
106
107         }
108     }
109 }
```