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1: //PROGRAMMA PER LA GESTIONE DEL DISPLAY E DEI TIMER SULLA PICDEM 2 PLUS DEM
2: //PIC UTILIZZATO P18F4920
3: //STRUTTURATO IN 5 FILE:
4: //1. main.c
5: //2. timer.h
6: //3. timer.c
7: //4. display.h
8: //5. display.c
9: //REALIZZATO DA LUIGI DI MASSA
10: //Informazioni su www.lmweb.it (BLOG/FORUM)
11: //info@lmweb.it
12:
13: //File name: main.c
14: #include "display.h"
15: #include <string.h>
16: #define SDIM 15
17:
18: void main(void){
19:     char stringa[SDIM]="__PROVA__";
20:     int i=0;
21:     init_display();
22:     set_display();
23:     for(i=0;i<strlen(stringa[i]);i++)
24:         write_char(stringa[i]);
25:     change_line();
26:     for(i=0;i<strlen(stringa[i]);i++)
27:         write_char(stringa[i]);
28:     while(1);
29: }
30:
31: //_____
32: //Libreria per la gestione di Timer 0
33: //File name: timer.h
34: //Require: p18f4620.h
35: #ifndef _TIMER_H
36: #define _TIMER_H
37: #include <p18f4620.h>
38: void set_timer(void);
39: void wait_timer(unsigned long int us);
40: #endif
41:
42: //_____
43: //Implementazione libreria funzioni per la gestione di Timer 0
44: //File name: timer.c
45: #include "timer.h"
46: void set_timer(void){
47:     //Setto il timer a 16 bit senza prescaler
48:     T0CON=0b00011000;
49: }
50: void wait_timer(unsigned long int us){
51:     unsigned long int conteggi=us;
52:     unsigned long int precaricamento=0xFFFF-precaricamento;
53:     TMR0H=precaricamento>>8;
54:     TMR0L=precaricamento&(0x0F);
55:     INTCONbits.TMR0IF=0;
56:     T0CONbits.TMR0ON=1;
57:     while(!INTCONbits.TMR0IF){}
58:     T0CONbits.TMR0ON=0;
59: }
60:
61: //_____
62: //Libreria per la gestione del display

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63: //File name:display.h
64: //Require: timer.h, p18f4920.h
65: #ifndef _DISPLAY_H
66: #define _DISPLAY_H
67: #include "timer.h"
68: void write_nibble(unsigned short nibble);
69: void init_display(void);
70: void set_display(void);
71: void write_char(char c);
72: void change_line(void);
73: #endif
74:
75: //_____
76: //Implementazione libreria funzioni per la gestione del display
77: //File name:display.c
78: #include "display.h"
79: #define VCC PORTDbits.RD7
80: #define E PORTDbits.RD6
81: #define RW PORTDbits.RD5
82: #define RS PORTDbits.RD4
83: void write_nibble(unsigned short nibble){
84:     PORTD=PORTD&(0xF0);
85:     PORTD=PORTD|nibble;
86:     E=1;
87:     E=0;
88: }
89: void init_display(void){
90:     set_timer();
91:     TRISD=0;
92:     PORTD=0;
93:     //Accendo il display
94:     VCC=1;
95:     wait_timer(15000);
96:
97:     write_nibble(0x03);
98:     wait_timer(4100);
99:     write_nibble(0x03);
100:    wait_timer(100);
101:    write_nibble(0x03);
102:    wait_timer(5000);
103:    //4 bit alla volta
104:    write_nibble(0x02);
105:    wait_timer(5000);
106:    //4 bit alla volta
107:    write_nibble(0x02);
108:    wait_timer(5000);
109:    //2 linee
110:    write_nibble(0x08);
111:    wait_timer(5000);
112:
113:    write_nibble(0x00);
114:    wait_timer(5000);
115:
116:    write_nibble(0x08);
117:    wait_timer(5000);
118:    write_nibble(0x00);
119:    wait_timer(5000);
120:    write_nibble(0x01);
121:    wait_timer(5000);
122:    write_nibble(0x00);
123:    wait_timer(5000);
124:    write_nibble(0x06);

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125:     wait_timer(5000);
126: }
127: void set_display(void){
128:     set_timer();
129:     //Clear display
130:     write_nibble(0x00);
131:     wait_timer(5000);
132:     write_nibble(0x01);
133:     wait_timer(5000);
134:     //Return Home
135:     write_nibble(0x00);
136:     wait_timer(5000);
137:     write_nibble(0x02);
138:     wait_timer(5000);
139:     //Blinking
140:     write_nibble(0x00);
141:     wait_timer(5000);
142:     write_nibble(0x0F);
143:     wait_timer(5000);
144: }
145: void write_char(char c){
146:     int high=c>>4;
147:     int low=c%16;
148:     RW=0;
149:     RS=1;
150:     write_nibble(high);
151:     wait_timer(5000);
152:     write_nibble(low);
153:     wait_timer(5000);
154: }
155: void change_line(void){
156:     RW=0;
157:     RS=0;
158:     write_nibble(0x0C);
159:     wait_timer(5000);
160:     write_nibble(0x00);
161:     wait_timer(5000);
162: }
163:
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