



# ΕΘΝΙΚΟ ΜΕΤΣΟΒΙΟ ΠΟΛΥΤΕΧΝΕΙΟ

ΣΧΟΛΗ ΗΜ&ΜΥ  
Εργαστήριο Μικροϋπολογιστών

3<sup>η</sup> Εργαστηριακή Άσκηση

Γενικό Θέμα

Ακ. έτος 2011-2012

*Ομάδα C07:*

|                      |                |
|----------------------|----------------|
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18 Δεκεμβρίου 2011

```
>>> team = 7
>>> 1+(team-1) % 7
7
```

## Ζήτημα 7<sup>ο</sup>

```

1  START:
2  IN 10H
3      MVI A,10H      ;clean digits
4      STA 0990H
5      STA 0991H
6      STA 0992H
7      STA 0993H
8      STA 0994H
9      STA 0995H
10     LXI D,0990H
11     CALL STDM
12     CALL DCD      ;show blank display
13     LXI B,0064H
14     MVI A,D7H      ;Green-Red
15     STA 3000H      ;show on leds
16     LDA 2000H      ;read from dip switches
17     RAL
18     JC CONT      ;check MSB
19     CALL DELB      ;no busy waits
20     JMP START
21
22 CONT:
23     MVI A,01H      ;Display 10
24     STA 0995H      ;
25     MVI L,00H      ;
26     CALL MDEL      ;Wait for a sec
27
28     MVI A,00H      ;load 0 on last
29     STA 0995H      ;7segment digit
30     MVI L,09H
31
32 LOOP1:
33     PUSH H      ;loop for L in [9,1]
34     CALL MDEL      ;Wait for a sec
35     POP H
36     DCR L
37     JNZ LOOP1
38
39     MVI A,B7H      ;Yellow-Red
40     STA 3000H      ;Show on leds
41     LXI B,03E8H
42     CALL DELB      ;Wait for a sec
43     MVI A,7DH      ;Red-Green
44     STA 3000H      ;Show on leds
45     CALL DELB      ;Wait for 3 secs
46     CALL DELB
47     CALL DELB
48     MVI A,7BH      ;Red-Yellow
49     STA 3000H      ;Show on leds
50     CALL DELB      ;Wait for a sec
51     JMP START
52
53 MDEL:
54     MOV A,L      ;Load A from L
55     STA 0994H      ;Load A to memory
56     LXI D,0990H      ;Load address to D for STDM
57     CALL STDM
58     LXI B,0032H      ;50ms delays
59     MVI H,14H      ;H as counter 20-0
60
61 LP:
62     CALL DCD      ;Refresh Display
63     CALL DELB      ;Wait 50ms
64     DCR H      ;Continue 20 times
65     JNZ LP      ;20x50ms = 1sec
66     RET
67
68 END

```

