



ΕΘΝΙΚΟ ΜΕΤΣΟΒΙΟ ΠΟΛΥΤΕΧΝΕΙΟ

ΣΧΟΛΗ ΗΜ&ΜΥ

Εργαστήριο Μικροϋπολογιστών 2^η Εργαστηριακή Άσκηση
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Ομάδα C07

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Άσκηση 3(i)

```
1  START:  LDA 2000H
2          CALL XOR
3          CALL XOR
4          CALL XOR
5          CALL XOR
6          MOV D,C
7          MOV A,C
8          RAR
9          MOV C,A
10         MOV A,D
11         RAL
12         RAL
13         RAL
14         RAL
15         RAL
16         RAL
17         CALL OR
18         MOV A,C
19         CMA
20         STA 3000H
21         JMP START
22
23
24         ;diabazei apo ton A,
25         ;wrhsimopoiei ton b ws buffer
26         ;grafei to apotelesma ston C
27  XOR:    RAL      ;CALL XOR
28          JC ONE
29          RAL
30          JC TRUE
31          JMP FALSE
32  ONE:    CMC
33          RAL
34          JC FALSEX
35          JMP TRUE
36
37  OR:     RAL      ;CALL OR
38          JC TRUE
39          RAL
40          JC TRUE
41          JMP FALSE
42
43  TRUE:   CMC
44          MOV B,A
45          MOV A,C
46          RAL
47          ORI 01H
48          MOV C,A
49          MOV A,B
50          RET
51
52  FALSEX: CMC
53  FALSE:  MOV B,A
54          MOV A,C
55          RAL
56          ANI FEH
57          MOV C,A
58          MOV A,B
59          RET
60  END
```

Άσκηση 4(ii)

```
1      MVI A,10H
2      STA 0BB0H
3      STA 0BB1H
4      STA 0BB2H
5      STA 0BB3H
6      STA 0BB4H
7      STA 0BB5H
8      LXI D,0BB0H
9      CALL STDM
10     LP: CALL KIND
11         MOV B,A
12         ANI 0FH
13         STA 0BB4H
14         MOV A,B
15         RLC
16         RLC
17         RLC
18         RLC
19         ANI 0FH
20         STA 0BB5H
21         LXI D,0BB0H
22         CALL STDM
23         JMP LP
24     END
```

Άσκηση 4(iv)

```
1  START:
2      IN 10H
3
4  READ_BINARY:
5      LDA 2000H
6      RAL
7      JC NEGATIVE
8      JNC POSITIVE
9
10 ;ARNHTIKOS EINAI MONO OTAN MSB==1 , OPOTE KAI TON "METATREPW"
11
12 NEGATIVE:
13     RAR          ;GIA UNDO THN RAL
14     CMA          ;TO SUMPLHRWMA WS PROS 2 TOY SUMPLHRWMATOS WS PROS 2 MAS DINEI TON ARX ARIΣMO
15     INR A
16     MVI E,1CH   ;O E EXEI TO PROSHMO. 17 GIATI AYTO ANTISTOIXEI SE - STHN DCD
17     ;CMA          ;TO CMA XREIAZETAI GIATI PLEON OLOI ARITHMOI MOU EINAI 8ETIKOI
18     JMP DEC_CONVERSION
19
20 POSITIVE:
21     RAR          ;GIA UNDO RAL
22     MVI E,10H   ;O E EXEI TO PROSHMO , TO 10 GIATI AUTO ANTISTOIXEI SE KENO STHN DCD
23
24 DEC_CONVERSION:
25
26     MVI C,00H   ;STON C OI MONADES
27     MVI B,FFH   ;STON B OI DECADES , EBALA FF GIATI META KSEKINAW KANONTAS INR
28     MVI D,00H   ;STON D OI EKATONTADES
29
30 BCD_FINDER:
31     CPI 64H     ;SUGKRINW ME TO 100
32     JM ELEGX_DEC ;AN EINAI DHL. NUMBER<100 H' ALLIWS (A)-100<0 TOTE ELEGXEI DECADES
33     MVI D,01H   ;ALLIWS O ARITHMOS MAS EXEI MIA EKATONTADA
34     SUI 64H     ;AFAIRW TO 100 KAI SUNEXIZW GIA DECADES
35
36 ELEGX_DEC:
37     INR B
38     SUI 0AH     ;AFAIRW 10 KAI METRAW POSES DECADES AFAIRESA
39     JNC ELEGX_DEC ;MEXRI NA MEINOUNE MONADES
40     ADI 0AH     ;DIORTHWSH YPOLOIPOU, PROSTHETW 10
41     MOV C,A     ;STON C OI MONADES
42
43 EMFANISH_STA_3DEKSIA_7SEGM:
44
45     ;===1o LSB PSHFIO===
46     LXI H,0990H ;BAZW STON H::=C =LEAST SIGN BIT, TIS MONADES @ THESH MNMHMS 0990
47     MOV M,C
48
49     ;===2o LSB PSHFIO===
50     LXI H,0991H ;BAZW STON H::=B =2o LSB TIS DEKADES @ THESH MNMHMS 0991
51     MOV M,B
52
53     ;===3o LSB PSHFIO===
54     LXI H,0992H ;BAZW STON H::=L THN EKANTONTADA (AN YPARXEI) @ THESH MNMHMS 0991
55     MOV M,D
56
57     ;===4o LSB PSHFIO===
58     LXI H,0993H ;BAZW STON H::=E TO PROSHMO
59     MOV M,E
60
61     ;===5o LSB PSHFIO===
62     LXI H,0994H ;EMFANIZEI KENA TA YPOLOIPA BITS
63     MVI M,10H
64
65     ;===6o (MSB)PSHFIO===
66     LXI H,0995H
67     MVI M,10H
68
69
70     LXI D,0990H ; BAZW STON D THN THESH APO OPOU ARXIZEI TO LSB
71     CALL STDM   ; TA METAFEREI TA BITS NA TA PAREI H DCD KAI NA TA PAEI STA 7SEG
72     CALL DCD
73     JMP START ; H DCD PAIRNEI TA PSHFIA KAI TA BAZEI STOUS 7SEGMENTS
```

74 | END
75