**Συστήματα Μικρουπολογιστών - 3ή Σειρά Ασκήσεων**

Σχολή Ηλεκτρολόγων Μηχανικών και Μηχανικών Υπολογιστών

Ακαδημαϊκό έτος : 2018 – 2019 Εξάμηνο : 6ό

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***Άσκηση 1η***

Δίνεται το πρόγραμμα σε 8085. Τα προγράμματα ελέγχθηκαν στον προσομοιωτή TSIK 8085.

START:

IN 10H

MVI A,0Dh ;Set appropriate mask for RST5.5

SIM

EI ;Enable Interrupts

INPUT\_LOOP: JMP INPUT\_LOOP

INTR\_ROUTINE:

EI

MVI B,03H ;Set (BC) = 1000, 1 sec delay

MVI C,E8H

CALL TURNON\_LED ;Turn on leds

MVI A,3CH ;Set A=60, it is a timer

CHECK1:

PUSH PSW

;First seperate digits of A to print on 7-segment display

MOV D,A ;Mov to D temporarily

ANI 0FH ;Keep only 4 LSB's

STA 0900H ;Store to adress 0900, from where it will be displayed

MOV A,D

ANI F0H ;Keep only 4 MSB's

RRC ;Shift 4 times, so they are in the place of 4 LSB's

RRC

RRC

RRC

STA 0901H ;Store in next memory location

LXI D,0900H ;Point DE to memory location 0900

CALL STDM ;Display remaining time

CALL DCD

CALL DELB

POP PSW

DCR A ;Decrement timer,

CPI 00H ;Check if it has reached zero

JNZ CHECK1 ;If not, repeat

CALL TURNOFF\_LED

EI ;Else, wait for another interrupt

JMP INPUT\_LOOP

TURNON\_LED:

MVI A,00H

STA 3000H

RET

TURNOFF\_LED:

MVI A,FFH

STA 3000H

RET

END

***Άσκηση 2η***

START:

IN 10H ;Disable Memory protection

MVI A,0Dh ;Set appropriate mask for RST5.5

SIM

EI

INPUT\_LOOP: JMP INPUT\_LOOP

INTR\_ROUTINE:

CALL TURNOFF\_LED ;Turn off leds

CALL BLNK ;Set display to blank

READ1:

CALL KIND ;Get input

MOV D,A ;Save it to D

CPI 10H ;Read until you get number between [00,0F]

JNC READ1

READ2:

CALL KIND ;Get second input

MOV E,A ;Save it to E

CPI 10H

JNC READ1

EI

DISPLAY:

MOV A,D ;Move first number (LSB) to accumulator

STA 0900H ;Store to adress 0900, from where it will be displayed

MOV A,E ;Move next number (MSB) to accumulator

STA 0901H ;Store in next memory location

MOV A,E ;Move MSB to accumulator and rotate 4 times

RRC

RRC

RRC

RRC

ADD D ;Add LSB

PUSH PSW

LXI D,0900H ;Point DE to memory location 0900

CALL STDM ;Call 7-segment display processes

POP PSW ;Check which LED will turn on

CMP C ;If (num)>C then turn on led 3

JNC CHECK2

MVI A,FBH

JMP L1

CHECK2:

CMP B ;Else if (num)>B

JNC CHECK3

MVI A,FDH ;Turn on led 2

JMP L1

CHECK3:

MVI A,FEH ;Else turn on led 1

L1:

STA 3000H ;Loop until new interrupt occurs

CALL DCD

JMP L1

TURNON\_LED:

MVI A,00H

STA 3000H

RET

TURNOFF\_LED:

MVI A,FFH

STA 3000H

RET

END