```
                ;*******************************************************
                ;
                ; TEST 2
                ;
                ; SLÅR AV LED AV/PÅ....  ADDR. FFFF BIT 080H = 00/FF
                ;
0000                    CPU     "8051.TBL"
0000                    HOF     "INT8"
                ;
                ;*******************************************************
                ;
                ;MCS-51 INTERNAL REGISTERS
                ;
00F0 =          B:      EQU     0F0H    ;B REGISTER
00E0 =          ACC:    EQU     0E0H    ;ACCUMULATOR
00D0 =          PSW:    EQU     0D0H    ;PROGRAM STATUS WORD
00B8 =          IPC:    EQU     0B8H    ;INTERRUPT PRIORITY
00B0 =          P3:     EQU     0B0H    ;PORT 3
00A8 =          IEC:    EQU     0A8H    ;INTERRUPT ENABLE
00A0 =          P2:     EQU     0A0H    ;PORT 2
0099 =          SBUF:   EQU     99H     ;SEND BUFFER
0098 =          SCON:   EQU     98H     ;SERIAL CONTROL
0090 =          P1:     EQU     90H     ;PORT 1
008D =          TH1:    EQU     8DH     ;TIMER 1 HIGH
008C =          TH0:    EQU     8CH     ;TIMER 0 HIGH
008B =          TL1:    EQU     8BH     ;TIMER 1 LOW
008A =          TL0:    EQU     8AH     ;TIMER 0 LOW
0089 =          TMOD:   EQU     89H     ;TIMER MODE
0088 =          TCON:   EQU     88H     ;TIMER CONTROL
0087 =          PCON:   EQU     87H     ;POWER CONTROL REGISTER
0083 =          DPH:    EQU     83H     ;DATA POINTER HIGH
0082 =          DPL:    EQU     82H     ;DATA POINTER LOW
0081 =          SP:     EQU     81H     ;STACK POINTER
0080 =          P0:     EQU     80H     ;PORT 0
                ;
                ;MCS-51 INTERNAL BIT ADDRESSES
                ;
00D7 =          CY:     EQU     0D7H    ;CARRY FLAG
00D6 =          AC:     EQU     0D6H    ;AUXILIARY-CARRY FLAG
00D5 =          F0:     EQU     0D5H    ;USER FLAG 0
00D4 =          RS1:    EQU     0D4H    ;REGISTER SELECT MSB
00D3 =          RS0:    EQU     0D3H    ;REGISTER SELECT LSB
00D2 =          OV:     EQU     0D2H    ;OVERFLOW FLAG
00D0 =          P:      EQU     0D0H    ;PARITY FLAG
00BC =          PS:     EQU     0BCH    ;PRIORITY SERIAL PORT
00BB =          PT1:    EQU     0BBH    ;PRIORITY TIMER 1
00BA =          PX1:    EQU     0BAH    ;PRIORITY EXTERNAL 1
00B9 =          PT0:    EQU     0B9H    ;PRIORITY TIMER 0
00B8 =          PX0:    EQU     0B8H    ;PRIORITY EXTERNAL 0
00AF =          EA:     EQU     0AFH    ;ENABLE ALL INTERRUPT
00AC =          ES:     EQU     0ACH    ;ENABLE SERIAL INTERRUPT
00AB =          ET1:    EQU     0ABH    ;ENABLE TIMER 1 INTERRUPT
00AA =          EX1:    EQU     0AAH    ;ENABLE EXTERNAL 1 INTERR
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```
00A9 =      ET0:    EQU     0A9H    ;ENABLE TIMER 0 INTERRUPT
00A8 =      EX0:    EQU     0A8H    ;ENABLE EXTERNAL 0 INTERR
009F =      SM0:    EQU     09FH    ;SERIAL MODE 0
009E =      SM1:    EQU     09EH    ;SERIAL MODE 1
009D =      SM2:    EQU     09DH    ;SERIAL MODE 2
009C =      REN:    EQU     09CH    ;SERIAL RECEPTION ENABLE
009B =      TB8:    EQU     09BH    ;TRANSMITT BIT 8
009A =      RB8:    EQU     09AH    ;RECEIVE BIT 8
0099 =      TI:     EQU     099H    ;TRANSMIT INTERRUPT FLAG
0098 =      RI:     EQU     098H    ;RECEIVE INTERRUPT FLAG
008F =      TF1:    EQU     08FH    ;TIMER 1 OVERFLOW FLAG
008E =      TR1:    EQU     08EH    ;TIMER 1 RUN CONTROL BIT
008D =      TF0:    EQU     08DH    ;TIMER 0 OVERFLOW FLAG
008C =      TR0:    EQU     08CH    ;TIMER 0 RUN CONTROL BIT
008B =      IE1:    EQU     08BH    ;EXT INTERR. 1 EDGE FLAG
008A =      IT1:    EQU     08AH    ;EXT INTERR. 1 TYPE FLAG
0089 =      IE0:    EQU     089H    ;EXT INTERR. 0 EDGE FLAG
0088 =      IT0:    EQU     088H    ;EXT INTERR. 0 TYPE FLAG

            ;*******************************************************
            ;
4100                ORG     04100H
            ;
            ; DEFINITION OF VARIABLES
            ; REGISTER-SEGMENT FROM 30H THRU 7FH IS FREE TO USE FOR PROGS.
            ;
0030 =      LED_ST:  EQU    030H        ;STATUS LED
0031 =      I_OUTER: EQU    031H        ;LOOP-COUNTER 1
0032 =      I_INNER: EQU    032H        ;LOOP-COUNTER 2
0033 =      DUMMY1:  EQU    033H        ;DUMMY-TEST 1
0034 =      DUMMY2:  EQU    034H        ;DUMMY-TEST 2
            ;
            ;  INIT VARS
4100 74FF   INIT:   MOV     A,#0FFH     ;NUMBER 0FFH TO ACCU
4102 F530           MOV     LED_ST,A    ;PUT CONT. OF ACCU INTO LED_ST
4104 F531           MOV     I_OUTER,A   ;----------"---------- I_OUTER
4106 F532           MOV     I_INNER,A   ;----------"---------- I_INNER
4108 7455           MOV     A,#055H     ;NUMBER 055H INTO ACCU
410A F533           MOV     DUMMY1,A    ;PUT CONT. OF ACCU INTO DUMMY1
410C 74AA           MOV     A,#0AAH     ;NUMBER 0AAH INTO ACCU
410E F534           MOV     DUMMY2,A    ;PUT CONT. OF ACCU INTO DUMMY2

4110 904200         MOV     DPTR, #04200H  ;DPTR POINTS TO EXT. MEM.
4113 F0             MOVX    @DPTR, A    ;PUT CONT. OF ACCU INTO MEM. POINTED
                            ;TO BY DPTR
4114 A3             INC     DPTR        ;INCREMENT DPTR
4115 14             DEC     A           ;DECREMENT ACCU
4116 F0             MOVX    @DPTR, A    ;ANOTHER PUT.....
            ;
            ;  TOGGLE LEDS
            ;
4117 E530   TOGGLE: MOV     A,LED_ST    ;LED STATUS TO ACCU
4119 64FF           XRL     A,#0FFH     ;TOGGLE LED
```

```
411B F530           MOV     LED_ST,A     ;LED BACK TO VARIABLE
411D 90FFFF         MOV     DPTR, #0FFFFH ;LED ADDR TIL DATAPOINTER
4120 F0             MOVX    @DPTR,A      ;LED STATUS TO DATA POINTER
                    ;
                    ; WAITING LOOPS
                    ;
                    ;
4121 E532     INNER:  MOV     A,I_INNER    ;INDEX TO ACCU
4123 14               DEC     A            ;I_INNER --
4124 F532             MOV     I_INNER,A    ;SAVE INDEX
4126 70F9             JNZ     INNER        ;IF I_INNER != 0 => CONTINUE
                    ;
4128 E531     OUTER:  MOV     A,I_OUTER    ;INDEX TO ACCU
412A 14               DEC     A            ;I_OUTER --
412B F531             MOV     I_OUTER,A    ;SAVE INDEX
412D 70F2             JNZ     INNER        ;IF I_OUTER != 0 => CONTINUE
412F 80E6             SJMP    TOGGLE       ;ELSE TOGGLE LED

0000                  END
```

00D6 AC
00E0 ACC
00F0 B
00D7 CY
0083 DPH
0082 DPL
0033 DUMMY1
0034 DUMMY2
00AF EA
00AC ES
00A9 ET0
00AB ET1
00A8 EX0
00AA EX1
00D5 F0
0089 IE0
008B IE1
00A8 IEC
4100 INIT
4121 INNER
00B8 IPC
0088 IT0
008A IT1
0032 I_INNER
0031 I_OUTER
0030 LED_ST
4128 OUTER
00D2 OV
00D0 P
0080 P0
0090 P1
00A0 P2
00B0 P3
0087 PCON
00BC PS
00D0 PSW
00B9 PT0
00BB PT1
00B8 PX0
00BA PX1
009A RB8
009C REN
0098 RI
00D3 RS0
00D4 RS1
0099 SBUF
0098 SCON
009F SM0
009E SM1
009D SM2
0081 SP
009B TB8
0088 TCON
008D TF0
008F TF1
008C TH0
008D TH1
0099 TI
008A TL0
008B TL1
0089 TMOD
4117 TOGGLE
008C TR0
008E TR1