

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING,
FACULTY OF ECE,
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EEE - 3210– Microprocessor, Interfacing
& System Design Sessional

Sessional Assignment

Submitted to

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Result of Arithmetic operation on 7-segment display

```
CODE SEGMENT
ASSUME CS:CODE, DS:CODE, SS:CODE,
ES:CODE
ORG 1000H; SETTING PROGRAM
COUNTER ON IP
PORTA EQU 19H
CONTRL EQU 1FH
MOV AL,10000000B
OUT CONTRL,AL
MOV AL,1
MOV BL,4
ADD AL,BL
CMP AL,1
JE L1
ADD AL,BL
CMP AL,2
JE L2
ADD AL,BL
CMP AL,3
JE L3
ADD AL,BL
CMP AL,4
JE L4
ADD AL,BL
CMP AL,5
JE L5
ADD AL,BL
CMP AL,6
JE L6
ADD AL,BL
CMP AL,7
JE L7
ADD AL,BL
MOV AL,0F8H
OUT PORTA,AL
HLT
L8:
MOV AL,80H
OUT PORTA,AL
HLT
L9:
MOV AL,90H
CMP AL,8
JE L8
ADD AL,BL
CMP AL,9
JE L9
CMP AL,0
JE L0
L1:
MOV AL,0F9H
OUT PORTA,AL
HLT
L2:
MOV AL,0AAH
OUT PORTA,AL
HLT
L3:
MOV AL,0B0H
OUT PORTA,AL
HLT
L4:
MOV AL,99H
OUT PORTA,AL
HLT
L5:
MOV AL,92H
OUT PORTA,AL
HLT
L6:
MOV AL,82H
OUT PORTA,AL
HLT
L7:
OUT PORTA,AL
HLT
L0:
MOV AL,0C0H
OUT PORTA,AL
HLT
CODE ENDS
END
```

- Output



Fig. Summation of '3' and '2' and displaying result through 7 segment
Increasing the time delay of LED using 8255, 8254 and 8259

```

INTRP PROC NEAR
CNT1 EQU 8001H
CNT2 EQU 8002H
CNTR EQU 8003H
MOV AL, 74H
OUT CNTR, AL
MOV AL, 94H
OUT CNTR, AL
MOV AL, 50H
OUT CNT1, AL
MOV AL, C3H
OUT CNT1, AL
MOV AL, 28H
OUT CNT2, AL
RET
INTRP ENDP
CODE SEGMENT
    ASSUME CS:CODE,DS:CODE,ES:CODE,SS:CODE
;
    PPIC_C EQU 1FH
    PPIC EQU 1DH
    PPIB EQU 1BH
    PPIA EQU 19H
;
    CTC1 EQU 0BH
    CTCC EQU 0FH
;
    INTA EQU 10H
    INTA2 EQU INTA+2
    OUT PPIB,AL
    STI
    L2: NOP
    JMP L2
;
    INT 3
;
;
    INT_SER:
    SHL AH,1
    TEST AH,00010000B
    JNZ L1
    OR AH,11110000B
    JMP L3
; LED out
    L1: MOV AH,11110001B
    L3: MOV AL,AH
    OUT PPIB,AL
    PUSH AX
    MOV AX,0FFFFH
    OUT CTC1,AL
    MOV AL,AH
    OUT CTC1,AL
    POP AX
; EOI command
    MOV AL,00100000B
    OUT INTA,AL
    STI
    IRET
;
;
    INT_V EQU 40H*4
;
    ORG 1000H
;
    XOR BX,BX
    MOV ES,BX
;
    MOV AX,OFFSET INT_SER
    MOV BX,INT_V
    MOV WORD PTR ES:[BX],AX
;
    XOR AX,AX
    MOV WORD PTR ES:[BX+2],AX
;
    CALL INIT
    CALL P_INIT
;
    MOV AL,10000000B
    OUT PPIC_C,AL
;
    MOV AL,11111111B
    OUT PPIA,AL
;
    MOV AL,00000000B
    OUT PPIC,AL
;
    MOV AH,11110001B
    MOV AL,AH
    P_INIT PROC NEAR
    PUSH AX
    MOV AL,01110000B
    OUT CTCC,AL
;
    MOV AX,0FFFFH
    OUT CTC1,AL
    MOV AL,AH
    OUT CTC1,AL
    POP AX
    RET
    P_INIT ENDP
;
    INIT PROC NEAR
; ICW1
    MOV AL,00010011B
    OUT INTA,AL
; ICW2 interrupt vector
    MOV AL,40H
    OUT INTA2,AL
; ICW4
    MOV AL,00000001B
    OUT INTA2,AL
; interrupt mask
    MOV AL,11111110B
    OUT INTA2,AL
    RET
    INIT ENDP
CODE ENDS
END

```