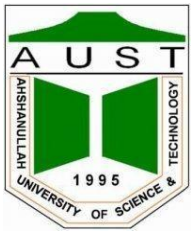

Ahsanullah University of Science & Technology

Department of Computer Science & Engineering

Course No : **CSE3108**
Course Title : **Microprocessor Lab**
Report Number : **02**
Set Number : **03**

Date of Performance : **18.01.2021**

Date of Submission : **31.01.2021**

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Submitted By-

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Section : **A**

Part: 01

E-3-0 using Arrays

Answer:

```
SA SEGMENT PARA PUBLIC 'CODE'
ASSUME CS: SA
ORG 1000H

START:

        MOV AL,80H
        OUT 1FH,AL

        BEGIN:

        MOV SI,OFFSET DATA
        MOV BX,13H

        TOP:

        MOV AL,BYTE PTR CS:[SI]
        OUT 19H,AL

        MOV CX,0FFFFH
        L1 : LOOP L1

        MOV CX,0FFFFH
        L2 : LOOP L2

        MOV CX,0FFFFH
        L3 : LOOP L3

        MOV CX,0FFFFH
        L4 : LOOP L4
```

```
        INC SI
        DEC BX
        CMP BX,0000H
        JE EXIT
        JMP TOP

        DATA:
        DB 0FEH  ; start displaying E
        DB 0DEH
        DB 09EH
        DB 08EH
        DB 086H
        DB 0FFH  ; reset
        DB 0FEH  ; start displaying 3
        DB 0FCH
        DB 0BCH
        DB 0B8H
        DB 0B0H
        DB 0FFH  ; reset
        DB 0FEH  ;start displaying 0
        DB 0FCH
        DB 0F8H
        DB 0F0H
        DB 0E0H
        DB 0C0H
        DB 0FFH

        EXIT:

        JMP BEGIN

SA ENDS
END START
```

Part: 02

(R1+R2(ON))-G(ON)-Y(ON) using Arrays

Answer:

```
SA SEGMENT PARA PUBLIC 'CODE'
ASSUME CS: SA
ORG 1000H
START:

    MOV AL,80H
    OUT 1FH,AL

    MOV AL,0FFH
    OUT 19H,AL

    BEGIN:

    MOV SI,OFFSET DATA
    MOV BX,03H

    TOP:

    MOV AL,BYTE PTR CS:[SI]
    OUT 1BH,AL
```

```
MOV CX,0FFFFH
L1: LOOP L1

MOV CX,0FFFFH
L2: LOOP L2

MOV CX,0FFFFH
L3: LOOP L3

MOV CX,0FFFFH
L4: LOOP L4

INC SI
DEC BX
CMP BX,0000H
JE EXIT
JMP TOP

DATA:
DB 09H
DB 0BH
DB 0FH

EXIT:
```

```
    JMP BEGIN

SA ENDS
END START
```

Part 3: A Parallelogram

```
DM SEGMENT PARA PUBLIC 'CODE'
ASSUME CS: DM
ORG 1000H


START:
    MOV AL, 80H
    OUT 1FH, AL

    MOV AL,0FFH
    OUT 19H,AL

BEGIN:
```

```
;Show Orange in Row 0 Column 4
MOV AL, FEH
OUT 18H, AL
MOV AL, FEH
OUT 1AH, AL
MOV AL, 10H
OUT 1CH, AL

;For delay
MOV CX, 0FFFFH
L1: LOOP L1
MOV CX, 0FFFFH
L2: LOOP L2


;Show Orange in Row 0 Column 3
MOV AL, FEH
OUT 18H, AL
MOV AL, FEH
OUT 1AH, AL
MOV AL, 08H
OUT 1CH, AL


MOV CX, 0FFFFH
```

```
L3: LOOP L3
MOV CX, 0FFFFH
L4: LOOP L4



;Show Orange in Row 0 Column 2
MOV AL, FEH
OUT 18H, AL
MOV AL, FEH
OUT 1AH, AL
MOV AL, 04H
OUT 1CH, AL


MOV CX, 0FFFFH
L5: LOOP L5
MOV CX, 0FFFFH
L6: LOOP L6


;Show Orange in Row 0 Column 1
MOV AL, FEH
OUT 18H, AL
MOV AL, FEH
```

```
OUT 1AH, AL
MOV AL, 02H
OUT 1CH, AL


MOV CX, 0FFFFH
L7: LOOP L7
MOV CX, 0FFFFH
L8: LOOP L8


;Show Orange in Row 0 Column 0
MOV AL, FEH
OUT 18H, AL
MOV AL, FEH
OUT 1AH, AL
MOV AL, 01H
OUT 1CH, AL


MOV CX, 0FFFFH
L9: LOOP L9
MOV CX, 0FFFFH
L10: LOOP L10
```

```
;Show Orange in Row 1 Column 0
MOV AL, FDH
OUT 18H, AL
MOV AL, FDH
OUT 1AH, AL
MOV AL, 01H
OUT 1CH, AL

MOV CX, 0FFFFH
L11: LOOP L11
MOV CX, 0FFFFH
L12: LOOP L12

;Show Orange in Row 1 Column 1
MOV AL, FDH
OUT 18H, AL
MOV AL, FDH
OUT 1AH, AL
MOV AL, 02H
OUT 1CH, AL
```

```
MOV CX, 0FFFFH
L13: LOOP L13
MOV CX, 0FFFFH
L14: LOOP L14

;Show Orange in Row 2 Column 1
MOV AL, FBH
OUT 18H, AL
MOV AL, FBH
OUT 1AH, AL
MOV AL, 02H
OUT 1CH, AL

MOV CX, 0FFFFH
L15: LOOP L15
MOV CX, 0FFFFH
L16: LOOP L16

;Show Orange in Row 3 Column 1
MOV AL, F7H
OUT 18H, AL
MOV AL, F7H
```

```
OUT 1AH, AL
MOV AL, 02H
OUT 1CH, AL

MOV CX, 0FFFFH
L17: LOOP L17
MOV CX, 0FFFFH
L18: LOOP L18

;Show Orange in Row 4 Column 1
MOV AL, EFH
OUT 18H, AL
MOV AL, EFH
OUT 1AH, AL
MOV AL, 02H
OUT 1CH, AL

MOV CX, 0FFFFH
L19: LOOP L19
MOV CX, 0FFFFH
L20: LOOP L20
```

```
;Show Orange in Row 4 Column 2
MOV AL, EFH
OUT 18H, AL
MOV AL, EFH
OUT 1AH, AL
MOV AL, 04H
OUT 1CH, AL

MOV CX, 0FFFFH
L21: LOOP L21
MOV CX, 0FFFFH
L22: LOOP L22

;Show Orange in Row 5 Column 2
MOV AL, DFH
OUT 18H, AL
MOV AL, DFH
OUT 1AH, AL
MOV AL, 04H
OUT 1CH, AL
```

```
MOV CX, 0FFFFH
L23: LOOP L23
MOV CX, 0FFFFH
L24: LOOP L24

;Show Orange in Row 6 Column 2
MOV AL, BFH
OUT 18H, AL
MOV AL, BFH
OUT 1AH, AL
MOV AL, 04H
OUT 1CH, AL

MOV CX, 0FFFFH
L25: LOOP L25
MOV CX, 0FFFFH
L26: LOOP L26

;Show Orange in Row 6 Column 3
MOV AL, BFH
```

```
OUT 18H, AL
MOV AL, BFH
OUT 1AH, AL
MOV AL, 08H
OUT 1CH, AL

MOV CX, 0FFFFH
L27: LOOP L27
MOV CX, 0FFFFH
L28: LOOP L28

;Show Orange in Row 7 Column 3
MOV AL, 7FH
OUT 18H, AL
MOV AL, 7FH
OUT 1AH, AL
MOV AL, 08H
OUT 1CH, AL

MOV CX, 0FFFFH
L29: LOOP L29
```

```
MOV CX, 0FFFFH
L30: LOOP L30


;Show Orange in Row 7 Column 4
MOV AL, 7FH
OUT 18H, AL
MOV AL, 7FH
OUT 1AH, AL
MOV AL, 10H
OUT 1CH, AL


MOV CX, 0FFFFH
L31: LOOP L31
MOV CX, 0FFFFH
L32: LOOP L32


;Show Orange in Row 7 Column 5
MOV AL, 7FH
OUT 18H, AL
MOV AL, 7FH
OUT 1AH, AL
```

```
MOV AL, 20H
OUT 1CH, AL


MOV CX, 0FFFFH
L33: LOOP 33
MOV CX, 0FFFFH
L34: LOOP 34


;Show Orange in Row 7 Column 6
MOV AL, 7FH
OUT 18H, AL
MOV AL, 7FH
OUT 1AH, AL
MOV AL, 40H
OUT 1CH, AL


MOV CX, 0FFFFH
L35: LOOP L35
MOV CX, 0FFFFH
L36: LOOP L36
```

```
;Show Orange in Row 7 Column 7
MOV AL, 7FH
OUT 18H, AL
MOV AL, 7FH
OUT 1AH, AL
MOV AL, 80H
OUT 1CH, AL

MOV CX, 0FFFFH
L37: LOOP L37
MOV CX, 0FFFFH
L38: LOOP L38

;Show Orange in Row 6 Column 7
MOV AL, BFH
OUT 18H, AL
MOV AL, BFH
OUT 1AH, AL
MOV AL, 80H
OUT 1CH, AL
```

```
MOV CX, 0FFFFH
L39: LOOP L39
MOV CX, 0FFFFH
L40: LOOP L40

;Show Orange in Row 5 Column 7
MOV AL, DFH
OUT 18H, AL
MOV AL, DFH
OUT 1AH, AL
MOV AL, 80H
OUT 1CH, AL

MOV CX, 0FFFFH
L41: LOOP L41
MOV CX, 0FFFFH
L42: LOOP L42

;Show Orange in Row 5 Column 6
MOV AL, DFH
```

```
OUT 18H, AL
MOV AL, DFH
OUT 1AH, AL
MOV AL, 40H
OUT 1CH, AL

MOV CX, 0FFFFH
L43: LOOP L43
MOV CX, 0FFFFH
L44: LOOP 44

;Show Orange in Row 4 Column 6
MOV AL, EFH
OUT 18H, AL
MOV AL, EFH
OUT 1AH, AL
MOV AL, 40H
OUT 1CH, AL

MOV CX, 0FFFFH
L45: LOOP L45
MOV CX, 0FFFFH
```

```
L46: LOOP L46


;Show Orange in Row 3 Column 6
MOV AL, F7H
OUT 18H, AL
MOV AL, F7H
OUT 1AH, AL
MOV AL, 40H
OUT 1CH, AL


MOV CX, 0FFFFH
L47: LOOP L47
MOV CX, 0FFFFH
L48: LOOP L48


;Show Orange in Row 3 Column 5
MOV AL, F7H
OUT 18H, AL
MOV AL, F7H
OUT 1AH, AL
MOV AL, 20H
OUT 1CH, AL
```

```
MOV CX, 0FFFFH
L49: LOOP L49
MOV CX, 0FFFFH
L50: LOOP L50

;Show Orange in Row 2 Column 5
MOV AL, FBH
OUT 18H, AL
MOV AL, FBH
OUT 1AH, AL
MOV AL, 20H
OUT 1CH, AL

MOV CX, 0FFFFH
L51: LOOP L51
MOV CX, 0FFFFH
L52: LOOP L52

;Show Orange in Row 1 Column 5
```

```
MOV AL, FDH
OUT 18H, AL
MOV AL, FDH
OUT 1AH, AL
MOV AL, 20H
OUT 1CH, AL

MOV CX, 0FFFFH
L53: LOOP L53
MOV CX, 0FFFFH
L54: LOOP L54

;Show Orange in Row 1 Column 4
MOV AL, FDH
OUT 18H, AL
MOV AL, FDH
OUT 1AH, AL
MOV AL, 10H
OUT 1CH, AL

MOV CX, 0FFFFH
```

```
        L55: LOOP L55
        MOV CX, 0FFFFH
        L56: LOOP L56


        JMP BEGIN


DM ENDS
END START
```