Lab7

> Aim :- DEMONSTRATE THE USE OF LOOPING, COMPARISON, AND BRANCHING INSTRUCTIONS IN 8085 ASSEMBLY LANGUAGE TO MANIPULATE DATA AND PERFORM MATHEMATICAL OPERATIONS.

Lab Assignment

1. Write an 8085 assembly language program to find the largest number in an array of data.

```
INPUT:
(2201H) = 08 (Array Size)
(2202H) = 45
(2203H) = 67
(2204H) = 15
(2205H) = 07
(2206H) = FE
(2207H) = 78
(2208H) = 21
(2209H) = 63
OUTPUT:
(220AH) = FE
```

> Code

```
MVI A,08H;
STA 2201H;
MVI A,45;
STA 2202H;
MVI A,67
STA 2203H;
MVI A,15;
STA 2204H;
MVI A,07H;
STA 2205H;
MVI A,FEH;
STA 2206H;
MVI A,78H;
STA 2207H;
MVI A,21H;
STA 2208H;
MVI A,63H;
STA 2209H;
LXI H,2200H;
MVI A,10H;
LXI B,2200H;
MOV D,A;
LOOP:
    INX B;
```

```
    CMP C;
    JZ END;
    MOV E,A;
    LDAX B;
    CMP D;
    JNC SWAP;
    MOV A,E;
    LOOP:

SWAP:

    MOV D,A
    JMP LOOP;
END:
    HLT;
HLT;
```

---

2. Write an 8085 assembly language program to find the smallest number in an array of data.

```
INPUT: (Take the above data).
OUTPUT: (220AH) = 07
```

> Code

```
MVI A,08H;
STA 2201H;
MVI A,45;
STA 2202H;
MVI A,67
STA 2203H;
MVI A,15;
STA 2204H;
MVI A,07H;
STA 2205H;
MVI A,FEH;
STA 2206H;
MVI A,78H;
STA 2207H;
MVI A,21H;
STA 2208H;
MVI A,63H;
STA 2209H;
LXI H,2200H;
MVI A,10H;
LXI B,2200H;
MOV D,A;
LOOP:
    INX B;
```

```
    CMP C;
    JZ END;
    MOV E,A;
    LDAX B;
    CMP D;
    JC SWAP;
    MOV A,E;
    LOOP:

SWAP:

    MOV D,A
    JMP LOOP;
END:
    HLT;
HLT;
```

---

3. Write an 8085 assembly language program to sort the data in ascending order.

```
Data(H): 63, 41, 56, 62, 48, 5A, 4F, 4C, 56, 56
```

> Code

```
START:     MVI D,10 // Counter

W:     LXI H,2201
       MVI C,10 // Counter

X:     MOV A,M
       INX H
       MOV B,M
       CMP B
       JC Y
       MOV M,A
       DCX H
       MOV M,B
       INX H

Y:     DCR C
       JNZ X
       DCR D
       JNZ W
       HLT

# ORG 2201
# DB 63,41,56,62,48,5A,4F,4C,56,56
```

4. Write an 8085 assembly language program to sort an array containing the set of marks scored by 10 students in a Computer system course in descending order.

```
Data(H): Take the above data
```

Code

```
START:     MVI D,10 // Counter

W:      LXI H,2201
        MVI C,10 // Counter

X:      MOV A,M
        INX H
        MOV B,M
        CMP B
        JNC Y
        MOV M,A
        DCX H
        MOV M,B
        INX H

Y:      DCR C
        JNZ X
        DCR D
        JNZ W
        HLT

# ORG 2201
# DB 63,41,56,62,48,5A,4F,4C,56,56
```

5. The following block of Data is stored starting from the memory location XX50H to XX5AH. Write an 8085 Assembly Language Program to transfer the data to a new location XX00H to XX05H in reverse order.

```
DATA(H): 22,A5,B2,99,7F,37
```

Code

```
MVI A,10H;
STA 1000H;
MVI A,20H
```

```
STA 1001H
MVI A,30H
STA 1002H
MVI A,40H
STA 1003H
MVI A,50H
STA 1004H
MVI H,5;

LXI B,1004H;
LXI D,2000H;
LOOP:
    LDAX B;
    STAX D;
    INX D
    DCX B
    DCR H;
    JZ END
    JMP LOOP;
END:
    HLT;
HLT;
```