

Microprocessor Assignment 2

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1. Two numbers MNH and KLH are stored in 2050H and 2051H, respectively. Write a program to assemble them as NKH, and LMH, store them in 2052H and 2053H.

```
LDA 2050H
MOV B, A;
LDA 2051H
MOV C, A;

MOV A,B;
ANI 0FH;
RLC;
RLC;
RLC;
RLC;
MOV D,A

MOV A,C;
ANI F0H;
RRC;
RRC;
RRC;
RRC;

ADD D;
STA 2052H;

LDA 2050H
MOV B, A;
LDA 2051H
MOV C, A;

MOV A,B;
ANI F0H;
RRC;
RRC;
RRC;
RRC;
MOV D,A

MOV A,C;
ANI 0FH;
RLC;
RLC;
RLC;
RLC;
```

```
ADD D;  
STA 2053H;  
  
HLT
```

2. Two numbers A & B are stored in 2050 and 2051H, respectively. Write a program to perform A×B and store the result in 2052H and 2053H.

```
LXI H,2050H  
MOV B,M  
LXI H,2051H  
MOV D,M  
MVI A,00H  
MVI C,00H  
LOOP:ADD D  
JNC SKIP  
INR C  
SKIP:INX H  
DCR B  
JNZ LOOP  
STA 2052H  
MVI A,00H  
MOV A,C  
STA 2053H  
HLT
```

OR

```
LHLD 2050H  
XCHG  
MOV C,D  
MVI D,00H  
LXI H,0000H  
LOOP:DAD D  
DCR C  
JNZ LOOP  
SHLD 2052H  
HLT
```

3. N numbers are stored in consecutive m/m location starting from 2050H. The value N is stored in 204FH.

(i)Find the maximum among the N numbers.

(ii)Find the minimum among the N numbers.

(iii)Sort the N numbers in ascending order.

(iv) Sort the N numbers in descending order.

```
i)
LXI H,204FH
MOV B,M
LXI H,2050H
MOV A,M
DCR B
LOOP:INX H
CMP M
JNC SKIP
MOV A,M
SKIP:DCR B
JNZ LOOP
STA 2060H
HLT
```

```
ii)
LXI H,204FH
MOV B,M
LXI H,2050H
MOV A,M
DCR B
LOOP:INX H
CMP M
JC SKIP
MOV A,M
SKIP:DCR B
JNZ LOOP
STA 2060H
HLT
```

```
iii)
    LXI H,204F
    MOV B,M
    DCR B
    LXI D,2050H
```

```
LOOP1: MOV H,D
        MOV L,E
        MOV A,M
        MOV C,B
```

```
LOOP2: INX H
        CMP M
        JC SKIP
        MOV A,M
        STA 2060H
        XCHG
        MOV A,M
        STA 2061H
        LDA 2060H
```

```
        MOV M,A
        XCHG
        LDA 2061H
        MOV M,A
        LDA 2060H
```

```
SKIP:   DCR C
        JNZ LOOP2
        INX D
        DCR B
        JNZ LOOP1
        XRA A;
        STA 2060H
        STA 2061H
        HLT
```

```
iv)
        LXI H,204F
        MOV B,M
        DCR B
        LXI D,2050H
```

```
LOOP1:  MOV H,D
        MOV L,E
        MOV A,M
        MOV C,B
```

```
LOOP2:  INX H
        CMP M
        JNC SKIP
        MOV A,M
        STA 2060H
        XCHG
        MOV A,M
        STA 2061H
        LDA 2060H
        MOV M,A
        XCHG
        LDA 2061H
        MOV M,A
        LDA 2060H
```

```
SKIP:   DCR C
        JNZ LOOP2
        INX D
        DCR B
        JNZ LOOP1
        XRA A;
        STA 2060H
        STA 2061H
        HLT
```

4. N numbers are stored in consecutive m/m location starting from 2050H. The value N is stored in 204F. Write a program to copy the even and odd numbers starting from 2100H and 2200H, respectively. Store the total no. of even and odd numbers in 2300H and 2201H. respectively.

```

        LXI H,204FH
        MOV B,M
        LXI H,2050H
        MVI C,00H
        LXI D,2200H

LOOP:   MOV A,M
        RAR
        JNC SKIP
        INR C
        RAL
        XCHG
        MOV M,A
        XCHG
        INX D

SKIP:   DCR B
        INX H
        JNZ LOOP
        MOV A,C
        STA 2301H

        LXI H,204FH
        MOV B,M
        LXI H,2050H
        MVI C,00H
        LXI D,2100H

LOOP1:  MOV A,M
        INX H
        RAR
        JC SKIP1
        INR C
        RAL
        XCHG
        MOV M,A
        XCHG
        INX D

SKIP1:  DCR B
        JNZ LOOP1
        MOV A,C
        STA 2300H
        HLT

```

5. N numbers are stored in consecutive m/m location starting from 2050H. The value N is stored in 204F. Write a program to test whether a number stored in 204EH is present in the list. If

present, store its position in the list at 204DH; otherwise store FFh.

```
MVI A,FF
STA 204D
LXI H,204F
MOV B,M
LXI H,2050
LDA 204E
```

```
LOOP: CMP M
JNZ SKIP
MOV A,C
STA 204D
HLT
```

```
SKIP: INX H
INR C
DCR B
JNZ LOOP
HLT
```