Assignment 3

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MicroProcessor Assignment

Program 1

A set of N data bytes is stored in m/m locations starting from 2501 H. The value of N is stored in 2500H. Write a pro gram store these data bytes from m/m location 2600H if D0 or D7 is 1; otherwise reject the data byte.

```
lda 2500h
mov b,a
lxi d,2600h

lxi H,2501h

start: nop
jz END
mov a,m
ani 81h
cpi 81h
jnz skip
mov a,m
stax d
inx d
skip: nop
inx h
dcr b
jmp start
END: nop
hlt
```

Program 2

There are N data bytes stored from m/m location 2200H. The value of N is stored in
21FFH. Write an 8085 program to find the sum of integers whose LSB and MSB are l.
Store the result in 2500H and 2501H.

```
LXI H, 2201H;
LDA 2200H;
MOV B,A;
ADI 01H;
MVI A,00h;
MVI C, 00H;
START: nop
JZ END
mov D,A
mov A, M;
ani 81H;
cpi 81h;
mov A,D
jnz SKIP;
```

```
add M
mov D,A;
jnc SKIP;
mvi C, 01H;
inx D
SKIP: nop
INX H;
DCR B
MOV A,D
jmp START;
END: nop
STA 2500H;
mov A,C
STA 2501H;
hlt;
```

Program 3

Write an 8085 program to generate Nth fibonacci number using function and store it in 2050H. The value of N (8-bits) is stored in memory 2060H.

```
jmp start

;data

;if n<=1,return n,else return fibb(n-1)+fibb(n-2)
fibb: nop ; parameter n passed and value returned through accumulator
DCR A
JZ isOne
INR A
JZ isZero
DCR A
MOV D,A
PUSH D
CALL fibb
POP D
MOV E,A
MOV A,D
DCR A
PUSH D
CALL fibb
POP D
ADD E
RET

isOne: nop
MVI A,01H
RET

isZero: nop
MVI A,00H
RET

;code
```

```
start: nop
LXI SP,6000H
LXI H,2060H
MOV A,M
CALL fibb
LXI H,2050H
MOV M,A
hlt
```

Problem 4

Write a program to transfer a block of bytes of size N from location1 to location2 (location2 > location) when the size of overlap between the two locations is defined by M. The values of N and M are stored in 201EH and 201FH, respectively.

```
;How CMP Reg works ...

;If A less than (R/M), the CY flag is set
;and Zero flag is reset.

;If A equals to (R/M), the Zero flag is set
;and CY flag is reset.

;If A greater than (R/M), the CY and Zero flag are reset.

jmp start

;data


;code
start: nop
LXI H,201EH
MOV B,M ; B=n
INX H
MOV C,M ; C=m
INX H

INR B
DCR B
JZ end ; n==0,we exit
MOV A,B
CMP C
JNZ weContinue
JNC end
weContinue: nop

SUB C ; A=n-m
LXI D,2020H
ADD E
MOV E,A
JNC noCarry1
INR D
noCarry1: nop
MOV A,B
```

```
DCR A ; A=n-1
ADD E
MOV E,A
JNC noCarry2
INR D
noCarry2: nop ; now we have DE=2050H + 2*n-m-1

MOV A,B
DCR A ; A=n-1
LXI H,2020H
ADD L
MOV L,A
JNC noCarry3
INR H
noCarry3: nop ; now we have HL=2050H + n-1

INR B
loop: nop
DCR B
JZ end

; loop body
MOV A,M
STAX D
DCX H
DCX D

JMP loop

end: nop
hlt
```

Problem 5

Write a program to flash "BCSE II in the address and data fields with a flashing rate of 0.5 seconds.