Lab 06

SUB: CSA

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1. Write an assembly program to find the GCD and LCM of two numbers.

GCD PROGRAM:

```
LXI H,5050H
MOV A,M
INX H
MOV B,M
L1: CMP B
JZ OUT
JC L2
SUB B
JMP L1
L2: MOV C,B
MOV B,A
MOV A,C
JMP L1
OUT: STA 5052H
HLT
```

OUTPUT :

```
;<Program title>

jmp start

;data


;code
start: nop
LXI H,5050H
MOV A,M
INX H
MOV B,M
L1: CMP B
JZ OUT
JC L2
SUB B
JMP L1
L2: MOV C,B
MOV B,A
MOV A,C
JMP L1
OUT: STA 5052H
HLT
```

Start 20560

Address (Hex)	Address	Data
5050	20560	10
5051	20561	15
5052	20562	5
5053	20563	0
5054	20564	0
5055	20565	0
5056	20566	0
5057	20567	0
5058	20568	0
5059	20569	0
505A	20570	0

Line No	Assembler Message
0	Program assembled successfully

LCM PROGRAM :

LXI H,5050H
MOV D,M
MOV A,M
INX H
MOV B,M
MOV E,M
L1: CMP B
JZ L3
JC L2
SUB B
JMP L1
L2: MOV C,B
MOV B,A
MOV A,C
JMP L1
L3: MOV C,A
MVI A,00H
L4: ADD D
DCR E
JNZ L4
MVI D,00H
L5: SUB C
INR D
JNC L5
ADD C

DCR D
MOV A,D
STA 5052H
HLT

OUTPUT:

```
LXI H,5050H
MOV D,M
MOV A,M
INX H
MOV B,M
MOV E,M
L1: CMP B
JZ L3
JC L2
SUB B
JMP L1
L2: MOV C,B
MOV B,A
MOV A,C
JMP L1
L3: MOV C,A
MVI A,00H
L4: ADD D
DCR E
JNZ L4
MVI D,00H
L5: SUB C
INR D
JNC L5
ADD C
DCR D
MOV A,D
STA 5052H
HLT
```

Start 20560

Address (Hex)	Address	Data
5050	20560	10
5051	20561	15
5052	20562	30
5053	20563	0
5054	20564	0
5055	20565	0
5056	20566	0
5057	20567	0
5058	20568	0
5059	20569	0
505A	20570	0

Line No	Assembler Message
0	Program assembled successfully

2. Write an assembly language program to Sort an array of 10 numbers.

PROGRAM :

MVI C,10
DCR C
REPEAT: MOV D,C
LXI H,5001H
LOOP: MOV A,M
INX H
CMP M
JC SKIP
MOV B,M
MOV M,A
DCX H
MOV M,B
INX H
SKIP: DCR D
JNZ LOOP
DCR C
JNZ REPEAT

HLT

OUTPUT :

Address (Hex)	Address	Data
5001	20481	10
5002	20482	4
5003	20483	15
5004	20484	6
5005	20485	7
5006	20486	20
5007	20487	11
5008	20488	15
5009	20489	18
500A	20490	5
500B	20491	0

Line No	Assembler Message
0	Program assembled successfully

Address (Hex)	Address	Data
5001	20481	4
5002	20482	5
5003	20483	6
5004	20484	7
5005	20485	10
5006	20486	11
5007	20487	15
5008	20488	15
5009	20489	18
500A	20490	20
500B	20491	0

Line No	Assembler Message
0	Program assembled successfully