

MICROPROCESSORS

LAB 2

Q1.

S.No.	Question								
1.	<p>Sort the given set of 3 numbers in descending order using a ALP for 8085 MP.</p> <table><tr><td>310F</td><td>3110</td><td>3111</td><td>3112</td></tr><tr><td>03</td><td>1A</td><td>3E</td><td>02</td></tr></table>	310F	3110	3111	3112	03	1A	3E	02
310F	3110	3111	3112						
03	1A	3E	02						

Solution:

Code:

MVI D, 03H

LOOP1: LXI H, 310fH

MOV B, M

DCR B

INX H

LOOP2: MOV A, M

INX H

CMP M

JNC FORWARD

MOV C, M

MOV M, A

DCX H

MOV M, C

INX H

FORWARD:DCR B

JNZ LOOP2

DCR D

JNZ LOOP1

HLT

Output:

The screenshot displays the Sim8085 emulator interface. On the left, the 'Registers' panel shows the following values: A/PSW (0x1A56), BC (0x003E), DE (0x0000), HL (0x3112), SP (0xFFFF), and PC (0x081C). Below this, the 'Flags' panel shows Z (checked), S (unchecked), P (checked), C (unchecked), and AC (checked). The central area displays the assembly code for 'main.asm':

```
1 MVI D, 03H
2 LOOP1: LXI H, 310FH
3       MOV B, M
4       DCR B
5       INX H
6 LOOP2: MOV A, M
7       INX H
8       CMP M
9       JNC FORWARD
10      MOV C, M
11      MOV M, A
12      DCX H
13      MOV M, C
14      INX H
15 FORWARD: DCR B
16      JNZ LOOP2
17      DCR D
18      JNZ LOOP1
19      HLT
```

On the right, the 'Memory View' panel shows a hexadecimal dump of memory. The address 310F is highlighted, containing the value 03. The dump shows the following data:

Address	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
310	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	03
311	3E	1A	02	00	00	00	00	00	00	00	00	00	00	00	00	00
312	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
313	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
314	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
315	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
316	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
317	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
318	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
319	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
31A	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
31B	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
31C	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
31D	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
31E	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
31F	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00

The bottom status bar shows the start address at 0x2200 and a progress bar.

problem: Sorting of ~~three~~ⁿ numbers using ALP of 8085

1. Load the content of the memory into the register

2.

Question:- Sort the given 3 numbers in descending order using a ALP for 8085 MP

310F	3110	3111	3112
03	1A	3E	02

Solution:-

Algo:-

1. Take a counter-1 and initialize with length of array (n)
2. Take counter-2 and initialize with n
3. decrement counter-2 each when we check the first consecutive memory address's data and swap if $CY=1$
4. ~~de~~ Decrement counter-1 each time counter-2 $\neq 0$.
then initialize the counter-2 to counter-1.
5. Then Repeat the steps until counter-1 equal zero.

```

LOOP1: MVI D, 03H
        LXI H, 310F
        MOV B, M
        OCR B
        INX H

```

```

LOOP2: MOV A, M
        INX H

```

CMP M [A-M]
 $CY=1$ (means 1st < 2nd)

16)

JNC FORWARD

MOV C, A

MOV A, M

MOV M, C

FORWARD: DCR B

JNZ LOOP 2

DCR D

JNZ LOOP 1

HLT

22/01/24.

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