

## WORKSHEET – 1.4

**Name:**

**Section/Group:**

**UID:**

**Subject:** Microprocessor and Interfacing Lab

**Date of Submission:**

**Branch:** BE CSE (4<sup>th</sup> Semester)

### Aim:

Complement of a number 8 bit data

### Task to be done:

1. 1's Complement of a number 8 bit data using Jubin Application.
2. 2's Complement of a number 8 bit data using Jubin Application.

### Apparatus / Simulator Used:

1. Jubin Application
2. 8085 Simulator
3. JDK

### Algorithm / Flowchart:

### **1's Complement:**

1. Load H – L pair with address 1000H.
2. Complement Accumulator.
3. Store the result at memory location 1050H.
4. Terminate the program.

### **2's Complement:**

1. Load H – L pair with address 1000H.
2. Complement Accumulator.
3. Store the result at memory location 1050H.
4. Increase Accumulator by 1.
5. Store the memory location 1051H.
6. Terminate the program.

### **Code:**

#### **1's Complement:**

```
LDA 1000H  
  
CMA  
  
STA 1050H  
  
HLT
```

#### **2's Complement:**

LDA 1000H

CMA

STA 1050H

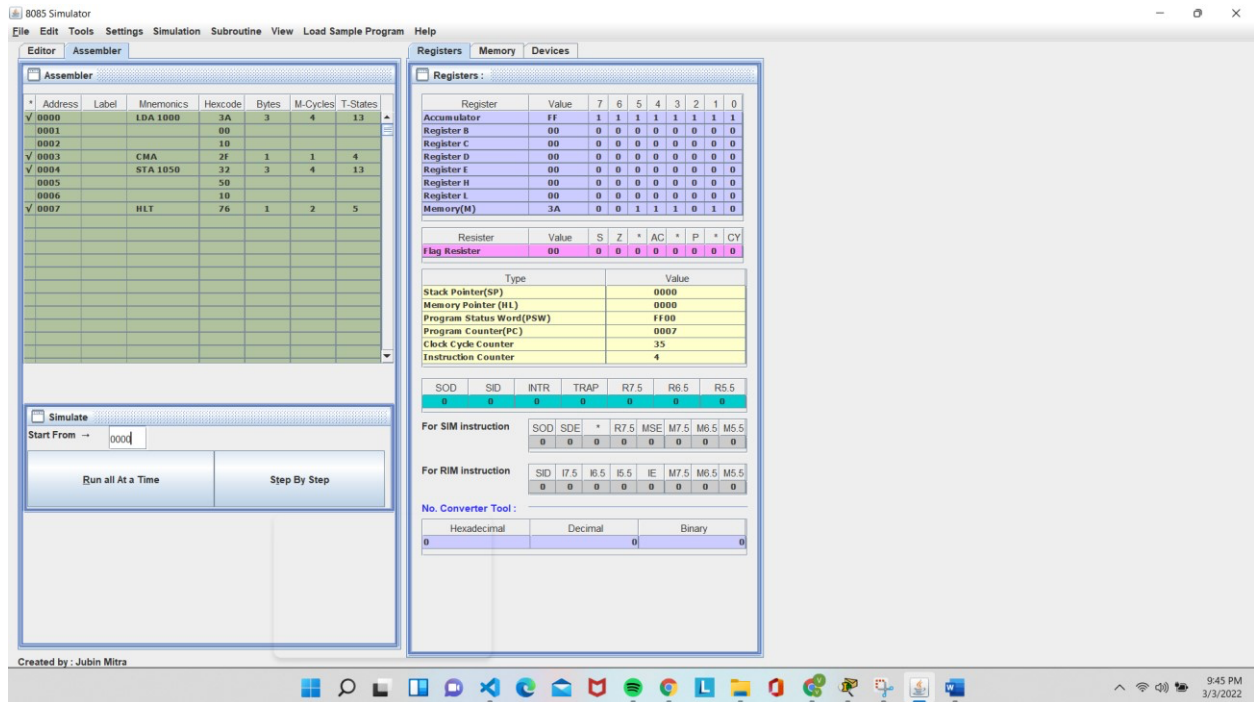
INR A

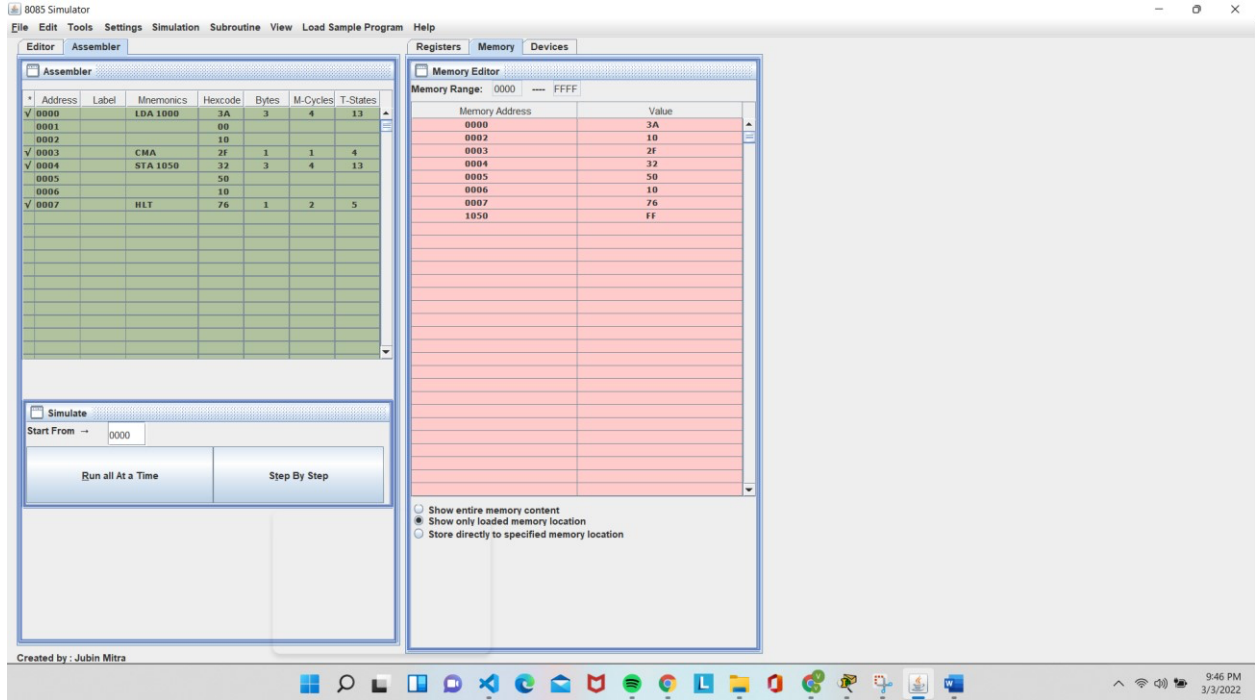
STA 1051H

HLT

**Result / Output / Writing Summary:**

**1's Complement:**





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2's Complement:

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The screenshot shows the 8085 Simulator interface. The 'Assembler' window displays a list of instructions with their addresses, labels, mnemonics, hexcodes, bytes, M-Cycles, and T-States. The 'Memory Editor' window shows a memory range from 0000 to FFFF with a table of memory addresses and values.

Address	Label	Mnemonics	Hexcode	Bytes	M-Cycles	T-States
0000	LDA 1000	3A	3	4	13	
0001		00				
0002		10				
0003	CMA	2F	1	1	4	
0004	STA 1050	32	3	4	13	
0005		50				
0006		10				
0007	INR A	3C	1	1	4	
0008	STA 1051	32	3	4	13	
0009		51				
000A		10				
000B	HLT	76	1	2	5	

Memory Address	Value
0000	3A
0002	10
0003	2F
0004	32
0005	50
0006	10
0007	3C
0008	32
0009	51
000A	10
000B	76
1050	FF

The screenshot shows the 8085 Simulator interface with the 'Registers' and 'Simulate' windows. The 'Registers' window displays the status of various registers and flags. The 'Simulate' window shows the start address and simulation options.

Register	Value	7	6	5	4	3	2	1	0
Accumulator	00	0	0	0	0	0	0	0	0
Register B	00	0	0	0	0	0	0	0	0
Register C	00	0	0	0	0	0	0	0	0
Register D	00	0	0	0	0	0	0	0	0
Register E	00	0	0	0	0	0	0	0	0
Register H	00	0	0	0	0	0	0	0	0
Register L	00	0	0	0	0	0	0	0	0
Memory(M)	3A	0	0	1	1	1	0	1	0

Register	Value	S	Z	AC	P	CY
Flag Register	54	0	1	0	1	0

Type	Value
Stack Pointer(SP)	0000
Memory Pointer (HL)	0000
Program Status Word(PSW)	0054
Program Counter(PC)	000B
Clock Cycle Counter	52
Instruction Counter	6

SOD	SID	INTR	TRAP	R7.5	R6.5	R5.5
0	0	0	0	0	0	0

For SIM instruction						
SOD	SDE	R7.5	MSE	M7.5	M6.5	M5.5
0	0	0	0	0	0	0

For RIM instruction							
SID	I7.5	I6.5	I5.5	IE	M7.5	M6.5	M5.5
0	0	0	0	0	0	0	0

No. Converter Tool:		
Hexadecimal	Decimal	Binary
0		0

## **Learning Outcomes:**

1. Working of microprocessors.
2. Learn how to complement data in microprocessors.
3. Learn about 8085 simulator.
4. Operations of 8 bit numbers.
5. Learn about the different instructions that are needed to be given to the memory to perform some tasks.

## **Evaluation Grid (To be created as per the SOP and Assessment guidelines by the faculty):**

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.			
2.			
3.			