



# 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

chandigarh university <u>Algorithm / Flowchart:</u>





#### **<u>1's Complement:</u>**

- 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

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# 2's Complement:





LDA 1000H

CMA

STA 1050H

INR A

STA 1051H

HLT

# **Result / Output / Writing Summary:**

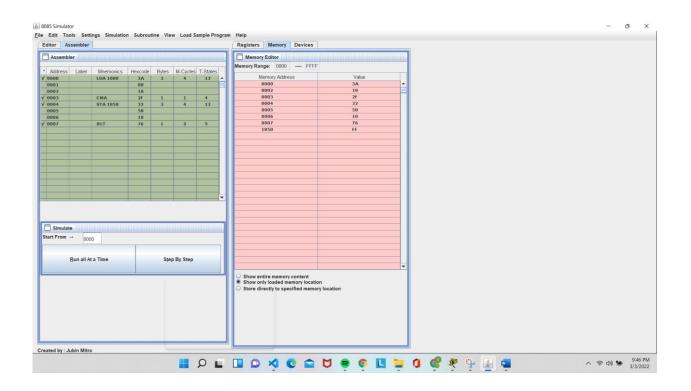
# **<u>1's Complement:</u>**

Edit Tools S	ettings Simulatio	on Subrou	tine Vie	w Load S	Sample Progra	am Help								
itor Assembl	ler					Registers Me	mory Devices							
Assembler						Registers :								
Address Lab	el Mnemonics	Hexcode	Bytes	M-Cycles	T-States	Registe	er Value 7	6 5 4 3 2 1 0						
0000	LDA 1000	3A	3	4	13 🔺			1 1 1 1 1 1 1						
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0002		10				Register C		0 0 0 0 0 0						
0003	СМА	2F	1	1	4	Register D		0 0 0 0 0 0						
0004	STA 1050	32	3	4	13	Register E		0 0 0 0 0 0						
0005		50				Register H		0 0 0 0 0 0						
0006		10		-		Register L		0 0 0 0 0 0						
007	HLT	76	1	2	5	Memory(M)	3A 0	0 1 1 1 0 1 0						
						Resister	Value S	Z * AC * P * CY						
				-		Flag Resister	00 0	0 0 0 0 0 0						
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						Memory Pointer		0000						
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						Clock Cycle Cou		35						
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2's Complement:





00 01 02 03 04 05 06		_				Registers Memory Devices		a
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001 002 003 004 005 006	Mnemonics				s T-States	Memory Range: 0000 FFFF Memory Address	Value	
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0005	СМА	10 2F	1	1	4	0002	10 = 2F	
0006	STA 1050	32 50	3	4	13	0004 0005	32 50	
0007		10				0006 0007	10 3C	
0008	INR A STA 1051	3C 32	1 3	1 4	4 13	0008	32	
0009 000A		51 10				0009 000A	51 10	
DOOB	HLT	76	1	2	5	000B 1050	76 FF	
					-			
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		_	_			<ul> <li>Show entire memory content</li> <li>Show only loaded memory location</li> </ul>	in .	
5 Simulator Edit Tools Setti	nge Simulation	Subrout	tine View	t Load S	Sample Program	a Hala		- a
itor Assembler	ngs Simulation	Subrout	ane view	/ Load s	sample Prograi	Registers Memory Devices		
Assembler						Registers :		
Address Label	Mnemonics	Hexcode	Bytes	M-Cycles	s T-States	Register Value	7 6 5 4 3 2 1 0	
0000	LDA 1000	3A 00	3	4	13 🔺	Accumulator 00 Register 8 00	0         0         0         0         0         0         0         0           0         0         0         0         0         0         0         0         0	
0002		10				Register C 00	0 0 0 0 0 0 0	
0003 0004	CMA STA 1050	2F 32	1 3	1 4	4 13	Register D 00 Register E 00	0         0         0         0         0         0         0           0         0         0         0         0         0         0         0	
0005		50 10				Register H 00 Register L 00	0         0         0         0         0         0         0           0         0         0         0         0         0         0         0	
0007	INR A STA 1051	3C 32	1 3	1 4	4 13	Memory(M) 3A	0 0 1 1 1 0 1 0	
0009	JINIUJI	51	-	-	13	Resister Value	S Z * AC * P * CY	
000A 000B	HLT	10 76	1	2	5	Flag Resister 54	0 1 0 1 0 1 0 0	
						Type Stack Pointer(SP)	Value 0000	
						Memory Pointer (HL)	0000	
						Program Status Word(PSW) Program Counter(PC)	0054 000B	
						Clock Cycle Counter Instruction Counter	52 6	
						SOD SID INTR TI	RAP R7.5 R6.5 R5.5 0 0 0 0 0	
							* R7.5 MSE M7.5 M6.5 M5.5	
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art From → 0000			Step			Hexadecimal De	cimal Binary 0 0	
art From → 0000			Step			Hexadecimal De	cimal Binary 0	

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#### **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.	Parameters	Marks Obtained	Maximum Marks
No.			
1.			
2.			
3.			

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