

NAME –
UID-
BRANCH –
SUBJECT – MPI
SECTION –

1. Aim/Overview of the practical:

Complement of a number 8 bit data

2. 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.

3.Apparatus/Simulator used :

1. Jubin Application

4.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.

5. Description/ Code:

1's Complement:

LDA 1000H

CMA

STA 1050H

HLT

2's Complement:

LDA 1000H CMA


STA 1050H INR A

STA 1051H

HLT

6. Result/Output/Writing Summary:

1's Complement:


8085 Simulator

File Edit Tools Settings Simulation Subroutine View Load Sample Program Help

Editor Assembler

8085 Assembly Language Editor

Assembler Disassembler

```
//SHUBHAM NATH TIWARI
//20BCS1575
//1'S COMPLIMENT
LDA 1000H
CMA
STA 1050H
HLT
```

Autocorrect Assemble

Registers Memory Devices

Registers :

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)	00	0	0	0	0	0	0	0	0

Register	Value	S	Z	*	AC	*	P	*	CY
Flag Register	00	0	0	0	0	0	0	0	0

Type	Value
Stack Pointer(SP)	0000
Memory Pointer (HL)	0000
Program Status Word(PSW)	0000
Program Counter(PC)	0000
Clock Cycle Counter	0
Instruction Counter	0

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	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


8085 Simulator

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Editor Assembler

Assembler

*	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		HLT	76	1	2	5

Registers Memory Devices

Registers :

Register	Value	7	6	5	4	3	2	1	0
Accumulator	FF	1	1	1	1	1	1	1	1
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	0	1	0	0

Register	Value	S	Z	*	AC	*	P	*	CY
Flag Register	00	0	0	0	0	0	0	0	0

Type	Value
Stack Pointer(SP)	0000
Memory Pointer (HL)	0000
Program Status Word(PSW)	FF00
Program Counter(PC)	0007
Clock Cycle Counter	35
Instruction Counter	4

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	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

Simulate

Start From → 0000

Run all At a Time

Step By Step

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8085 Simulator

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Editor Assembler

Assembler

*	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		HLT	76	1	2	5

Simulate

Start From → 0000

Run all At a Time

Step By Step

Registers Memory Devices

Memory Editor

Memory Range: 0000 ---- FFFF

Memory Address	Value
0000	3A
0002	10
0003	2F
0004	32
0005	50
0006	10
0007	76
1050	FF

☐ Show entire memory content
☒ Show only loaded memory location
☐ Store directly to specified memory location

8085 Simulator

File Edit Tools Settings Simulation Subroutine View Load Sample Program Help

Editor Assembler

Assembler

* 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		HLT	76	1	2	5

Simulate

Start From → 0000

Run all At a Time Step By Step

Registers Memory Devices

Registers :

Register	Value	7	6	5	4	3	2	1	0
Accumulator	FF	1	1	1	1	1	1	1	1
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	00	0	0	0	0	0	0	0	0

Type	Value
Stack Pointer(SP)	0000
Memory Pointer (HL)	0000
Program Status Word(PSW)	FF00
Program Counter(PC)	0007
Clock Cycle Counter	35
Instruction Counter	4

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	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

Created by : Jubin Mitra

2's

Complement:

8085 Simulator

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Editor Assembler

8085 Assembly Language Editor

Assembler Disassembler

```
// SHUBHAM NATH TIWARI
// 20BCS1575
// 2'S COMPLIMENT
LDA 1000H
CMA
STA 1050H
INR A
STA 1051H
HLT
|
```

Autocorrect Assemble

Registers Memory Devices

Registers :

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)	00	0	0	0	0	0	0	0	0

Register	Value	S	Z	*	AC	*	P	*	CY
Flag Register	00	0	0	0	0	0	0	0	0

Type	Value
Stack Pointer(SP)	0000
Memory Pointer (HL)	0000
Program Status Word(PSW)	0000
Program Counter(PC)	0000
Clock Cycle Counter	0
Instruction Counter	0

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	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	0

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8085 Simulator

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Editor Assembler

Assembler

* 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

Simulate

Start From → 0000

Run all At a Time Step By Step

Registers Memory Devices

Registers :

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	1	0	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	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

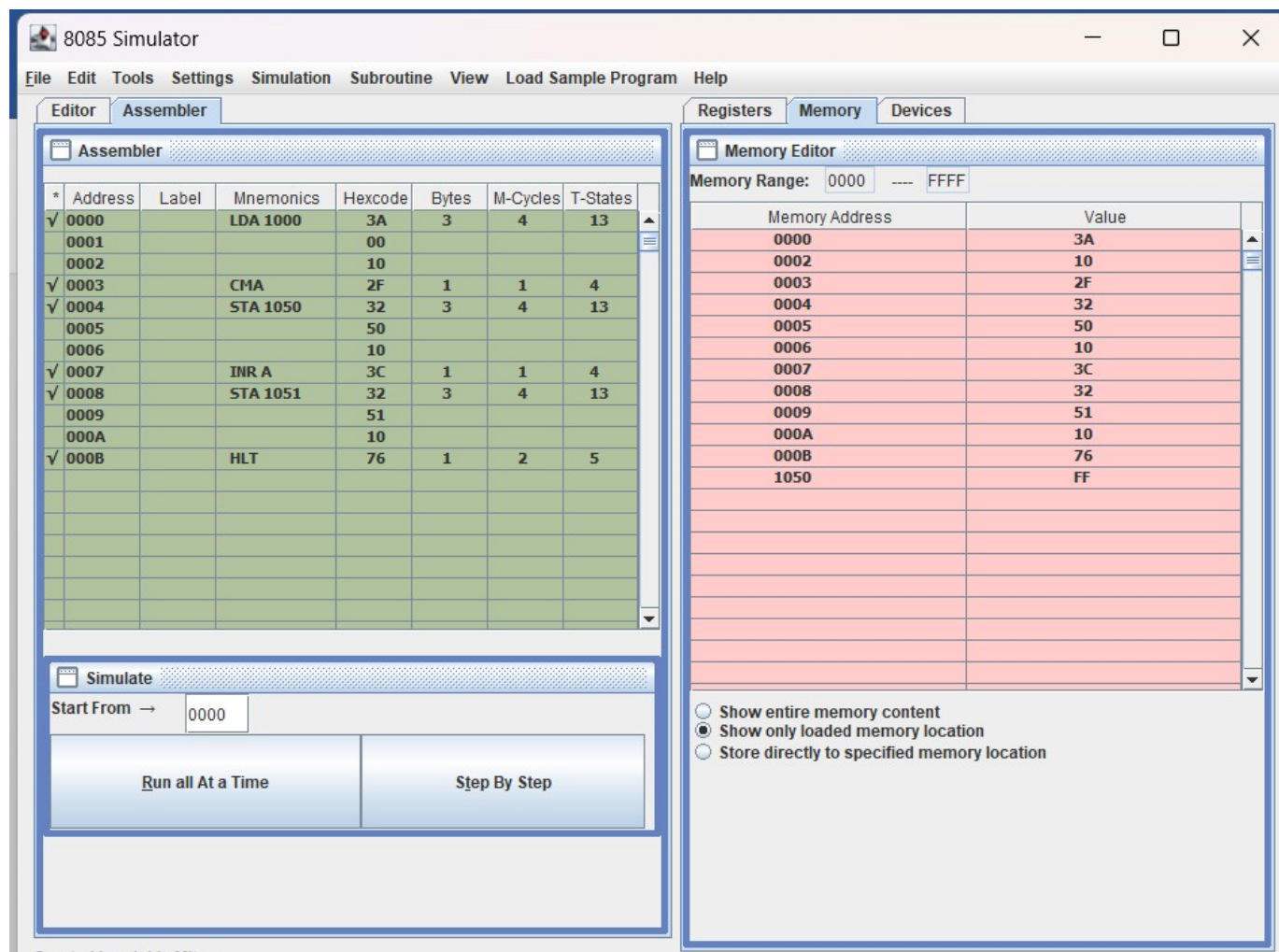
No. Converter Tool :

Hexadecimal	Decimal	Binary
0	0	0

Created by : Jubin Mitra



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Learning outcomes (What I have learnt):

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.