

Experiment 2.2

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Branch: CSE

Semester: 4th

Subject Name: MPI Lab

UID: 20BCS1812

Section/Group: 607A

Date of Performance: 22/03/2022

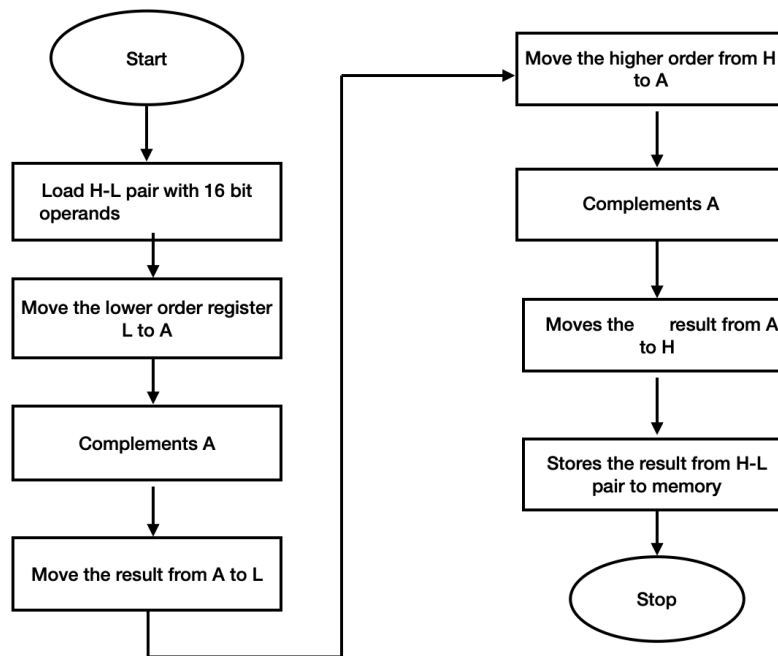
Subject Code: 22E-20CSP-253

1) Aim/Overview of the practical:

a) 1's complement of 16 bit number.

Apparatus/Simulator used: 8085 simulator

Flowchart:



Algorithm:

- 1. LHLD 7050 loads H-L pair with data from 7050H memory location.**
- 2. MOV A,L moves data from reg, L to A.**
- 3. CMA compliments the accumulator.**
- 4. MOV L,A moves result from A to reg. L.**
- 5. MOV A,H moves data from reg. H to A.**
- 6. CMA compliments the accumulator.**
- 7. MOV H,A moves result from A to reg. H.**
- 8. SHLD 7052 stores result at 7052H.**
- 9. HLT end of the execution.**

Steps for experiment/practical/Code:

BEGIN 0000H

LHLD 7050

MOV A,L

CMA

MOV L,A

MOV A,H

CMA

MOV H,A

SHLD 7052

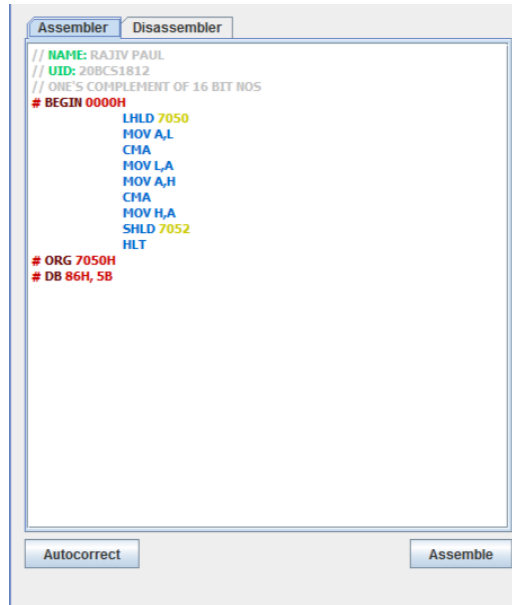
HLT

ORG 7050H

DB 86H, 5B

Simulation:

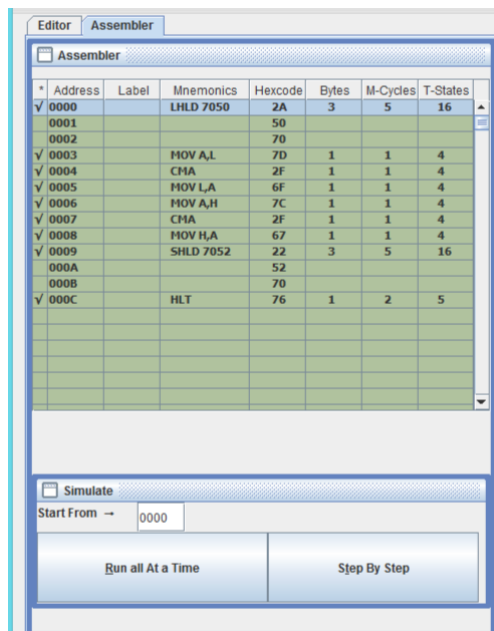
1. CODE IN EDITOR WINDOW:



```

Assembler Disassembler
// NAME: RAJIV PAUL
// UID: 20BC51812
// ONE'S COMPLEMENT OF 16 BIT NOS
# BEGIN 0000H
    LHLD 7050
    MOV A,L
    CMA
    MOV L,A
    MOV A,H
    CMA
    MOV H,A
    SHLD 7052
    HLT
# ORG 7050H
# DB 86H, 5B
Autocorrect Assemble
  
```

2. ASSEMBLER WINDOW:



* Address	Label	Mnemonics	Hexcode	Bytes	M-Cycles	T-States
✓ 0000		LHLD 7050	2A	3	5	16
0001			50			
0002			70			
✓ 0003		MOV A,L	7D	1	1	4
✓ 0004		CMA	2F	1	1	4
✓ 0005		MOV L,A	6F	1	1	4
✓ 0006		MOV A,H	7C	1	1	4
✓ 0007		CMA	2F	1	1	4
✓ 0008		MOV H,A	67	1	1	4
✓ 0009		SHLD 7052	22	3	5	16
000A			52			
000B			70			
✓ 000C		HLT	76	1	2	5

☐ Simulate
 Start From → 0000

RESULT

BEFORE EXECUTION:

7050H: 86H

7051H: 5B

AFTER EXECUTION:

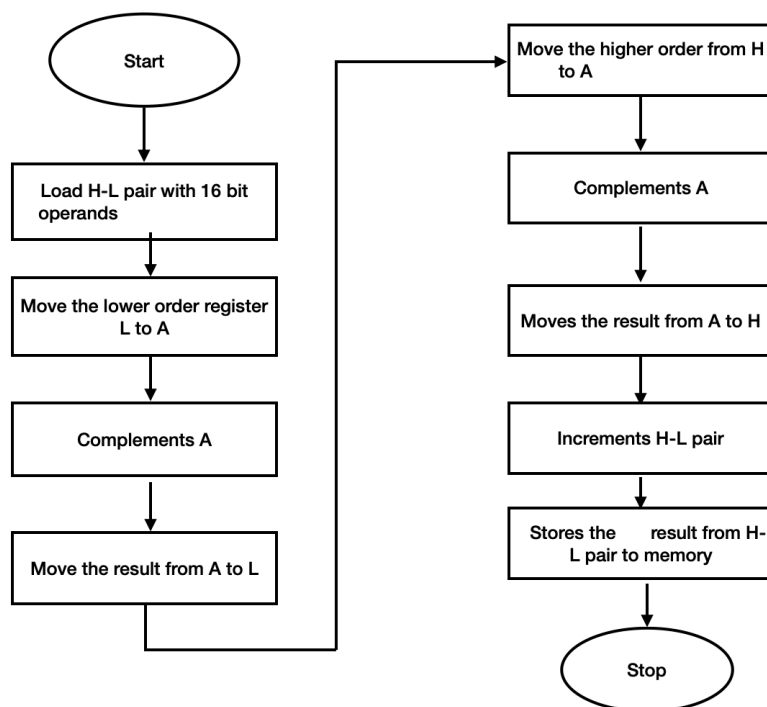
7053H: A4

Aim/Overview of the practical:

b) 2's complement of 16 bit number.

Apparatus/Simulator used: 8085 simulator

Flowchart:



Algorithm:

- 1. LHLD 7050 loads H-L pair with data from 7050H memory location.**
- 2. MOV A,L moves data from reg, L to A.**
- 3. CMA compliments the accumulator.**
- 4. MOV L,A moves result from A to reg. L.**
- 5. MOV A,H moves data from reg. H to A.**
- 6. CMA compliments the accumulator.**
- 7. MOV H,A moves result from A to reg. H.**
- 8. INX H increments the H-L pair by 1.**
- 9. SHLD 7052 stores result at 7052H.**
- 10. HLT end of the execution.**

Steps for experiment/practical/Code:

BEGIN 0000H

LHLD 7050

MOV AL

CMA

MOV LA

MOV A,H

CMA

MOV H,A

SHLD 7052

INX H

SHLD 7054

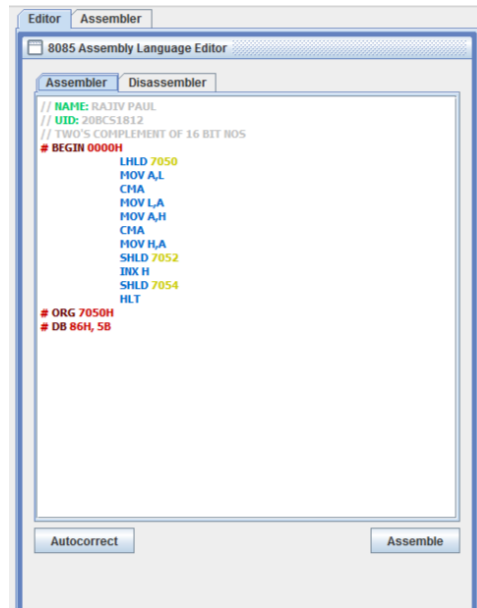
HLT

ORG 7050H

DB 86H, 5B

Simulation:

1. CODE IN EDITOR WINDOW:



```

Editor  Assembler
8085 Assembly Language Editor

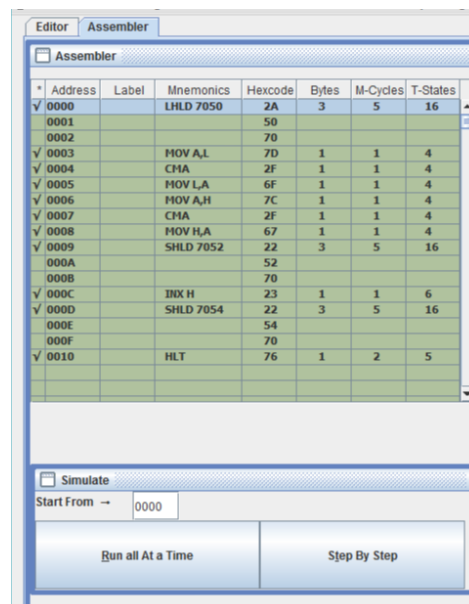
Assembler  Disassembler

// NAME: RAJIV PAUL
// UID: 20BCS1812
// TWO'S COMPLEMENT OF 16 BIT NOS
# BEGIN 0000H
    LHLD 7050
    MOV A,L
    CMA
    MOV L,A
    MOV A,H
    CMA
    MOV H,A
    SHLD 7052
    INX H
    SHLD 7054
    HLT

# ORG 7050H
# DB 86H, 5B

Autocorrect  Assemble
  
```

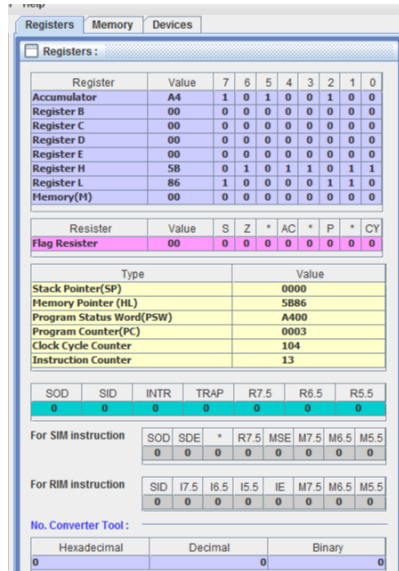
2. ASSEMBLER WINDOW:



Address	Label	Mnemonics	Hexcode	Bytes	M-Cycles	T-States
✓ 0000		LHLD 7050	2A	3	5	16
0001			50			
0002			70			
✓ 0003		MOV A,L	7D	1	1	4
✓ 0004		CMA	2F	1	1	4
✓ 0005		MOV L,A	6F	1	1	4
✓ 0006		MOV A,H	7C	1	1	4
✓ 0007		CMA	2F	1	1	4
✓ 0008		MOV H,A	67	1	1	4
✓ 0009		SHLD 7052	22	3	5	16
000A			52			
000B			70			
✓ 000C		INX H	23	1	1	6
✓ 000D		SHLD 7054	22	3	5	16
000E			54			
000F			70			
✓ 0010		HLT	76	1	2	5

☐ Simulate
 Start From → 0000
 Run all At a Time Step By Step

3. REGISTERS:



Register	Value	7	6	5	4	3	2	1	0
Accumulator	A4	1	0	1	0	0	1	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	58	0	1	0	1	1	0	1	1
Register L	86	1	0	0	0	0	1	1	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)	5886
Program Status Word(PSW)	A400
Program Counter(PC)	0003
Clock Cycle Counter	104
Instruction Counter	13

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

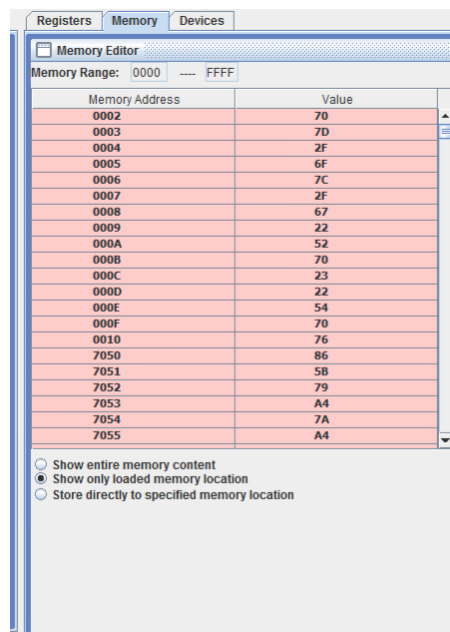
For RIM instruction

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

4. MEMORY:



Memory Address	Value
0002	70
0003	7D
0004	2F
0005	6F
0006	7C
0007	2F
0008	67
0009	22
000A	52
000B	70
000C	23
000D	22
000E	54
000F	70
0010	76
7050	86
7051	58
7052	79
7053	A4
7054	7A
7055	A4

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



RESULT

BEFORE EXECUTION:

7050H: 86H

7051H: 5B

AFTER EXECUTION:

7053H: A4

7054H: 7A

7055H: A4

Learning outcomes (What I have learnt):

- 1.Learnt about 8085 simulator**
- 2. Learnt how to 1's and 2's complements of 16bit number.**
- 3. Learnt what LHL D works for.**
- 4. Learnt about CMA and SHLD.**
- 5.**

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.			