

Lab MST Worksheet - 1

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Branch: BE-CSE (LEET)

Section/Group: ON20BCS-809/A

Semester: 4th Sem

Date of Performance: 21/03/2022

Subject Name: MPI Lab

Subject Code: 22E-20CSP-253

1. Aim/Overview of the practical:

Write an assembly language program in 8085 microprocessors to subtract two 16-bit numbers.

2. Task to be done:

- Write the program to calculate the subtraction of two 16bit numbers.
- Add the screenshot of the output.

3. Apparatus/Simulator used (For applied/experimental sciences/materials-based labs):

- 8085 Jubin simulator version 2 (Microprocessor Simulator)
- Java (jdk/ jre1.8.0_321) or any

4. Algorithm/Flowchart (For programming-based labs):

Subtraction of two 16bit number

- Load the 1st pair number from memory location 3000,3001 to HL pair.
- Exchange it with the DE pairs.
- Load the 2nd pair number from memory location 3002,3003 to HL pair.
- Move the content from E to accumulator.
- Subtract the L from accumulator.
- Move the content from accumulator to L register.
- Move the content from D to accumulator.
- Subtract the H from accumulator with the borrow.
- Move Accumulator to H register.
- Move the content of HL pair Register to memory location 1004,1005,
- Exit the program.

5. Description/ Code:

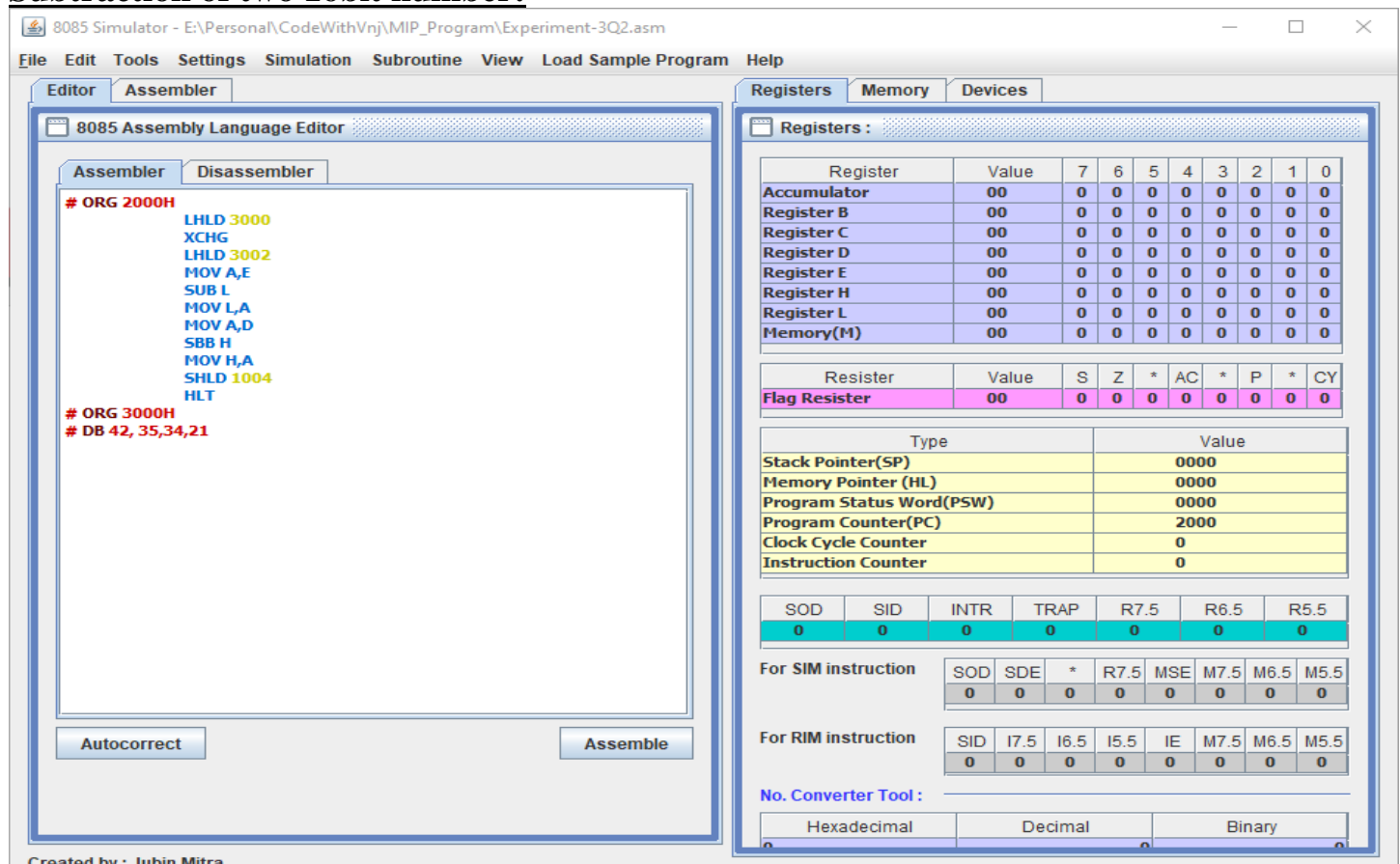
Subtraction of two 16bit number

```
# ORG 2000H
    LHLD 3000
    XCHG
    LHLD 3002
    MOV A,E
    SUB L
    MOV L,A
    MOV A,D
    SBB H
    MOV H,A
    SHLD 1004
    HLT

# ORG 3000H
# DB 42, 35,34,21
```

6. Result/Output/Writing Summary:

Subtraction of two 16bit number:



8085 Simulator - E:\Personal\CodeWithVn\8085_Program\Experiment-3Q2.asm

File Edit Tools Settings Simulation Subroutine View Load Sample Program Help

Editor Assembler

8085 Assembly Language Editor

Assembler Disassembler

```
# ORG 2000H
    LHLD 3000
    XCHG
    LHLD 3002
    MOV A,E
    SUB L
    MOV L,A
    MOV A,D
    SBB H
    MOV H,A
    SHLD 1004
    HLT

# ORG 3000H
# DB 42, 35,34,21
```

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

Resister	Value	S	Z	*	AC	*	P	*	CY
Flag Resister	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)	2000
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

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8085 Simulator - E:\Personal\CodeWithVn\8085\Program\Experiment-3Q2.asm

File Edit Tools Settings Simulation Subroutine View Load Sample Program Help

Editor Assembler

Assembler

* Address	Label	Mnemonics	Hexcode	Bytes	M-Cycles	T-States
✓ 2000		LHLD 3000	2A	3	5	16
✓ 2001			00			
✓ 2002			30			
✓ 2003		XCHG	EB	1	1	4
✓ 2004		LHLD 3002	2A	3	5	16
✓ 2005			02			
✓ 2006			30			
✓ 2007		MOV A,E	7B	1	1	4
✓ 2008		SUB L	95	1	1	4
✓ 2009		MOV L,A	6F	1	1	4
✓ 200A		MOV A,D	7A	1	1	4
✓ 200B		SBB H	9C	1	1	4
✓ 200C		MOV H,A	67	1	1	4
✓ 200D		SHLD 1004	22	3	5	16
✓ 200E			04			
✓ 200F			10			
✓ 2010		HLT	76	1	2	5

Simulate

Start From → 2000

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)	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)	2000
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

Created by : Jubin Mitra

8085 Simulator - E:\Personal\CodeWithVn\8085\Program\Experiment-3Q2.asm

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Editor Assembler

Assembler

* Address	Label	Mnemonics	Hexcode	Bytes	M-Cycles	T-States
✓ 2000		LHLD 3000	2A	3	5	16
✓ 2001			00			
✓ 2002			30			
✓ 2003		XCHG	EB	1	1	4
✓ 2004		LHLD 3002	2A	3	5	16
✓ 2005			02			
✓ 2006			30			
✓ 2007		MOV A,E	7B	1	1	4
✓ 2008		SUB L	95	1	1	4
✓ 2009		MOV L,A	6F	1	1	4
✓ 200A		MOV A,D	7A	1	1	4
✓ 200B		SBB H	9C	1	1	4
✓ 200C		MOV H,A	67	1	1	4
✓ 200D		SHLD 1004	22	3	5	16
✓ 200E			04			
✓ 200F			10			
✓ 2010		HLT	76	1	2	5

Simulate

Start From → 2000

Run all At a Time Step By Step

Registers **Memory** **Devices**

Memory Editor

Memory Range: 0000 ---- FFFF

Memory Address	Value
2000	2A
2001	00
2002	30
2003	EB
2004	2A
2005	02
2006	30
2007	7B
2008	95
2009	6F
200A	7A
200B	9C
200C	67
200D	22
200E	04
200F	10
2010	76
3000	42
3001	35
3002	34
3003	21

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

Created by : Jubin Mitra

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
✓ 2000		LHLD 3000	2A	3	5	16
2001			00			
2002			30			
✓ 2003		XCHG	EB	1	1	4
✓ 2004		LHLD 3002	2A	3	5	16
2005			02			
2006			30			
✓ 2007		MOV A,E	7B	1	1	4
✓ 2008		SUB L	95	1	1	4
✓ 2009		MOV L,A	6F	1	1	4
✓ 200A		MOV A,D	7A	1	1	4
✓ 200B		SBB H	9C	1	1	4
✓ 200C		MOV H,A	67	1	1	4
✓ 200D		SHLD 1004	22	3	5	16
200E			04			
200F			10			
✓ 2010		HLT	76	1	2	5

Simulate

Start From → 2000

Backward Stop Forward

Created by : Jubin Mitra

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	35	0	0	1	1	0	1	0	1
Register L	42	0	1	0	0	0	0	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)	3542
Program Status Word(PSW)	0000
Program Counter(PC)	2003
Clock Cycle Counter	16
Instruction Counter	1

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

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
✓ 2000		LHLD 3000	2A	3	5	16
2001			00			
2002			30			
✓ 2003		XCHG	EB	1	1	4
✓ 2004		LHLD 3002	2A	3	5	16
2005			02			
2006			30			
✓ 2007		MOV A,E	7B	1	1	4
✓ 2008		SUB L	95	1	1	4
✓ 2009		MOV L,A	6F	1	1	4
✓ 200A		MOV A,D	7A	1	1	4
✓ 200B		SBB H	9C	1	1	4
✓ 200C		MOV H,A	67	1	1	4
✓ 200D		SHLD 1004	22	3	5	16
200E			04			
200F			10			
✓ 2010		HLT	76	1	2	5

Simulate

Start From → 2000

Backward Stop Forward

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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	35	0	0	1	1	0	1	0	1
Register E	42	0	1	0	0	0	0	1	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)	2004
Clock Cycle Counter	20
Instruction Counter	2

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

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
✓ 2000		LHLD 3000	2A	3	5	16
2001			00			
2002			30			
✓ 2003		XCHG	EB	1	1	4
✓ 2004		LHLD 3002	2A	3	5	16
2005			02			
2006			30			
✓ 2007		MOV A,E	7B	1	1	4
✓ 2008		SUB L	95	1	1	4
✓ 2009		MOV L,A	6F	1	1	4
✓ 200A		MOV A,D	7A	1	1	4
✓ 200B		SBB H	9C	1	1	4
✓ 200C		MOV H,A	67	1	1	4
✓ 200D		SHLD 1004	22	3	5	16
200E			04			
200F			10			
✓ 2010		HLT	76	1	2	5

Simulate

Start From → 2000

Backward Stop Forward

Created by : Jubin Mitra

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	35	0	0	1	1	0	1	0	1
Register E	42	0	1	0	0	0	0	1	0
Register H	21	0	0	1	0	0	0	0	1
Register L	34	0	0	1	1	0	1	0	0
Memory(M)	00	0	0	0	0	0	0	0	0

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

Type	Value
Stack Pointer(SP)	0000
Memory Pointer (HL)	2134
Program Status Word(PSW)	0000
Program Counter(PC)	2007
Clock Cycle Counter	36
Instruction Counter	3

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

File Edit Tools Settings Simulation Subroutine View Load Sample Program Help

Editor Assembler

Assembler

* Address	Label	Mnemonics	Hexcode	Bytes	M-Cycles	T-States
✓ 2000		LHLD 3000	2A	3	5	16
2001			00			
2002			30			
✓ 2003		XCHG	EB	1	1	4
✓ 2004		LHLD 3002	2A	3	5	16
2005			02			
2006			30			
✓ 2007		MOV A,E	7B	1	1	4
✓ 2008		SUB L	95	1	1	4
✓ 2009		MOV L,A	6F	1	1	4
✓ 200A		MOV A,D	7A	1	1	4
✓ 200B		SBB H	9C	1	1	4
✓ 200C		MOV H,A	67	1	1	4
✓ 200D		SHLD 1004	22	3	5	16
200E			04			
200F			10			
✓ 2010		HLT	76	1	2	5

Simulate

Start From → 2000

Backward Stop Forward

Created by : Jubin Mitra

Registers **Memory** **Devices**

Registers :

Register	Value	7	6	5	4	3	2	1	0
Accumulator	42	0	1	0	0	0	0	1	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	35	0	0	1	1	0	1	0	1
Register E	42	0	1	0	0	0	0	1	0
Register H	21	0	0	1	0	0	0	0	1
Register L	34	0	0	1	1	0	1	0	0
Memory(M)	00	0	0	0	0	0	0	0	0

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

Type	Value
Stack Pointer(SP)	0000
Memory Pointer (HL)	2134
Program Status Word(PSW)	4200
Program Counter(PC)	2008
Clock Cycle Counter	40
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

8085 Simulator

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Editor Assembler

Assembler

* Address	Label	Mnemonics	Hexcode	Bytes	M-Cycles	T-States
✓ 2000		LHLD 3000	2A	3	5	16
2001			00			
2002			30			
✓ 2003		XCHG	EB	1	1	4
✓ 2004		LHLD 3002	2A	3	5	16
2005			02			
2006			30			
✓ 2007		MOV A,E	7B	1	1	4
✓ 2008		SUB L	95	1	1	4
✓ 2009		MOV L,A	6F	1	1	4
✓ 200A		MOV A,D	7A	1	1	4
✓ 200B		SBB H	9C	1	1	4
✓ 200C		MOV H,A	67	1	1	4
✓ 200D		SHLD 1004	22	3	5	16
200E			04			
200F			10			
✓ 2010		HLT	76	1	2	5

Simulate

Start From → 2000

Backward Stop Forward

Created by : Jubin Mitra

Registers **Memory** **Devices**

Registers :

Register	Value	7	6	5	4	3	2	1	0
Accumulator	0E	0	0	0	0	1	1	1	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	35	0	0	1	1	0	1	0	1
Register E	42	0	1	0	0	0	0	1	0
Register H	21	0	0	1	0	0	0	0	1
Register L	34	0	0	1	1	0	1	0	0
Memory(M)	00	0	0	0	0	0	0	0	0

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

Type	Value
Stack Pointer(SP)	0000
Memory Pointer (HL)	2134
Program Status Word(PSW)	0E00
Program Counter(PC)	2009
Clock Cycle Counter	44
Instruction Counter	5

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

File Edit Tools Settings Simulation Subroutine View Load Sample Program Help

Editor Assembler

Assembler

* Address	Label	Mnemonics	Hexcode	Bytes	M-Cycles	T-States
✓ 2000		LHLD 3000	2A	3	5	16
2001			00			
2002			30			
✓ 2003		XCHG	EB	1	1	4
✓ 2004		LHLD 3002	2A	3	5	16
2005			02			
2006			30			
✓ 2007		MOV A,E	7B	1	1	4
✓ 2008		SUB L	95	1	1	4
✓ 2009		MOV L,A	6F	1	1	4
✓ 200A		MOV A,D	7A	1	1	4
✓ 200B		SBB H	9C	1	1	4
✓ 200C		MOV H,A	67	1	1	4
✓ 200D		SHLD 1004	22	3	5	16
200E			04			
200F			10			
✓ 2010		HLT	76	1	2	5

Simulate

Start From → 2000

Backward Stop Forward

Created by : Jubin Mitra

Registers **Memory** **Devices**

Registers :

Register	Value	7	6	5	4	3	2	1	0
Accumulator	0E	0	0	0	0	1	1	1	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	35	0	0	1	1	0	1	0	1
Register E	42	0	1	0	0	0	0	1	0
Register H	21	0	0	1	0	0	0	0	1
Register L	0E	0	0	0	0	1	1	1	0
Memory(M)	00	0	0	0	0	0	0	0	0

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

Type	Value
Stack Pointer(SP)	0000
Memory Pointer (HL)	210E
Program Status Word(PSW)	0E00
Program Counter(PC)	200A
Clock Cycle Counter	48
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

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
✓ 2000		LHLD 3000	2A	3	5	16
✓ 2001			00			
✓ 2002			30			
✓ 2003		XCHG	EB	1	1	4
✓ 2004		LHLD 3002	2A	3	5	16
✓ 2005			02			
✓ 2006			30			
✓ 2007		MOV A,E	7B	1	1	4
✓ 2008		SUB L	95	1	1	4
✓ 2009		MOV L,A	6F	1	1	4
✓ 200A		MOV A,D	7A	1	1	4
✓ 200B		SBB H	9C	1	1	4
✓ 200C		MOV H,A	67	1	1	4
✓ 200D		SHLD 1004	22	3	5	16
✓ 200E			04			
✓ 200F			10			
✓ 2010		HLT	76	1	2	5

Simulate

Start From → 2000

Backward Stop Forward

Registers Memory Devices

Registers :

Register	Value	7	6	5	4	3	2	1	0
Accumulator	35	0	0	1	1	0	1	0	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	35	0	0	1	1	0	1	0	1
Register E	42	0	1	0	0	0	0	1	0
Register H	21	0	0	1	0	0	0	0	1
Register L	0E	0	0	0	0	1	1	1	0
Memory(M)	00	0	0	0	0	0	0	0	0

Resister	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)	210E
Program Status Word(PSW)	3500
Program Counter(PC)	200B
Clock Cycle Counter	52
Instruction Counter	7

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

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
✓ 2000		LHLD 3000	2A	3	5	16
✓ 2001			00			
✓ 2002			30			
✓ 2003		XCHG	EB	1	1	4
✓ 2004		LHLD 3002	2A	3	5	16
✓ 2005			02			
✓ 2006			30			
✓ 2007		MOV A,E	7B	1	1	4
✓ 2008		SUB L	95	1	1	4
✓ 2009		MOV L,A	6F	1	1	4
✓ 200A		MOV A,D	7A	1	1	4
✓ 200B		SBB H	9C	1	1	4
✓ 200C		MOV H,A	67	1	1	4
✓ 200D		SHLD 1004	22	3	5	16
✓ 200E			04			
✓ 200F			10			
✓ 2010		HLT	76	1	2	5

Simulate

Start From → 2000

Backward Stop Forward

Registers Memory Devices

Registers :

Register	Value	7	6	5	4	3	2	1	0
Accumulator	14	0	0	0	1	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	35	0	0	1	1	0	1	0	1
Register E	42	0	1	0	0	0	0	1	0
Register H	21	0	0	1	0	0	0	0	1
Register L	0E	0	0	0	0	1	1	1	0
Memory(M)	00	0	0	0	0	0	0	0	0

Resister	Value	S	Z	*	AC	*	P	*	CY
Flag Register	14	0	0	0	1	0	1	0	0

Type	Value
Stack Pointer(SP)	0000
Memory Pointer (HL)	210E
Program Status Word(PSW)	1414
Program Counter(PC)	200C
Clock Cycle Counter	56
Instruction Counter	8

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

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
✓ 2000		LHLD 3000	2A	3	5	16
2001			00			
2002			30			
✓ 2003		XCHG	EB	1	1	4
✓ 2004		LHLD 3002	2A	3	5	16
2005			02			
2006			30			
✓ 2007		MOV A,E	7B	1	1	4
✓ 2008		SUB L	95	1	1	4
✓ 2009		MOV L,A	6F	1	1	4
✓ 200A		MOV A,D	7A	1	1	4
✓ 200B		SBB H	9C	1	1	4
✓ 200C		MOV H,A	67	1	1	4
✓ 200D		SHLD 1004	22	3	5	16
200E			04			
200F			10			
✓ 2010		HLT	76	1	2	5

Simulate

Start From → 2000

Backward Stop Forward

Registers **Memory** **Devices**

Registers :

Register	Value	7	6	5	4	3	2	1	0
Accumulator	14	0	0	0	1	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	35	0	0	1	1	0	1	0	1
Register E	42	0	1	0	0	0	0	1	0
Register H	14	0	0	0	1	0	1	0	0
Register L	0E	0	0	0	0	1	1	1	0
Memory(M)	00	0	0	0	0	0	0	0	0

Resister	Value	S	Z	*	AC	*	P	*	CY
Flag Resister	14	0	0	0	1	0	1	0	0

Type	Value
Stack Pointer(SP)	0000
Memory Pointer (HL)	140E
Program Status Word(PSW)	1414
Program Counter(PC)	200D
Clock Cycle Counter	60
Instruction Counter	9

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

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
✓ 2000		LHLD 3000	2A	3	5	16
2001			00			
2002			30			
✓ 2003		XCHG	EB	1	1	4
✓ 2004		LHLD 3002	2A	3	5	16
2005			02			
2006			30			
✓ 2007		MOV A,E	7B	1	1	4
✓ 2008		SUB L	95	1	1	4
✓ 2009		MOV L,A	6F	1	1	4
✓ 200A		MOV A,D	7A	1	1	4
✓ 200B		SBB H	9C	1	1	4
✓ 200C		MOV H,A	67	1	1	4
✓ 200D		SHLD 1004	22	3	5	16
200E			04			
200F			10			
✓ 2010		HLT	76	1	2	5

Simulate

Start From → 2000

Backward Stop Forward

Registers **Memory** **Devices**

Registers :

Register	Value	7	6	5	4	3	2	1	0
Accumulator	14	0	0	0	1	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	35	0	0	1	1	0	1	0	1
Register E	42	0	1	0	0	0	0	1	0
Register H	14	0	0	0	1	0	1	0	0
Register L	0E	0	0	0	0	1	1	1	0
Memory(M)	00	0	0	0	0	0	0	0	0

Resister	Value	S	Z	*	AC	*	P	*	CY
Flag Resister	14	0	0	0	1	0	1	0	0

Type	Value
Stack Pointer(SP)	0000
Memory Pointer (HL)	140E
Program Status Word(PSW)	1414
Program Counter(PC)	2010
Clock Cycle Counter	76
Instruction Counter	10

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

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
✓ 2000		LHLD 3000	2A	3	5	16
✓ 2001			00			
✓ 2002			30			
✓ 2003		XCHG	EB	1	1	4
✓ 2004		LHLD 3002	2A	3	5	16
✓ 2005			02			
✓ 2006			30			
✓ 2007		MOV A,E	7B	1	1	4
✓ 2008		SUB L	95	1	1	4
✓ 2009		MOV L,A	6F	1	1	4
✓ 200A		MOV A,D	7A	1	1	4
✓ 200B		SBB H	9C	1	1	4
✓ 200C		MOV H,A	67	1	1	4
✓ 200D		SHLD 1004	22	3	5	16
✓ 200E			04			
✓ 200F			10			
✓ 2010		HLT	76	1	2	5

Simulate

Start From → 2000

Backward Stop Forward

Registers **Memory** **Devices**

Registers :

Register	Value	7	6	5	4	3	2	1	0
Accumulator	14	0	0	0	1	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	35	0	0	1	1	0	1	0	1
Register E	42	0	1	0	0	0	0	1	0
Register H	14	0	0	0	1	0	1	0	0
Register L	0E	0	0	0	0	1	1	1	0
Memory(M)	00	0	0	0	0	0	0	0	0

Resister	Value	S	Z	*	AC	*	P	*	CY
Flag Resister	14	0	0	0	1	0	1	0	0

Type	Value
Stack Pointer(SP)	0000
Memory Pointer (HL)	140E
Program Status Word(PSW)	1414
Program Counter(PC)	2010
Clock Cycle Counter	81
Instruction Counter	11

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

8085 Simulator - E:\Personal\CodeWithVnj\MIP_Program\Experiment-3Q2.asm

File Edit Tools Settings Simulation Subroutine View Load Sample Program Help

Editor Assembler

Assembler

* Address	Label	Mnemonics	Hexcode	Bytes	M-Cycles	T-States
✓ 2000		LHLD 3000	2A	3	5	16
✓ 2001			00			
✓ 2002			30			
✓ 2003		XCHG	EB	1	1	4
✓ 2004		LHLD 3002	2A	3	5	16
✓ 2005			02			
✓ 2006			30			
✓ 2007		MOV A,E	7B	1	1	4
✓ 2008		SUB L	95	1	1	4
✓ 2009		MOV L,A	6F	1	1	4
✓ 200A		MOV A,D	7A	1	1	4
✓ 200B		SBB H	9C	1	1	4
✓ 200C		MOV H,A	67	1	1	4
✓ 200D		SHLD 1004	22	3	5	16
✓ 200E			04			
✓ 200F			10			
✓ 2010		HLT	76	1	2	5

Simulate

Start From → 2000

Run all At a Time Step By Step

Registers **Memory** **Devices**

Registers :

Register	Value	7	6	5	4	3	2	1	0
Accumulator	14	0	0	0	1	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	35	0	0	1	1	0	1	0	1
Register E	42	0	1	0	0	0	0	1	0
Register H	14	0	0	0	1	0	1	0	0
Register L	0E	0	0	0	0	1	1	1	0
Memory(M)	00	0	0	0	0	0	0	0	0

Resister	Value	S	Z	*	AC	*	P	*	CY
Flag Resister	14	0	0	0	1	0	1	0	0

Type	Value
Stack Pointer(SP)	0000
Memory Pointer (HL)	140E
Program Status Word(PSW)	1414
Program Counter(PC)	2010
Clock Cycle Counter	81
Instruction Counter	11

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

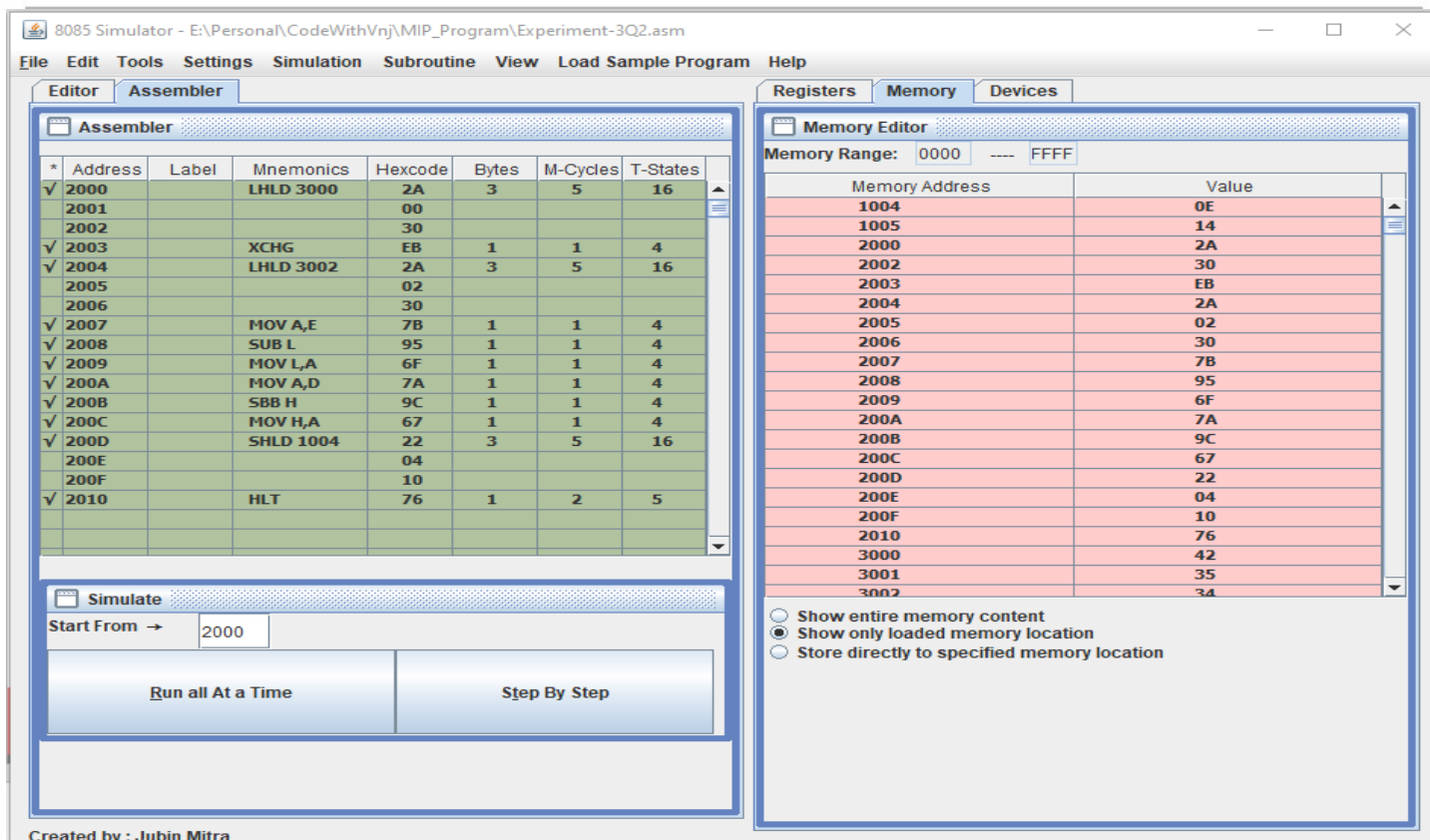
For RIM instruction

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



The screenshot shows the 8085 Simulator interface. The main window is titled "8085 Simulator - E:\Personal\CodeWithVn\8085_Program\Experiment-3Q2.asm". It has a menu bar with File, Edit, Tools, Settings, Simulation, Subroutine, View, Load Sample Program, and Help. Below the menu bar are three tabs: Editor, Assembler, and Memory Editor. The Assembler tab is active, showing a table of assembly instructions. The Memory Editor tab is also active, showing a table of memory addresses and values. The Assembler table has columns for Address, Label, Mnemonics, Hexcode, Bytes, M-Cycles, and T-States. The Memory Editor table has columns for Memory Address and Value. The Assembler table shows instructions like LHL D 3000, XCHG, LHL D 3002, MOV A,E, SUB L, MOV L,A, MOV A,D, SBB H, MOV H,A, SHLD 1004, and HLT. The Memory Editor table shows values for addresses from 1004 to 3002. The bottom of the window has a "Simulate" button and a "Start From" field set to 2000. There are also buttons for "Run all At a Time" and "Step By Step".

Learning outcomes (What I have learnt):

1. Learnt how to do the 8085-microprocessor programming.
2. Learnt how to Subtract the two 16bits numbers in assembly language.

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.			