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Enrollment number - 21162101012  
Branch - CBA      Batch - 51  
M&A Practical 1

**Aim : Learning Programs using Data Transfer Instructions and Arithmetic Instructions**

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**Exercise :**

**1. Write programs for addition of two data for the following conditions and show the status of flags in each case.**

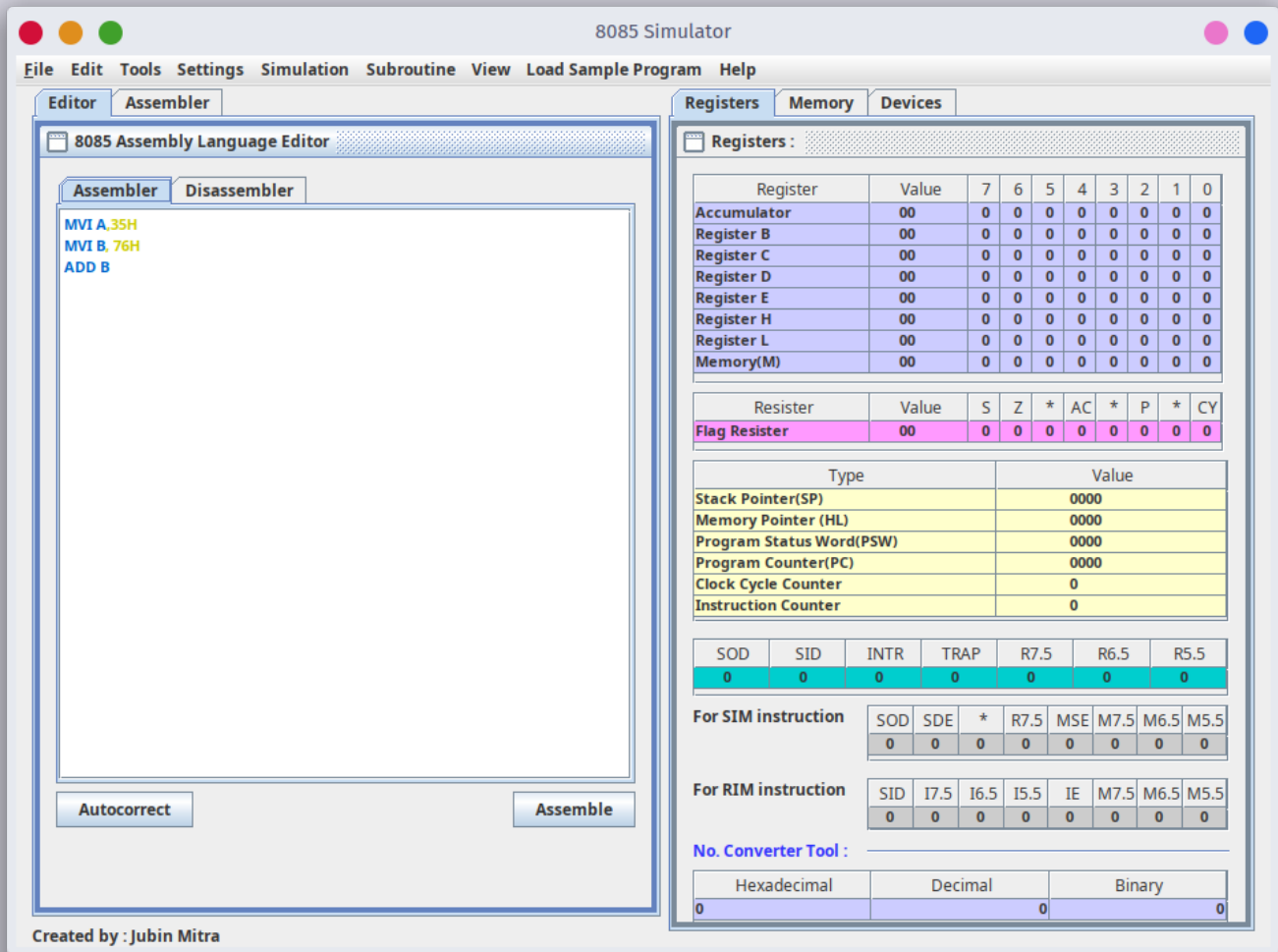
**A) Load immediate data 35H in register A and 76H in register B. Add them.  
Comment on the result.**

**Code :**

```
MVI A, 35H  
MVI B, 76H  
ADD B
```

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## Screenshots :



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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		MVI A,35	3E	2	2	7
	0001			35			
✓	0002		MVI B,76	06	2	2	7
	0003			76			
✓	0004		ADD B	80	1	1	4

Simulate

Start From → 0000

Backward

Stop

Forward

Registers Memory Devices

Registers :

Register	Value	7	6	5	4	3	2	1	0
Accumulator	AB	1	0	1	0	1	0	1	1
Register B	76	0	1	1	1	0	1	1	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)	3E	0	0	1	1	1	1	1	0

Register	Value	S	Z	*	AC	*	P	*	CY
Flag Register	80	1	0	0	0	0	0	0	0

Type	Value
Stack Pointer(SP)	0000
Memory Pointer (HL)	0000
Program Status Word(PSW)	AB80
Program Counter(PC)	0005
Clock Cycle Counter	18
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

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## M&A Practical 1

## Contents and comment :

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Practical - I

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Aim: Learning programs using data transfer instructions and arithmetic instructions.

Exercise 10

Exercise-1: Write programs for addition of two data for following conditions and show the status of flags in each case:

[A] Load immediate data 35H in register A and 76H in register B. Add them.  
Comment on the result.

Code:

```
MVI A, 35H    // Move 35H to Accumulator
MVI B, 76H    // Move 76H to Reg. B
ADD B         // Add B to Accumulator
```

Assembler :

Address	Mnemonics	Hexcode	Bytes	M-cycles	T-states
✓ 0000	MVI A, 35	3E	2	2	7
0001		35			
✓ 0002	MVI B, 76	06	2	2	7
0003		76			
✓ 0004	ADD B	80	1	1	4

Register Flag

Value	S	Z	*	AC	*	P	*	CY
80	1	0	0	0	0	0	0	0

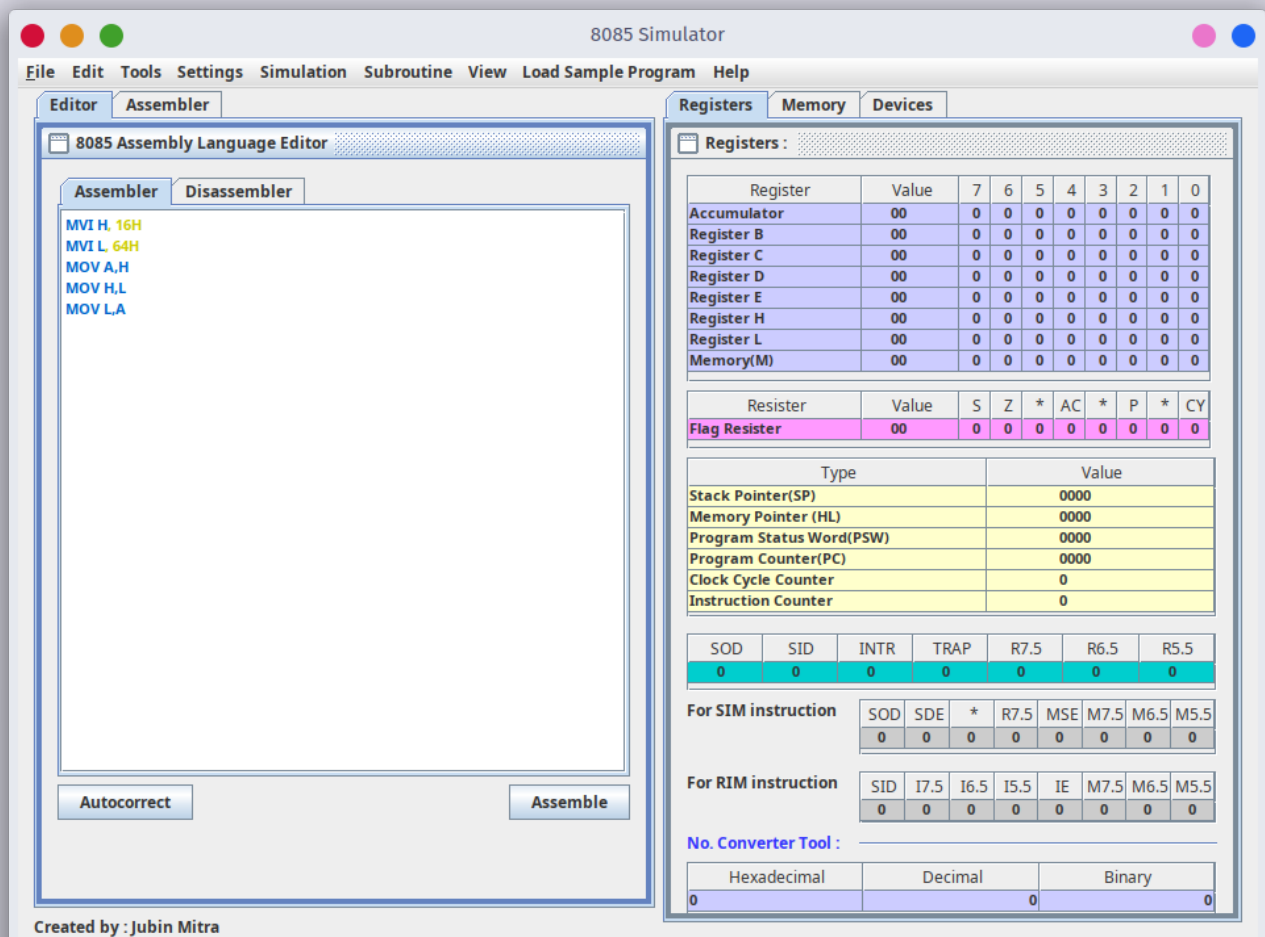
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**B) Write a program that swap the contents of register H and L registers**

**Code :**

```
MVI H, 16H
MVI L, 64H
MOV A,H
MOV H,L
MOV L,A
```

**Screenshots :**



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Editor Assembler Registers Memory Devices

**Assembler**

* Address	Label	Mnemonics	Hexcode	Bytes	M-Cycles	T-States
✓ 0000		MVI H,16	26	2	2	7
0001			16			
✓ 0002		MVI L,64	2E	2	2	7
0003			64			
✓ 0004		MOV A,H	7C	1	1	4
✓ 0005		MOV H,L	65	1	1	4
✓ 0006		MOV L,A	6F	1	1	4

**Simulate**

Start From → 0000

Backward Stop Forward

**Registers :**

Register	Value	7	6	5	4	3	2	1	0
Accumulator	16	0	0	0	1	0	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	00	0	0	0	0	0	0	0	0
Register E	00	0	0	0	0	0	0	0	0
Register H	64	0	1	1	0	0	1	0	0
Register L	16	0	0	0	1	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)	6416
Program Status Word(PSW)	1600
Program Counter(PC)	0007
Clock Cycle Counter	26
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

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Contents and comment :

[B] write a program that swap the contents of register H and L registers.

Code :  
MVI H, 16H // Move 16H to H  
MVI L, 64H // Move 64H to L  
MOV A, H // Copy contents of H to A  
MOV H, L // Copy contents of L to H  
MOV L, A // Copy contents of A to L

Assembler	Address	Mnemonics	Hexcode	Bytes	M-cycles	T-states
✓	0000	MVI H, 16	26	2	2	7
	0001		16			
✓	0002	MVI L, 64	2E	2	2	7
	0003		64			
✓	0004	MOV A, H	7C	1	1	4
✓	0005	MOV H, L	65	1	1	4
✓	0006	MOV L, A	6F	1	1	4

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

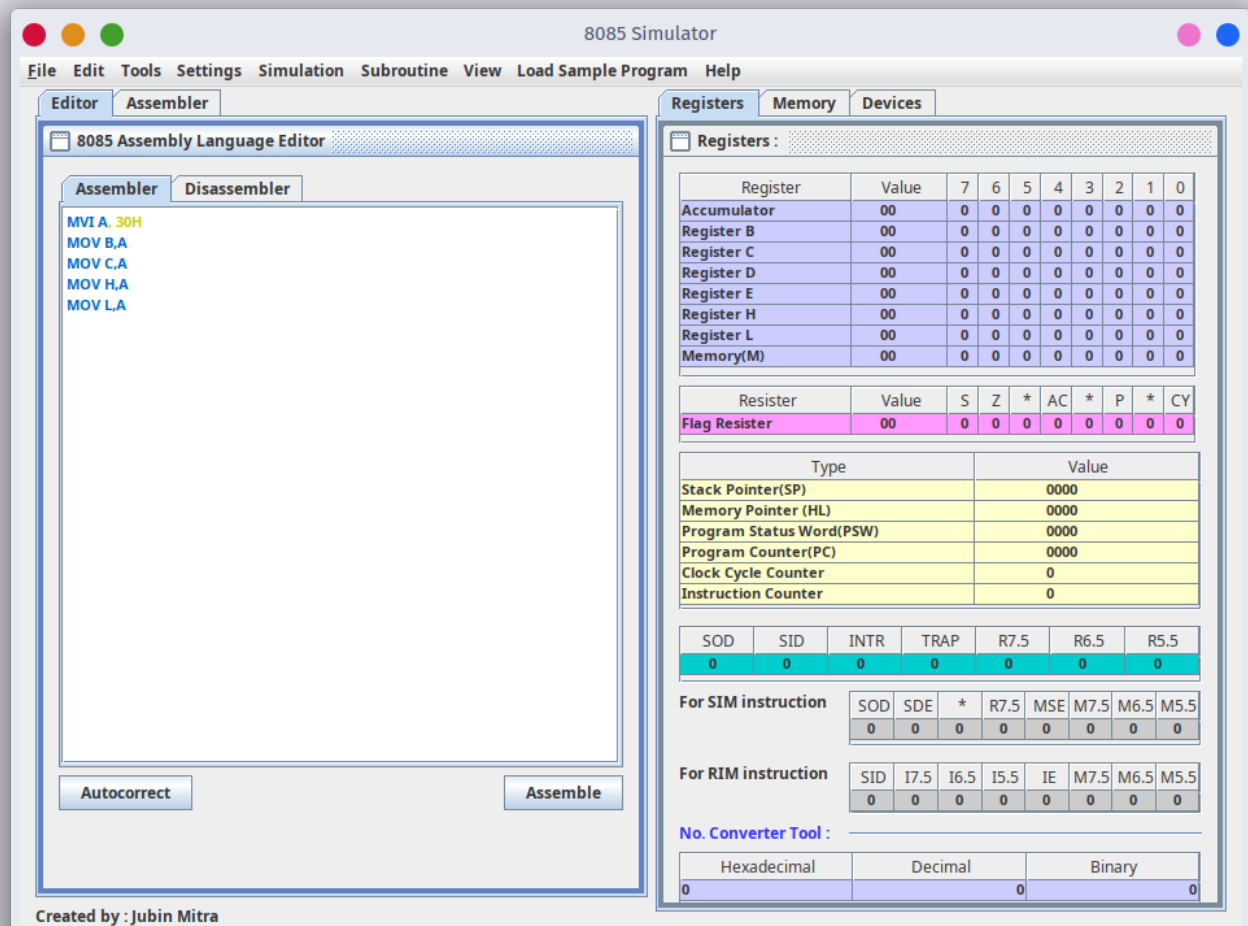
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C) Write a program to load an immediate data 30H in register A and copy it into registers B, C, H, L.

Code :

```
MVI A, 30H
MOV B,A
MOV C,A
MOV H,A
MOV L,A
```

Screenshots :





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8085 Simulator

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Editor Assembler Registers Memory Devices

**Assembler**

* Address	Label	Mnemonics	Hexcode	Bytes	M-Cycles	T-States
✓ 0000		MVI A,30	3E	2	2	7
0001			30			
✓ 0002		MOV B,A	47	1	1	4
✓ 0003		MOV C,A	4F	1	1	4
✓ 0004		MOV H,A	67	1	1	4
✓ 0005		MOV L,A	6F	1	1	4

**Simulate**

Start From → 0000

Backward Stop Forward

**Registers :**

Register	Value	7	6	5	4	3	2	1	0
Accumulator	30	0	0	1	1	0	0	0	0
Register B	30	0	0	1	1	0	0	0	0
Register C	30	0	0	1	1	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	30	0	0	1	1	0	0	0	0
Register L	30	0	0	1	1	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)	3030
Program Status Word(PSW)	3000
Program Counter(PC)	0006
Clock Cycle Counter	23
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

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### Contents and comment :

[C] Write a program to load an immediate data 30H in register A and copy it into registers B, C, H, L.

Code :  
MVI A, 30H // Move 30H to A  
MOV B, A // Copy contents of A to B  
MOV C, A // Copy contents of A to C  
~~MOV C, A~~ // Copy contents of A to C  
MOV H, A // Copy contents of A to H  
MOV L, A // Copy contents of A to L

Assembler	Address	Mnemonics	Hexcode	Bytes	M-cycles	T-states
	0000	MOV A, 30	3E	2	2	7
	0001		30			
	0002	MOV B, A	47	1	1	4
	0003	MOV C, A	4F	1	1	4
	0004	MOV H, A	67	1	1	4
	0005	MOV L, A	6F	1	1	4

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

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2. Specify the register contents and the flag status after each instruction as they are executed.

Screenshots :

The screenshot displays the 8085 Simulator interface. The main window is titled "8085 Simulator" and contains a menu bar (File, Edit, Tools, Settings, Simulation, Subroutine, View, Load Sample Program, Help) and a toolbar. The interface is divided into several panels:

- Editor/Assembler Panel:** Contains a table of assembly instructions. The first instruction is "MVI A,00" at address 0000, which has been executed. The instruction table is as follows:
 

* Address	Label	Mnemonics	Hexcode	Bytes	M-Cycles	T-States
✓ 0000		MVI A,00	3E	2	2	7
0001			00			
✓ 0002		MVI B,F8	06	2	2	7
0003			F8			
✓ 0004		MOV C,A	4F	1	1	4
✓ 0005		MOV D,B	50	1	1	4
✓ 0006		ADD D	82	1	1	4
✓ 0007		HLT	76	1	2	5
- Registers Panel:** Shows the status of the 8085 registers. The Accumulator (A) contains 00. The other registers (B, C, D, E, H, L) also contain 00. The Memory (M) contains 3E. The Flag Register shows the status of the flags: S=0, Z=0, \* (Carry)=0, AC=0, \* (Parity)=0, P=0, \* (CY)=0.
 

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)	3E	0	0	1	1	1	1	1	0

Register	Value	S	Z	*	AC	*	P	*	CY
Flag Register	00	0	0	0	0	0	0	0	0
- Simulate Panel:** Shows the "Start From" address as 0000. It includes buttons for "Backward", "Stop", and "Forward".
- Other Panels:** The "Memory" and "Devices" panels are currently empty. The "No. Converter Tool" panel shows a conversion table with Hexadecimal, Decimal, and Binary columns.

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8085 Simulator

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Editor Assembler Registers Memory Devices

**Assembler**

* Address	Label	Mnemonics	Hexcode	Bytes	M-Cycles	T-States
✓ 0000		MVI A,00	3E	2	2	7
0001			00			
✓ 0002		MVI B,F8	06	2	2	7
0003			F8			
✓ 0004		MOV C,A	4F	1	1	4
✓ 0005		MOV D,B	50	1	1	4
✓ 0006		ADD D	82	1	1	4
✓ 0007		HLT	76	1	2	5

**Simulate**

Start From → 0000

Backward Stop Forward

**Registers**

Register	Value	7	6	5	4	3	2	1	0
Accumulator	00	0	0	0	0	0	0	0	0
Register B	F8	1	1	1	1	1	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)	3E	0	0	1	1	1	1	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)	0000
Program Counter(PC)	0004
Clock Cycle Counter	14
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

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Editor Assembler

Assembler

* Address	Label	Mnemonics	Hexcode	Bytes	M-Cycles	T-States
✓ 0000		MVI A,00	3E	2	2	7
0001			00			
✓ 0002		MVI B,F8	06	2	2	7
0003			F8			
✓ 0004		MOV C,A	4F	1	1	4
✓ 0005		MOV D,B	50	1	1	4
✓ 0006		ADD D	82	1	1	4
✓ 0007		HLT	76	1	2	5

Simulate

Start From → 0000

Backward Stop Forward

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	F8	1	1	1	1	1	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)	3E	0	0	1	1	1	1	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)	0000
Program Counter(PC)	0005
Clock Cycle Counter	18
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

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Editor Assembler

Assembler

*	Address	Label	Mnemonics	Hexcode	Bytes	M-Cycles	T-States
✓	0000		MVI A,00	3E	2	2	7
	0001			00			
✓	0002		MVI B,F8	06	2	2	7
	0003			F8			
✓	0004		MOV C,A	4F	1	1	4
✓	0005		MOV D,B	50	1	1	4
✓	0006		ADD D	82	1	1	4
✓	0007		HLT	76	1	2	5

Simulate

Start From → 0000

Backward Stop Forward

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	F8	1	1	1	1	1	0	0	0
Register C	00	0	0	0	0	0	0	0	0
Register D	F8	1	1	1	1	1	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)	3E	0	0	1	1	1	1	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)	0000
Program Counter(PC)	0006
Clock Cycle Counter	22
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

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8085 Simulator

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Editor Assembler

Assembler

* Address	Label	Mnemonics	Hexcode	Bytes	M-Cycles	T-States
✓ 0000		MVI A,00	3E	2	2	7
0001			00			
✓ 0002		MVI B,F8	06	2	2	7
0003			F8			
✓ 0004		MOV C,A	4F	1	1	4
✓ 0005		MOV D,B	50	1	1	4
✓ 0006		ADD D	82	1	1	4
✓ 0007		HLT	76	1	2	5

Simulate

Start From → 0000

Backward Stop Forward

Registers Memory Devices

Registers :

Register	Value	7	6	5	4	3	2	1	0
Accumulator	F8	1	1	1	1	1	0	0	0
Register B	F8	1	1	1	1	1	0	0	0
Register C	00	0	0	0	0	0	0	0	0
Register D	F8	1	1	1	1	1	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)	3E	0	0	1	1	1	1	1	0

Register	Value	S	Z	*	AC	*	P	*	CY
Flag Register	80	1	0	0	0	0	0	0	0

Type	Value
Stack Pointer(SP)	0000
Memory Pointer (HL)	0000
Program Status Word(PSW)	F880
Program Counter(PC)	0007
Clock Cycle Counter	26
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

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Editor Assembler Registers Memory Devices

**Assembler**

* Address	Label	Mnemonics	Hexcode	Bytes	M-Cycles	T-States
✓ 0000		MVI A,00	3E	2	2	7
0001			00			
✓ 0002		MVI B,F8	06	2	2	7
0003			F8			
✓ 0004		MOV C,A	4F	1	1	4
✓ 0005		MOV D,B	50	1	1	4
✓ 0006		ADD D	82	1	1	4
✓ 0007		HLT	76	1	2	5

**Simulate**

Start From → 0000

Backward Stop Forward

**Registers :**

Register	Value	7	6	5	4	3	2	1	0
Accumulator	F8	1	1	1	1	1	0	0	0
Register B	F8	1	1	1	1	1	0	0	0
Register C	00	0	0	0	0	0	0	0	0
Register D	F8	1	1	1	1	1	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)	3E	0	0	1	1	1	1	1	0

Register	Value	S	Z	*	AC	*	P	*	CY
Flag Register	80	1	0	0	0	0	0	0	0

Type	Value
Stack Pointer(SP)	0000
Memory Pointer (HL)	0000
Program Status Word(PSW)	F880
Program Counter(PC)	0007
Clock Cycle Counter	31
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

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Branch - CBA Batch - 51

M&A Practical 1

### Contents :

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Exercise: Specify the register contents and flag status after each instructions as they are executed.							
	A	B	C	D	S	Z	CY
	XX	XX	X	X	X	X	X
MVI R00	00	00	00	00	00	00	0
MVI B, F8	00	F8	00	00	0	0	0
MOV C, A	00	F8	00	00	0	0	0
MOV D, B	00	F8	00	F8	0	0	0
ADD D	F8	F8	00	F8	1	0	0
HLT	F8	F8	00	F8	1	0	0