Experiment 2.3

Student Name:Rajiv Paul　　　　　**UID:20BCS1812**
Branch: CSE　　　　　**Section/Group:607A**
Semester: 4th　　　　　**Date of Performance: 28/03/2022**
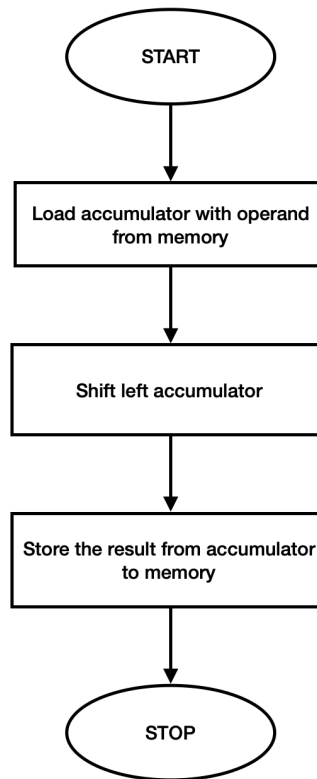**Subject Name:MPI Lab**　　　　　**Subject Code: 22E-20CSP-253**

1) **Aim/Overview of the practical:**

a) Shift left by 1 bit of 8bit number

Apparatus/Simulator used: 8085 simulator

**DEPARTMENT OF
ACADEMIC AFFAIRS**

Discover. Learn. Empower.

NAAC
GRADE A+
ACCREDITED UNIVERSITY

Flowchart:

```
        ┌─────────────┐
        │    START     │
        └──────┬──────┘
               │
               ▼
   ┌─────────────────────────┐
   │ Load accumulator with    │
   │ operand from memory      │
   └────────────┬────────────┘
                │
                ▼
   ┌─────────────────────────┐
   │  Shift left accumulator   │
   └────────────┬────────────┘
                │
                ▼
   ┌─────────────────────────┐
   │ Store the result from     │
   │ accumulator to memory     │
   └────────────┬────────────┘
                │
                ▼
        ┌─────────────┐
        │    STOP      │
        └─────────────┘
```

DEPARTMENT OF
ACADEMIC AFFAIRS
Discover. Learn. Empower.

NAAC
GRADE A+
ACCREDITED UNIVERSITY

Algorithm:

1. LDA 5050 loads H-L pair with data from 5050H memory location.

2. RAL shifts 1bit to left of accumulator.

3. STA 5051 stores result at the memory location 5051H.

4. HLT end of the execution.

Steps for experiment/practical/Code:

#BEGIN 0000H

LDA 5050H

RAL

STA 5051H

HLT

#ORG 5050H

#DB 59H

Simulation:

1. CODE IN EDITOR WINDOW:

2. ASSEMBLER WINDOW:

DEPARTMENT OF
ACADEMIC AFFAIRS
Discover. Learn. Empower.

NAAC
GRADE A+
ACCREDITED UNIVERSITY

3. REGISTERS:

Register	Value	7	6	5	4	3	2	1	0
Accumulator	B2	1	0	1	1	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	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

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)	B200
Program Counter(PC)	0007
Clock Cycle Counter	40
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

4. MEMORY:

Memory Editor

Memory Range:	0000	----	FFFF

Memory Address	Value
0000	3A
0001	50
0002	50
0003	17
0004	32
0005	51
0006	50
0007	76
5050	59
5051	B2

○ Show entire memory content
◉ Show only loaded memory location
○ Store directly to specified memory location

RESULT

BEFORE EXECUTION:

5050H: 59

AFTER EXECUTION:

5051H: B2

DEPARTMENT OF
ACADEMIC AFFAIRS
Discover. Learn. Empower.

NAAC
GRADE **A+**
ACCREDITED UNIVERSITY

Aim/Overview of the practical:

    b) Shift left by 2 bit of 8bit number.

Apparatus/Simulator used: 8085 simulator

Flowchart:
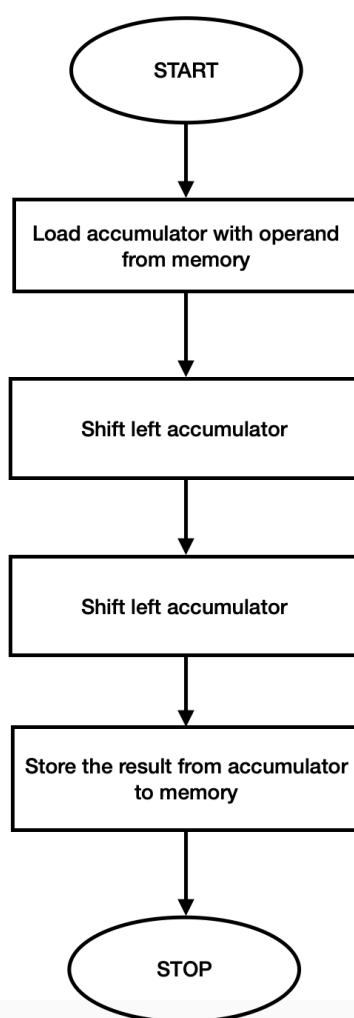
Algorithm:

1. LDA 5050 loads H-L pair with data from 5050H memory location.

2. RAL shifts 1bit to left of accumulator.

3. RAL shifts 1bit to left of accumulator.

4. STA 5051 stores result at the memory location 5051H.

5. HLT end of the execution.

Steps for experiment/practical/Code:

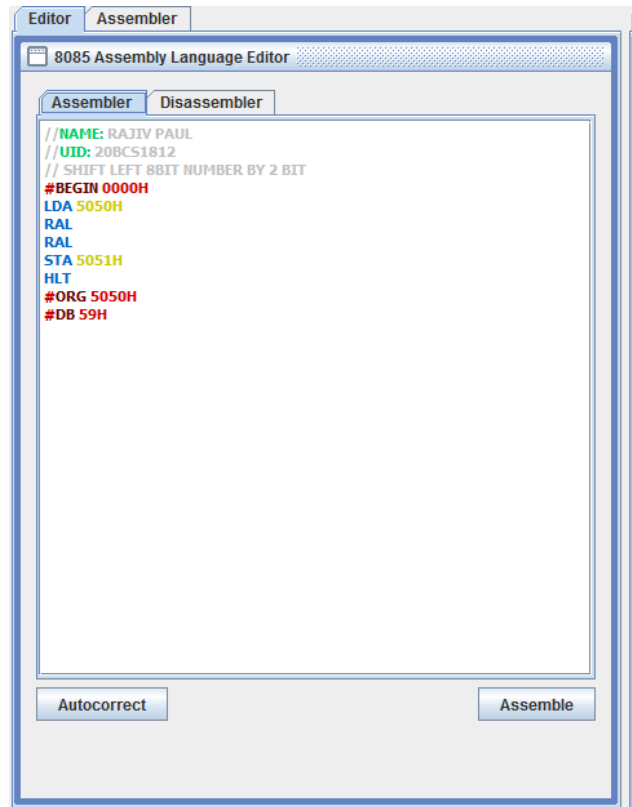**#BEGIN 0000H**

LDA 5050H

RAL

RAL

STA 5051H

HLT

#ORG 5050H

#DB 59H

Simulation:

1. <u>CODE IN EDITOR WINDOW</u>:

DEPARTMENT OF
ACADEMIC AFFAIRS
Discover. Learn. Empower.

NAAC
GRADE A+
ACCREDITED UNIVERSITY

2. ASSEMBLER WINDOW:

*	Address	Label	Mnemonics	Hexcode	Bytes	M-Cycles	T-States
√	0000		LDA 5050	3A	3	4	13
	0001			50			
	0002			50			
√	0003		RAL	17	1	1	4
√	0004		RAL	17	1	1	4
√	0005		STA 5051	32	3	4	13
	0006			51			
	0007			50			
√	0008		HLT	76	1	2	5

Simulate

Start From → 0000

Run all At a Time	Step By Step

3. REGISTERS:

Registers | **Memory** | **Devices**

Registers :

Register	Value	7	6	5	4	3	2	1	0
Accumulator	64	0	1	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	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

Resister	Value	S	Z	*	AC	*	P	*	CY
Flag Resister	01	0	0	0	0	0	0	0	1

Type	Value
Stack Pointer(SP)	0000
Memory Pointer (HL)	0000
Program Status Word(PSW)	6401
Program Counter(PC)	0008
Clock Cycle Counter	44
Instruction Counter	6

SOD	SID	INTR	TRAP	R7.5	R6.5	R5.5
0	0	0	0	0	0	0

For SIM instruction
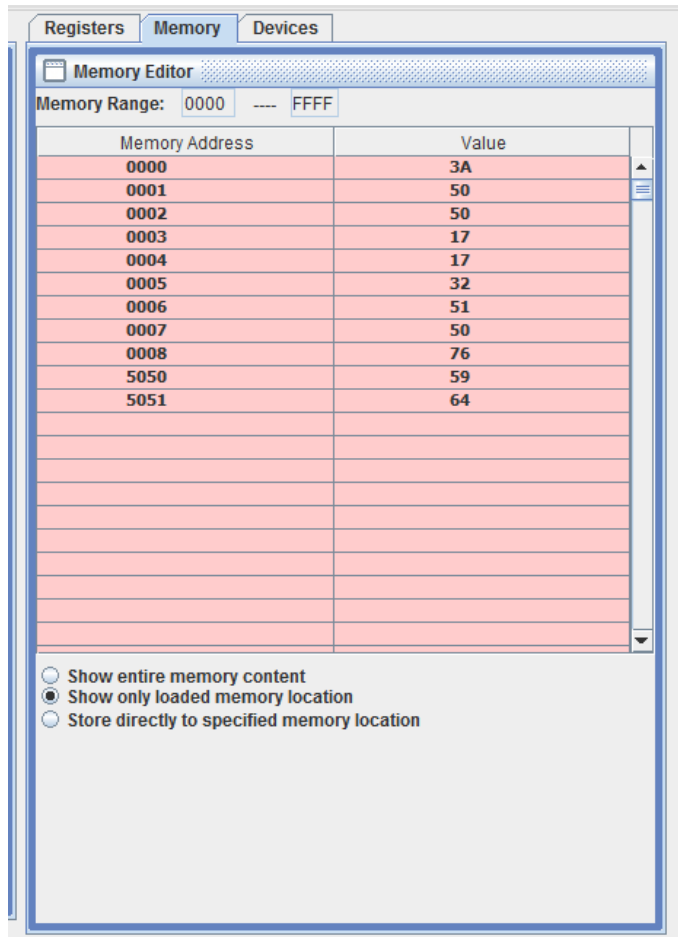
SOD	SDE	*	R7.5	MSE	M7.5	M6.5	M5.5
0	0	0	0	0	0	0	0

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 :

DEPARTMENT OF
ACADEMIC AFFAIRS
Discover. Learn. Empower.

NAAC
GRADE A+
ACCREDITED UNIVERSITY

4. MEMORY:

Memory Editor	
Memory Range: 0000 ---- FFFF	

Memory Address	Value
0000	3A
0001	50
0002	50
0003	17
0004	17
0005	32
0006	51
0007	50
0008	76
5050	59
5051	64

Registers | Memory | Devices

○ Show entire memory content
● Show only loaded memory location
○ Store directly to specified memory location

RESULT

BEFORE EXECUTION:

5050H: 59

AFTER EXECUTION:

5051H: 64

DEPARTMENT OF
ACADEMIC AFFAIRS
Discover. Learn. Empower.

NAAC
GRADE A+
ACCREDITED UNIVERSITY

Learning outcomes (What I have learnt):

    1.Learnt about 8085 simulator

    2. Learnt how to shift left by 1bit and 2bit of 8bit number.

    3. Learnt about RAL and its function.

    4.

    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.			