L. D. College of Engineering

Opp Gujarat University, Navrangpura, Ahmedabad - 380015

LAB MANUAL

Branch: Computer Engineering

Microprocessor and Interfacing (3160712)

Semester: VI

Certificate

This is to certify that Mr./Ms. _____,
Enrollment Number_____ has satisfactorily completed the practical work in _____ subject at L D College of Engineering, Ahmedabad-380015.

Date of Submission: _____

Sign of Faculty: _____

Head of Department: _____

Sr. No.	CO	AIM	Date	Page No.	Grade	Sign
1	CO3	Write an assembly language program to add 2 8-bit numbers. Also use ADC to add the finalanswer along with carry. Save the final answer at particular memory location.				
2	CO3	Write an assembly language program to subtract 2 8-bit numbers. Save the final answer atparticular memory location.				
3	CO3	Write an assembly language program to subtract 2 8-bit numbers using 2's complement method and 1's complement method. Save the final answer at particular memory location.				
4	CO3	Write an assembly language program to multiply 2 8-bit numbers. Save the final answer at particular memory location.				
5	CO3	Write an assembly language program to divide 2 8-bit numbers. Save the quotient and remainder at particular memory location.				
6	CO3	Write an assembly language program to find SQUARE of 8-bit number. Save the final answer at particular memory location.				
7	CO3	Write an assembly language program to find FACTORIAL of 8-bit number. Save the final answer at particular memory location.				
8	CO3	Write an assembly language program to multiply 2 8-bit numbers. Save the final answer at particular memory location 200A H. Check if the final answer sets EVEN PARITY flag than add the data available at 200A H and largest no between multiplier and multiplicand. If final answer sets ODD PARITY flag add the data available at 200A H and smaller no between Multiplier and multiplicand.				
9	CO3	Write an assembly language program that can checks whether the given number is positive ornegative, if number is positive then store 99H at memory location 2000H otherwise store 98H at memory location 2000H.				
10	CO3	Write an assembly language program to understand the functionality of DAA instruction. Save final answer before DAA instruction and after DAA instruction at particular memory location.				
11	CO3	Write an assembly language program to count total no. of 1's in given 8-bit number. Save the final answer at particular memory location.				
12	CO3	Write an assembly language program to count total no. of 0's in given 8-bit number. Save the final answer at particular memory location.				

13	**CO3**	Write an assembly language program to compare two numbers. If first number is greater than second number than store 97H at particular memory location, if both the numbers are equal than store 98H at particular memory location and if first number is smaller than second number than store 99H at particular memory location.				
14	**CO3**	Write an assembly language program to count no of 1's in two 8-bit numbers separately. Save both the answer at particular memory location. Finally do multiplication between them and save the final answer at 3000h memory location.				
15	**CO3**	Write an assembly language program to add two 8-bit numbers. If addition sets Carry Flag (CF)than multiply the final answer by 05H else by 0AH. Save the final answer at particular memory location.				
16	**CO3**	Write an assembly language program to sort 10 numbers that are available at consecutivememory location from 2000H to 2009H. Store the sorted list at the same memory location.				
17	**CO3**	Write an assembly language program to search a given number in list of 10 numbers stored at Consecutive memory location 2000H to 2009H. If match found than store 99H at memorylocation 200A else 98H.				
18	**CO3**	Write an assembly language program to fetch 10 values from memory location 2000H to 2009H. Add all the even value from the list and add all the odd values from the list. Store the answer of even no addition at 2015H location and store the answer of odd no addition at 2016H memory location. Do subtraction of data available at 2015H and 2016H and save the final answer at 2017H memory location.				
19	**CO3**	Write an assembly language program to fetch 10 values from memory location 2000H to 2009H. Add all the numbers that are available at odd memory location and add all the numbers that are available at even memory location. Store the answer of even location addition at 2015H location and store the answer of odd location addition at 2016H memory location. Do division of data available at 2015H and 2016H and Save the quotient and remainder at particular memory location.				
20	**CO3**	Write an assembly language program to generate Fibonacci Series at a particular memoryblock.				

L. D. College of Engineering, Ahmedabad

Department of Computer Engineering

Subject Name: Microprocessor and Interfacing **Subject Code: 3160712**
Term: 2022-23

Rubrics ID	Criteria	Marks	Good (2)	Satisfactory (1)	Need Improvement (0)
RB1	Knowledge of Assembly language	05	High (>70%)	Moderate (40-70%)	Poor (0-40%)
RB2	Problem Analysis & Development of the Solution	05	Apt & Full Identification of the Problem & Complete Solution for the Problem	Limited Identification of the Problem / Incomplete Solution for the Problem	Very Less Identification of the Problem / Very Less Solution for the Problem
RB3	Testing of the Solution	05	Correct Solution as required	Partially Correct Solution for the Problem	Very less correct solution for the problem
RB4	Documentation	05	Documentation completed neatly.	Not up to standard.	Proper format not followed, incomplete.

SIGN OF FACULTY

L. D. College of Engineering, Ahmedabad

Department of Computer Engineering

LABORATORY PRACTICALS ASSESSMENT

Subject Name: Microprocessor and Interfacing

Term: 2022-23

Enroll. No.:

Class:

Pract. No.	CO No.	RB1	RB2	RB3	RB4	Total	Date	Faculty Sign
1	CO3							
2	CO3							
3	CO3							
4	CO3							
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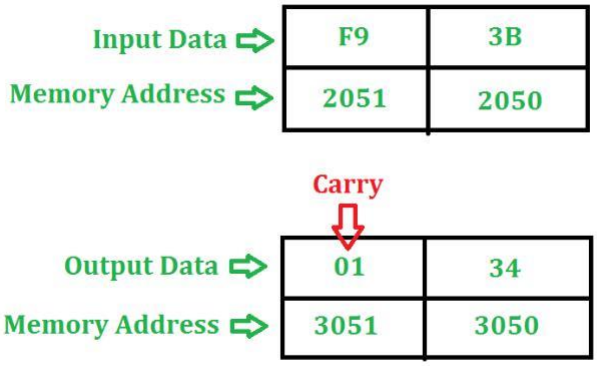
17	CO3							
18	CO3							
19	CO3							
20	CO3							

Practical 1

AIM: Write an assembly language program to add 2 8-bit numbers. Also use ADC to add the final answer along with carry. Save the final answer at particular rmemory location.



Algorithm:

1. Load the first number from memory location 2050 to accumulator.
2. Move the content of accumulator to register H.
3. Load the second number from memory location 2051 to accumulator.
4. Then add the content of register H and accumulator using “ADD” instruction and storing result at 3050
5. The carry generated is recovered using “ADC” command and is stored at memory location 3051

- **Program**

```
LDA 2050H
MOV H,A

LDA 2051H
ADD H
STA 3050H

MVI A,00H
ADC A
STA 3051H
HLT
```

- **Output**

Input data:

Start 2050h OK

Address (Hex)	Address	Data
2050	8272	59
2051	8273	249
2052	8274	0
2053	8275	0
2054	8276	0

Sum at loc: 3050H, carry at 3051H

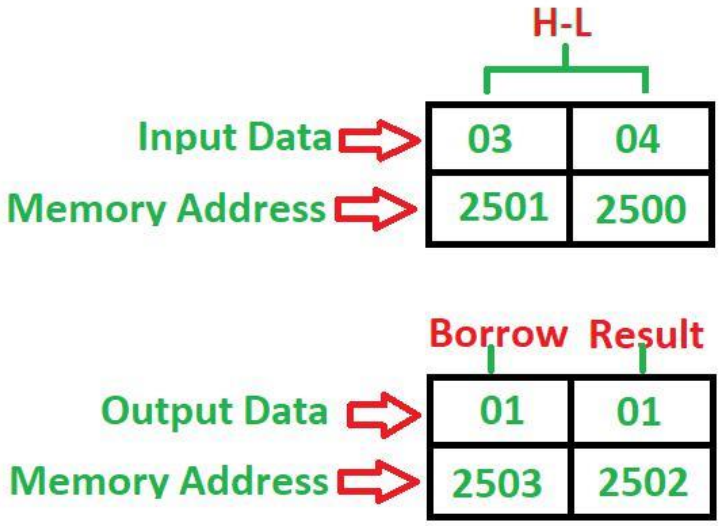
Start 3050h OK

Address (Hex)	Address	Data
3050	12368	52
3051	12369	1
3052	12370	0
3053	12371	0

Signature of Faculty: **Grade:**

Practical 2

AIM: Write an assembly language program to subtract 2 8-bit numbers. Save the final answer at particular memory location.



Algorithm:

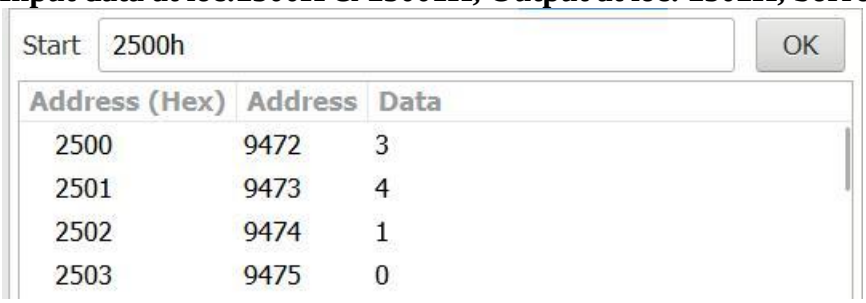
1. Load 00 in a register C (for borrow)
2. Load two 8-bit number from memory into registers
3. Move one number to accumulator
4. Subtract the second number with accumulator
5. If borrow is not equal to 1, go to step 7
6. Increment register for borrow by 1
7. Store accumulator content in memory
8. Move content of register into accumulator
9. Store content of accumulator in other memory location
10. Stop

- **Program**

```
MVI C,00H
LHLD 2500H
MOV A,H

SBB L
JNC LABEL
INR C

LABEL:  STA 2502H
        MOV A,C
        STA 2503H
        HLT
```

- **Output**

Input data at loc:2500H & 25001H, Output at loc: 2502H, borrow at 2503H



Signature of Faculty: **Grade:**

Practical 3

AIM: Write an assembly language program to subtract 2 8-bit numbers using 2's complement method and 1's complement method. Save the final answer at particular memory location.

first input

Address	Data
...	...
8000	78
8001	5D
...	...

second input

Address	Data
...	...
8000	23
8001	CF
...	...

Program

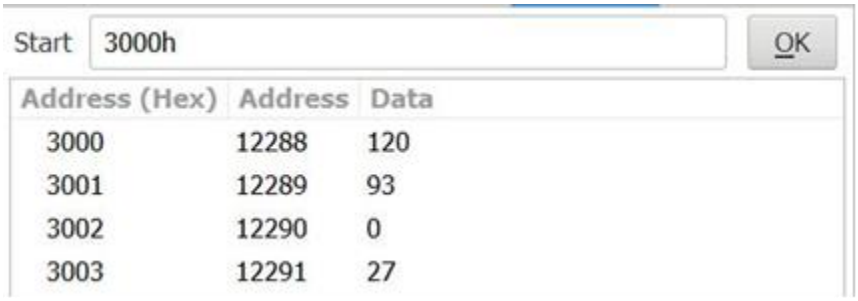
Address	HEX Codes	Labels	Mnemonics	Comments
F000	0E,00		MVIC,00H	Clear C register
F002	21,00, 80		LXIH,8000H	Load initial address to get operand
F005	7E		MOVA, M	Load Acc with the memory element
F006	23		INX H	Point to next location
F007	46		MOVB, M	Load B with the second operand
F008	90		SUB B	Subtract B from A
F009	D2,0D, F0		JNC STORE	When CY = 0, go to STORE
F00C	0C		INR C	Increase C by 1
F00D	21,50, 80	STORE	LXIH,8050H	Load the destination address
F010	77		MOVM, A	Store the result
F011	23		INX H	Point to next location
F012	71		MOVM, C	Store the borrow
F013	76		HLT	Terminate the program

- **Program**

```
MVI C,00H
LXI H,3000H
MOV A,M

INX H

MOV B,M
SUB B

JNC STORE
INR C

STORE:  LXI H,3003H
        MOV M,A
        INX H
        MOV M,C
        HLT
```

- **Output**

Input at loc: 3000H & 3001H, Output at 3003H



Signature of Faculty: **Grade:**