Practical 05

Objective: Write and Simulate programs to perform Multi Byte Multi Level addition and Subtraction.

1. Write a program to perform addition of data 85C963BDAFH, 9989796959, 7857679787 and

   37CB796D99H. Store result in register R0 to R5. R0 should contain Low Byte.

2. Write a program to perform Subtraction of data ABCDH and A999H. Store result in address 08H to

   0AH. 0AH should contain Low Byte.

Pre – Requisites:

The student should have completed the following study before doing this experiment
   - ✓ Assemble Directives
   - ✓ Operations using MOV, ADD, ADDC and SUBB Instructions.

Equipment/Software Needed:

1. EdSim51 Open Ware Software with Computer.

Write Program here: (You May also Write programs by multiple methods)

Program 1	Program 2

Result: (You should write data of various registers and memory location after complete execution of Program)

Result of Program 1	Result of Program 2

Post – lab Activities: (Write Answer just inside the Table)

A) SUBB

The SUBB instruction subtracts the specified byte variable and the carry flag from the accumulator. The result is stored in the accumulator. This instruction sets the carry flag if borrow is required for bit 7 of the result. If no borrow is required, the carry flag is cleared. The general form of SUBB instructions is

SUBB A, 2nd Data				
Source 1	Accumulator			
Source 2	Immediate Data	Direct Address	Register	Indirect Address
Destination	Accumulator			
Effect	(A)= (A) - Data from Source 2 - C			
Flags affected	C (Carry), AC (Auxiliary Carry), OV (Overflow) and P(Parity) in PSW			

Write the operation being performed in comment field.

ORG 0000	; Starting Memory location of Program code
START_HERE:	; Comments
MOV A, #0A0H	;
ADD A, #0E5H	;
ADDC A, #0CDH	;
SUBB A, #0E5H	;
ADDC A, 05H	;
SUBB A, 07H	;
ADDC A, R7	;
ADD A, @R0	;
SUBB A, @R1	;
END	

Set contents of ML (Memory Location) 00H to 07H of internal data RAM as follows.

ML	00H	01H	02H	03H	04H	05H	06H	07H
Content	04H	05H	00H	06H	98H	87H	04H	05H

✓ Note down the data stored in Accumulator, PSW, Register R0 to R7 and MLs 00 to 07 before and after executing each instruction in below table carefully.
✓ Understand the effect by comparing it with description of instruction.

Sr. No.	Instruction	Contents	Registers					Data RAM Locations							
			A	PSW	PC	R0	R1	00H	01H	02H	03H	04H	05H	06H	07H
1.	MOV A, #0A0H	Before Execution						04H	05H	00H	06H	98H	87H	04H	05H
		After Execution													
2.	ADD A, #0E5H	Before Execution													
		After Execution													
3.	ADDC A, #0CDH	Before Execution													
		After Execution													
4.	SUBB A, #0E5H	Before Execution													
		After Execution													
5.	ADDC A, 05H	Before Execution													
		After Execution													
6.	SUBB A,07H	Before Execution													
		After Execution													
7.	ADDC A, R7	Before Execution													
		After Execution													
8.	ADD A,@R0	Before Execution													
		After Execution													
9.	SUBB A,@R1	Before Execution													
		After Execution													

Conclusion: