

Computer Organization and Architecture (EET2211)

LAB V: Addition of two BCD numbers

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Remarks:

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I. OBJECTIVE:

- 1) Write a program to find the sum of two BCD numbers.

II. PRE-LAB

For Obj. 1:

- a) Find the sum of two BCD numbers.

[1000h] = 2222h

[1002h] = 1111h

Output: 3333h

- b) Write the assembly code.

```
org 100h
mov ax,0000h
mov ds,ax
mov al,[3000h]
mov bl,[3002h]
add al,bl
daa
mov [3004h],al
mov al,[3001h]
mov bl,[3003h]
adc al,bl
daa
mov [3005h],al
mov al,00
adc al,al
mov [3006h],al
hlt
ret
```

III. LAB:

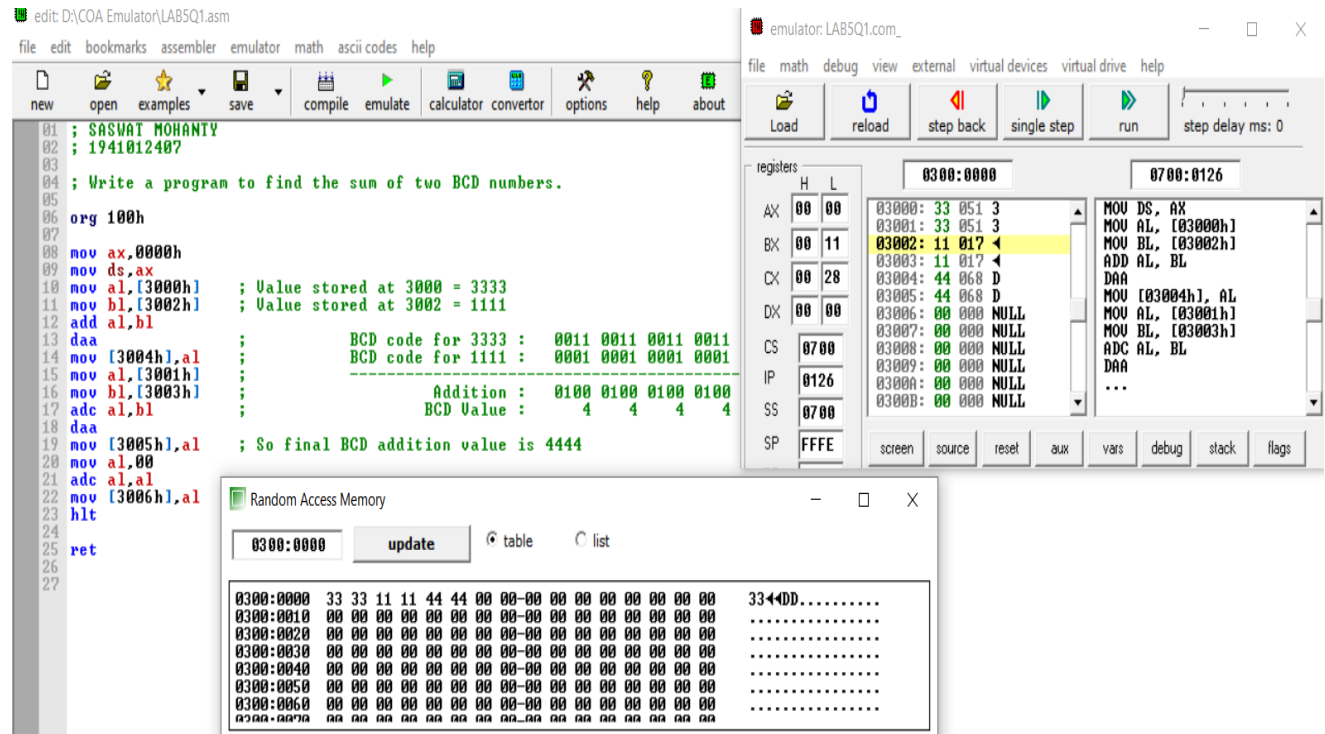
Assembly Program:

For Obj. 1:

```
; SASWAT MOHANTY  
; 1941012407  
  
; Write a program to find the sum of two BCD numbers.  
  
org 100h  
  
mov ax,0000h  
mov ds,ax  
mov al,[3000h] ; Value stored at 3000 = 3333  
mov bl,[3002h] ; Value stored at 3002 = 1111  
add al,bl  
daa ; BCD code for 3333 : 0011 0011 0011 0011  
mov [3004h],al ; BCD code for 1111 : 0001 0001 0001 0001  
mov al,[3001h] ;  
mov bl,[3003h] ;  
adc al,bl ;  
daa ;  
mov [3005h],al ; So final BCD addition value is 4444  
mov al,00  
adc al,al  
mov [3006h],al  
hlt  
  
ret
```

Observations (with screen shots):

For Obj. 1:



Conclusion:

It can be concluded that the addition of two BCD numbers when dry run and executed in system found to be same. Thus, the program to find the sum of two BCD numbers was executed.

IV. POST LAB:

1. What is the maximum memory size that can be addressed by 8086?

In 8086 microprocessor the total memory addressing capability is 1MB. For representing 1MB there are minimum 4 hex digits are required i.e., 20 bits. 8086 microprocessors have fourteen 16 bit registers (i.e. there are no registers for

representing 20 bit address). So, the total memory can be divided into 16 separate logical segments and each segment capacity is 64KB (i.e., $16 * 64 \text{ KB} = 1\text{MB}$).

2. Which of the following is not a data copy/transfer instruction? Explain.

- a) MOV b) PUSH
- c) DAS d) POP

DAS is the answer because, it's used to adjust decimal after subtraction.

3. Write Down the Comparisons between the 8086 and 8088?

	8086	8088
Clock Speeds	5MHz, 8MHz, 10MHz	5MHz, 8MHz
Bus Width	16 bits	8 bits
Number of Transistors	29,000	29,000
Feature size	3	6
Addressable Memory	1MB	1MB