Laboratory Exercise No.:	3	**Date Performed:**	
Laboratory Exercise Title:	Assembly Language Instructions		
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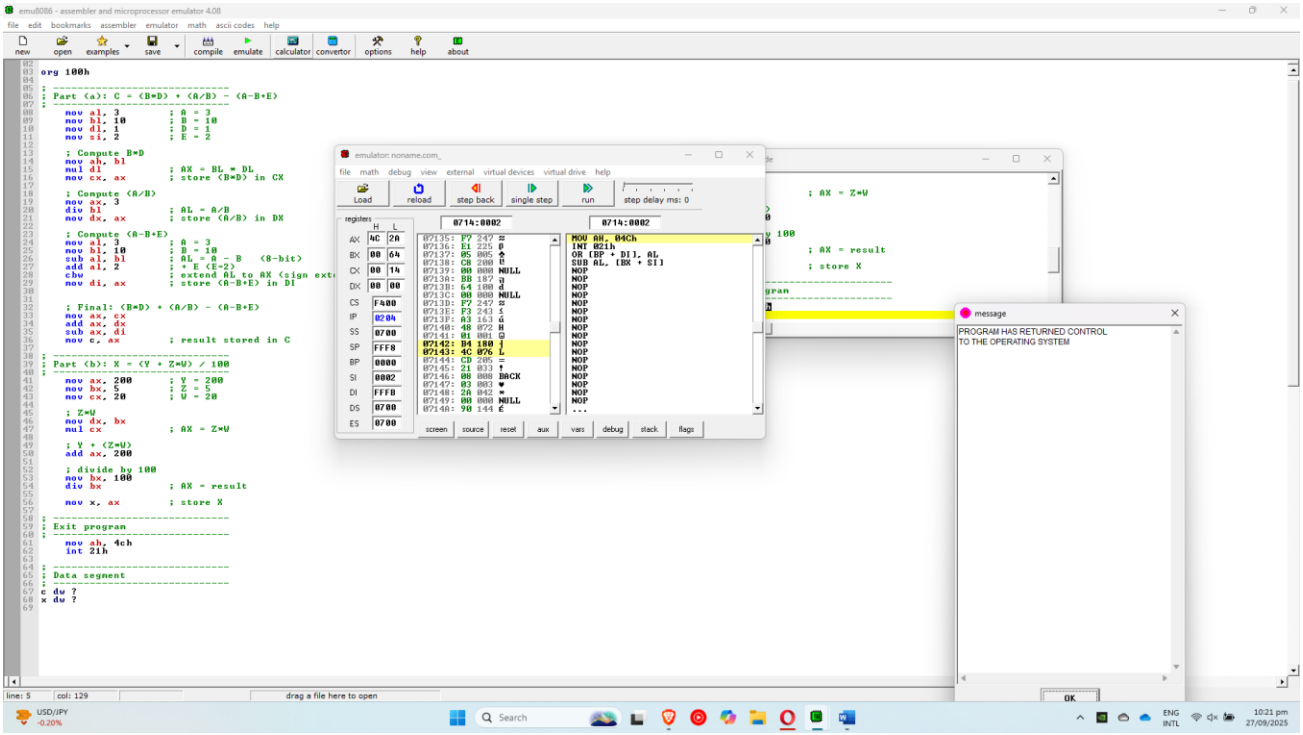
Laboratory Report

Activity #31-1

Instruction	Register value after the instruction is executed	Flag value
MOV AL, 040H	None changed.	IF = 1
MOV BL, 010H	AX = 00F0, IP = 0102	IF = 1
ADD AL, BL	BX = 0010, IP = 0104	IF = 1
MOV CL, AL	IP = 0106	CF = 1, ZF = 1, PF = 1, IF = 1
SUB CL, BL	CX = 0000, IP = 0108	CF = 1, ZF = 1, PF = 1, IF = 1
ADC CL, BL	CX = 00F0, IP = 010A	CF = 1, SF = 1, PF = 1, IF = 1
MUL BL	CX = 0001, = IP = 010C	CF = 1, IF = 1
MUL CX	IP = 010E	IF = 1
IMUL BH	IP = 0110	IF = 1
IMUL DX	IP = 0112	IF = 1
DIV BL	IP = 0114	IF = 1
DIV CX	IP = 0116	IF = 1
IDIV BL	IP = 0118	IF = 1
DIV CX	IP = 011A	IF = 1

Activity #31-2



CODE:

```
;31-2

org 100h

; ----------------------------
; Part (a): C = (B*D) + (A/B) - (A-B+E)
; ----------------------------
   mov al, 3        ; A = 3
   mov bl, 10       ; B = 10
   mov dl, 1        ; D = 1
   mov si, 2        ; E = 2

   ; Compute B*D
   mov ah, bl
   mul dl           ; AX = BL * DL
   mov cx, ax       ; store (B*D) in CX

   ; Compute (A/B)
   mov ax, 3
   div bl           ; AL = A/B
   mov dx, ax       ; store (A/B) in DX

   ; Compute (A-B+E)
   mov al, 3        ; A = 3
   mov bl, 10       ; B = 10
   sub al, bl       ; AL = A - B   (8-bit)
```

```
    add al, 2       ; + E (E=2)
    cbw             ; extend AL to AX (sign extend)
    mov di, ax      ; store (A-B+E) in DI


    ; Final: (B*D) + (A/B) - (A-B+E)
    mov ax, cx
    add ax, dx
    sub ax, di
    mov c, ax       ; result stored in C

; ----------------------------
; Part (b): X = (Y + Z*W) / 100
; ----------------------------
    mov ax, 200     ; Y = 200
    mov bx, 5       ; Z = 5
    mov cx, 20      ; W = 20

    ; Z*W
    mov dx, bx
    mul cx          ; AX = Z*W

    ; Y + (Z*W)
    add ax, 200

    ; divide by 100
    mov bx, 100
    div bx          ; AX = result

    mov x, ax       ; store X

; ----------------------------
; Exit program
; ----------------------------
    mov ah, 4ch
    int 21h

; ----------------------------
; Data segment
; ----------------------------
c dw ?
x dw ?
```