Technological University of the Philippines
Ayala Blvd, Ermita, Manila, 1000 Metro Manila

SCHOOL SUBJECT

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BSCS-NS-2A — November 21, 2022

Prelim Exam Assembly Language (Part 2b)

Instructions:

Make a program that will perform the following in the following sequence:

first: run the LED light to count from 1 to 8,

second: run the vertical traffic lights for 8 seconds,

third: run the horizontal traffic lights for 8 seconds,

fourth: turn on all red lights, and

fifth: run the LED light to count from 8 to 1

SOURCE CODE	OUTPUT

first: run the LED light to count from 1 to 8,
 	
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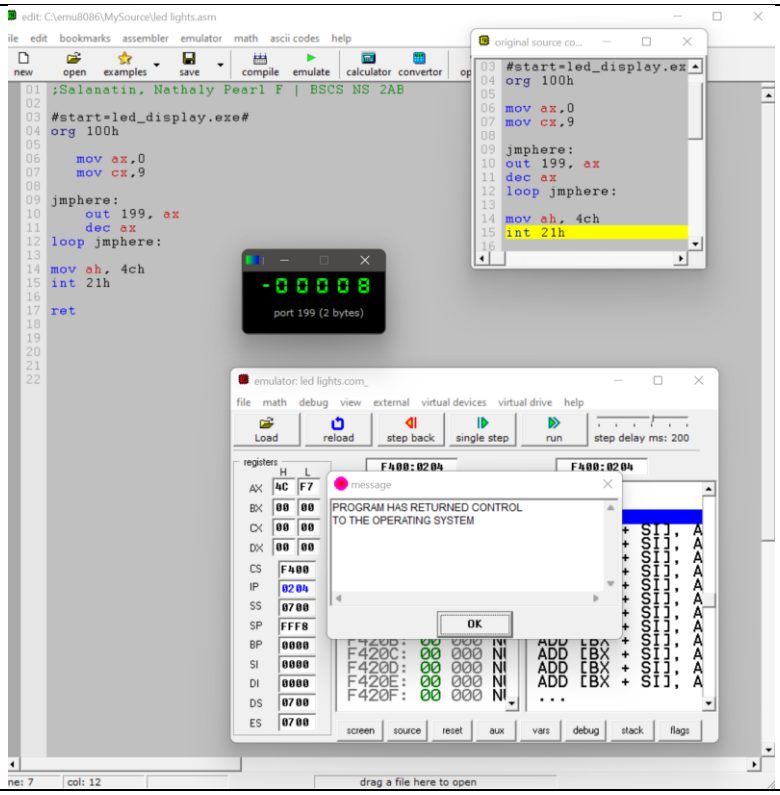
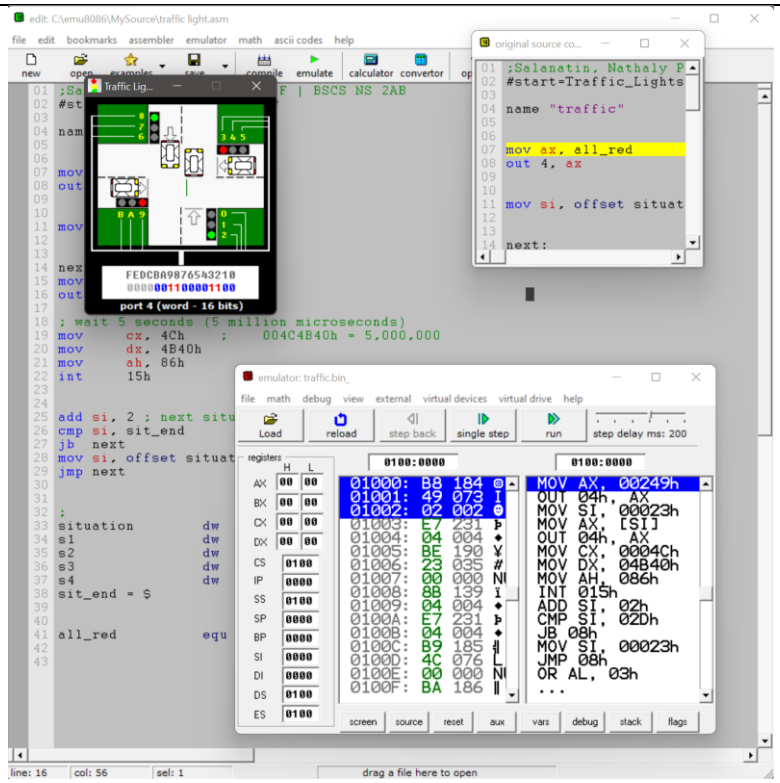
#start=led_display.exe#
org 100h
 	
mov ax,0
mov cx,9
 	
jmphere:
out 199, ax
dec ax
loop jmphere:
 	
mov ah, 4ch
int 21h
 	
ret
	

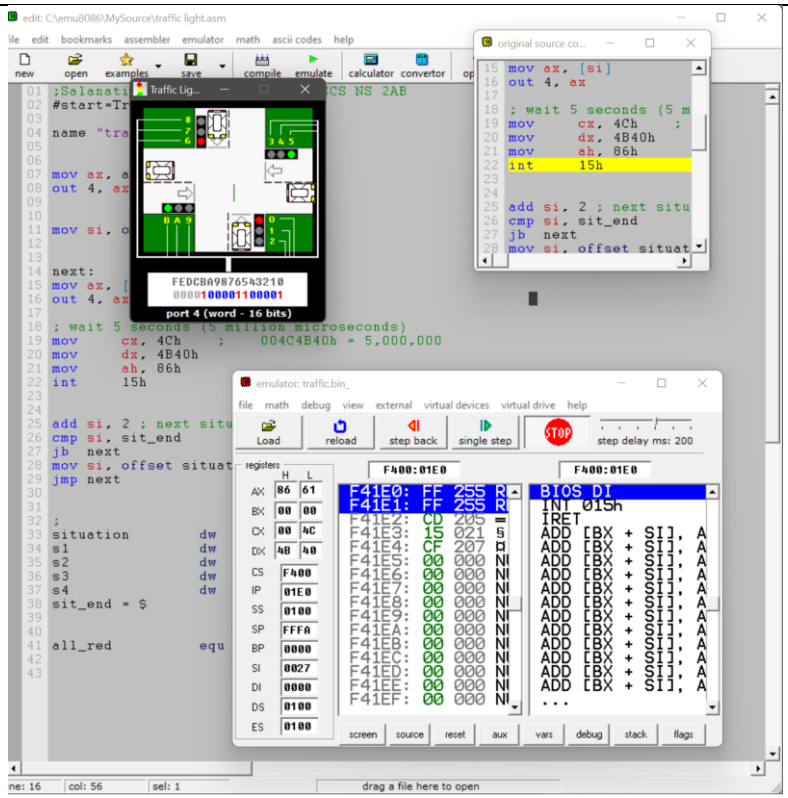
second: run the vertical traffic lights for 8 seconds,

```
;Salanatin, Nathaly Pearl F | BSCS NS 2AB
#start=Traffic_Lights.exe#

name "traffic"


mov ax, all_red
out 4, ax


mov si, offset situation


next:
mov ax, [si]
out 4, ax

; wait 5 seconds (5 million microseconds)
mov     cx, 4Ch    ;    004C4B40h = 5,000,000
mov     dx, 4B40h
mov     ah, 86h
int     15h


add si, 2 ; next situation
cmp si, sit_end
jb  next
mov si, offset situation
jmp next


;                   FEDC_BA98_7654_3210
situation       dw      0000_0011_0000_1100b
s1              dw      0000_0110_1001_1010b
s2              dw      0000_1000_0110_0001b
s3              dw      0000_1000_0110_0001b
s4              dw      0000_0100_1101_0011b
sit_end = $


all_red         equ     0000_0010_0100_1001b
```



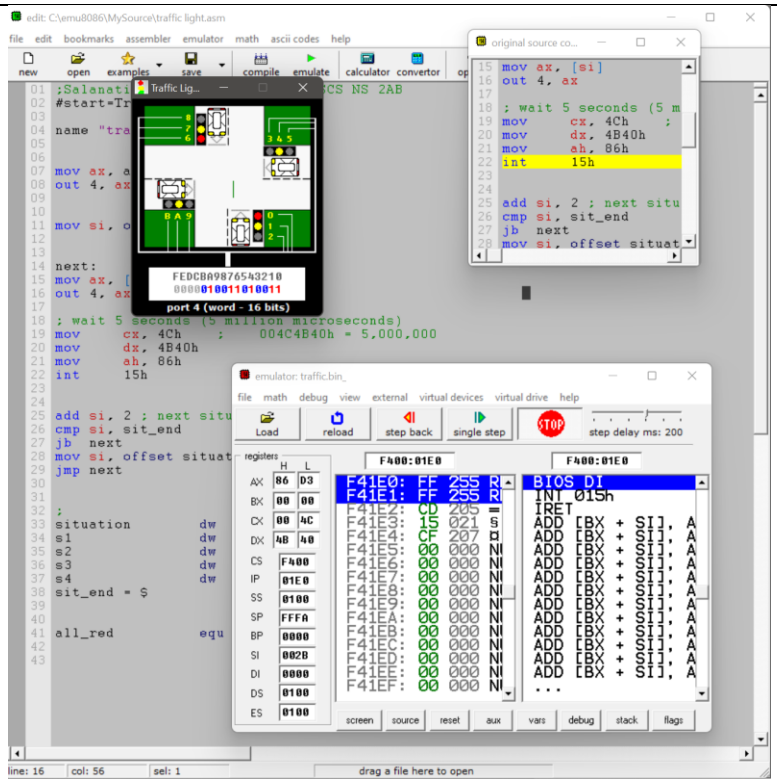
third: run the horizontal traffic lights for 8 seconds,

```
;Salanatin, Nathaly Pearl F | BSCS NS 2AB
#start=Traffic_Lights.exe#

name "traffic"


mov ax, all_red
out 4, ax


mov si, offset situation


next:
mov ax, [si]
out 4, ax

; wait 5 seconds (5 million microseconds)
mov     cx, 4Ch    ;    004C4B40h = 5,000,000
mov     dx, 4B40h
mov     ah, 86h
int     15h


add si, 2 ; next situation
cmp si, sit_end
jb  next
mov si, offset situation
jmp next


;                   FEDC_BA98_7654_3210
situation       dw      0000_0011_0000_1100b
s1              dw      0000_0110_1001_1010b
s2              dw      0000_1000_0110_0001b
s3              dw      0000_1000_0110_0001b
s4              dw      0000_0100_1101_0011b
sit_end = $


all_red         equ     0000_0010_0100_1001b
```



fourth: turn on all red lights, and

```
;Salanatin, Nathaly Pearl F | BSCS NS 2AB
#start=Traffic_Lights.exe#

name "traffic"


mov ax, all_red
out 4, ax


mov si, offset situation


next:
mov ax, [si]
out 4, ax

; wait 5 seconds (5 million microseconds)
mov     cx, 4Ch    ;    004C4B40h = 5,000,000
mov     dx, 4B40h
mov     ah, 86h
int     15h


add si, 2 ; next situation
cmp si, sit_end
jb  next
mov si, offset situation
jmp next


;                   FEDC_BA98_7654_3210
situation       dw      0000_0011_0000_1100b
s1              dw      0000_0110_1001_1010b
s2              dw      0000_1000_0110_0001b
s3              dw      0000_1000_0110_0001b
s4              dw      0000_0100_1101_0011b
sit_end = $


all_red         equ     0000_0010_0100_1001b
```



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fifth: run the LED light to count from 8 to 1

```
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2AB

#start=led_display.exe#
org 100h

   mov ax,6
   mov cx,8

jmphere:
    out 199, ax
    dec ax
loop jmphere:

mov ah, 4ch
int 21h

ret
```