NATIONAL UNIVERSITY
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Coal

LAB TASK 3

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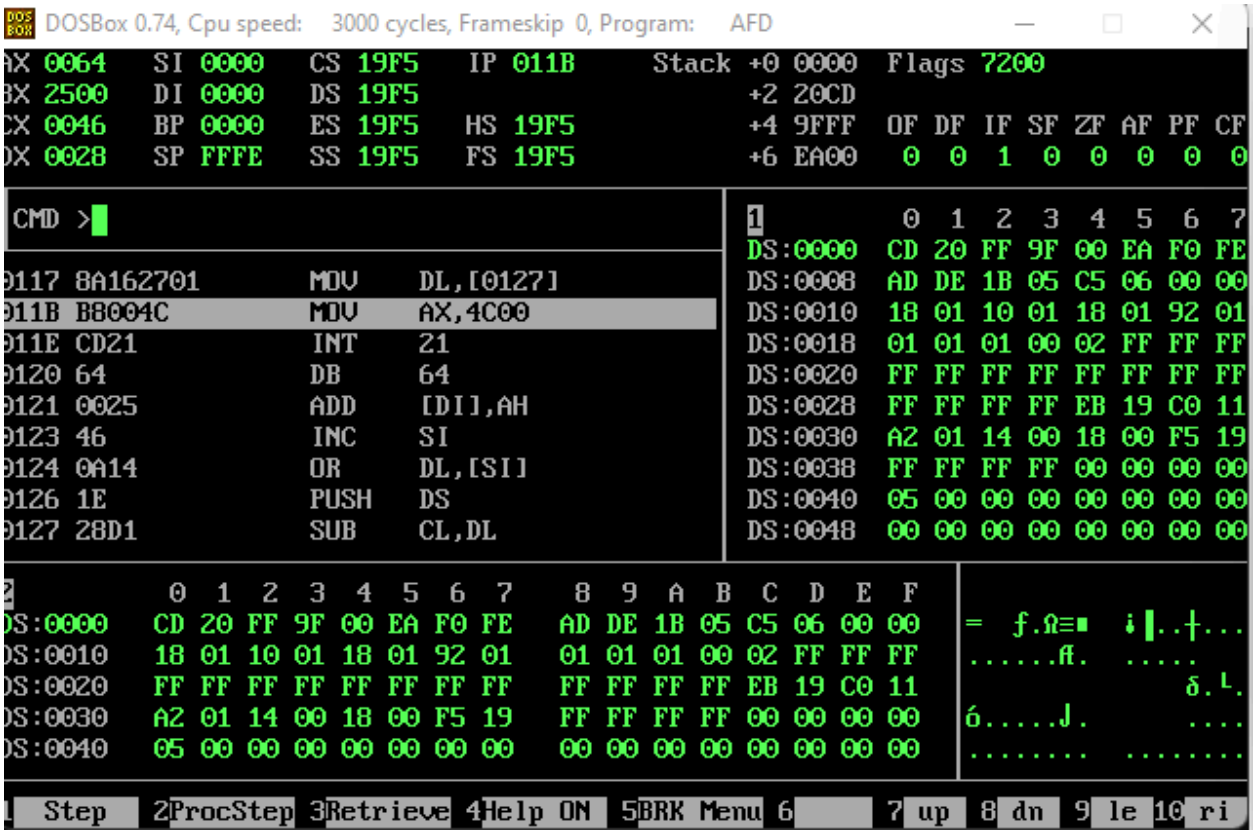
Question 1

```
[org 0x0100]

mov al, [score]
mov bx, [population]
mov cl, [initial]
mov dl, [numbers]
mov dl, [numbers+1]
mov dl, [numbers+2]
mov dl, [numbers+3]

mov ax, 0x4c00
int 0x21

score: db 100
population: dw 2500h
initial: db 'F'
numbers: db 10,20,30,40
```

A byte variable **`score`** is initialized to 100 and loaded into AL (8-bit register).
A word variable **`population`** is set to 2500h (or 9472 decimal) and stored in BX (16-bit register).
A byte variable **`initial`** is assigned the character 'F' (ASCII 0x46) and moved into CL.
A 4-byte array **`numbers`** is defined with values 10, 20, 30, 40, each sequentially loaded into DL.

Variable	Type	Size	Value Stored	Memory Rep
Score	Byte	1	100(Decimal)	64h
population	Word	2	2500h(hex)	00h,25h,(little endian)
Initial	Byte	1	‘F’ (ASCII =70d)	46h
Numbers	Byte	4	10,20,30,40	0Ah, 14h,1EH,28h

ScreenShot of DOS



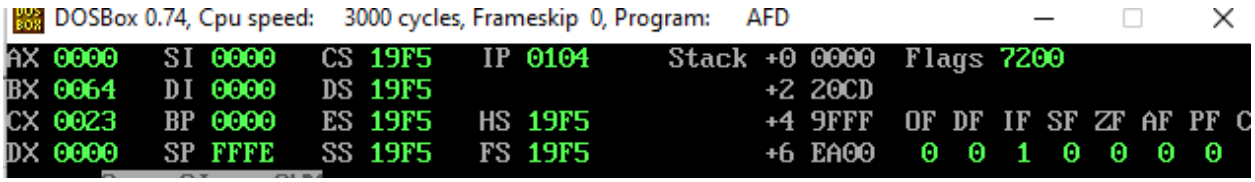
Question 2

Q1.asm × Q2.asm Q3.asm Q4.asm

Q1.asm

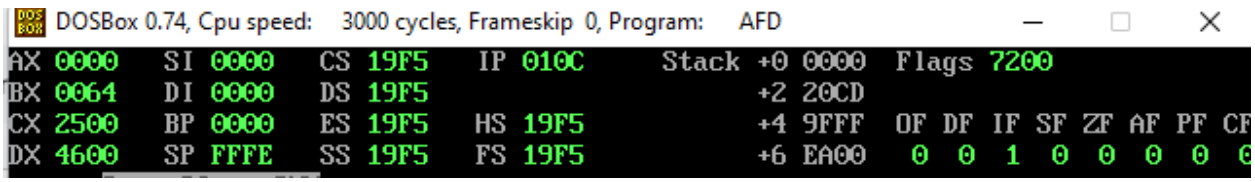
```
1   [org 0x0100]
2
3   mov bl, [score]
4   mov cx, [population]
5   mov dh, [initial]
6   mov [population], ax
7   mov [score], cl
8
9   mov ax, 0x4c00
10  int 0x21
11
12  score:       db  100        ; 1 byte (decimal 100)
13  population:  dw  02500h     ; 2 bytes (hexadecimal 2500h)
14  initial:     db  'F'        ; 1 byte (ASCII for 'F' = 46h)
15  numbers:     db  10 20 30 40 ; 4 bytes (array of 4 elements)
16
```

1→ Copy the value of score into the BL register.

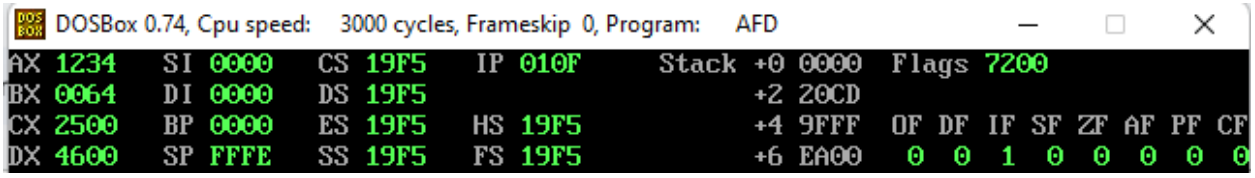


2→ Copy the value of population into the CX register.

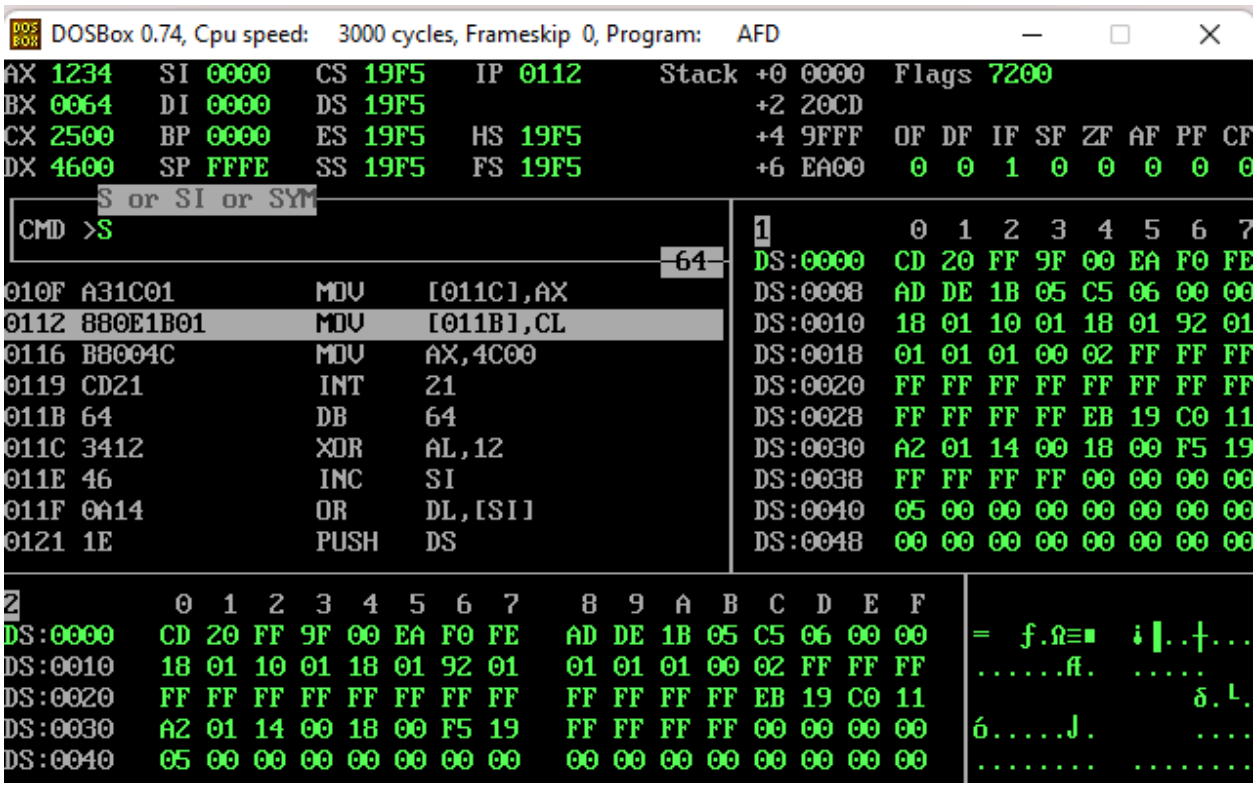
3→Copy the value of the initial into the DH register



4 → Copy the value from the AX register into the population variable.



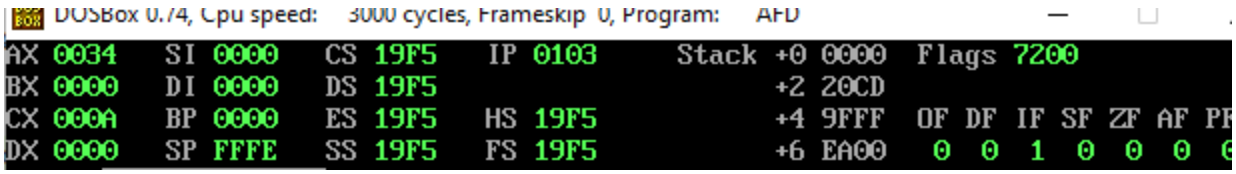
5→ Copy the value from the CL register into the score variable.



Question 3

```
1   [org 0x0100]
2
3   start:
4       mov al, [num]
5
6       mov ax, 0x4C00
7       int 0x21
8
9   ; --- Data Section ---
10  num: dw 1234h
11
```

We are trying to put the 16 bits data into 8 bits as al hav 8 bits size while dw has 16 bits size so this is a size mis match error

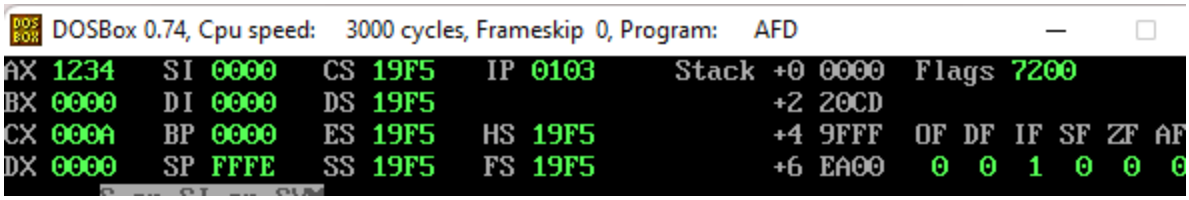


Half of value has copied to register but full value is not there as shown

Corrected code

```
1   [org 0x0100]
2
3   start:
4       mov ax, [num]
5
6
7       mov ax, 0x4C00
8       int 0x21
9
10
11  num: dw 1234h
12
```

It will not give us logical errors because sizes of both are compatible with each other.



The whole value has been copied to register Ax

Question 4

```
1    mov [var1], 99h    ; mov ax, 0099h
2
3   mov ax, [var2]             ;       [correct code] mov al, [var2]  load single byte into AL
4   mov bl, var1               ;  [correct code] mov bx ,[var1]  load the 1 byte into the bl
5
6
7   var1 dw 1234h
8   var2 db 12h
```

In the first line we have added the 8 bits to al while the error was that we were assigning the 1 byte data to 2 byte which was causing mismatch error

In the second line the error was also the mismatch we were assigning the the 16 bits data to 8 bits of register which we have fixed and save the data 16 bits