NATIONAL UNIVERSITY
of Computer & Emerging Sciences

Coal

LAB TASK 6

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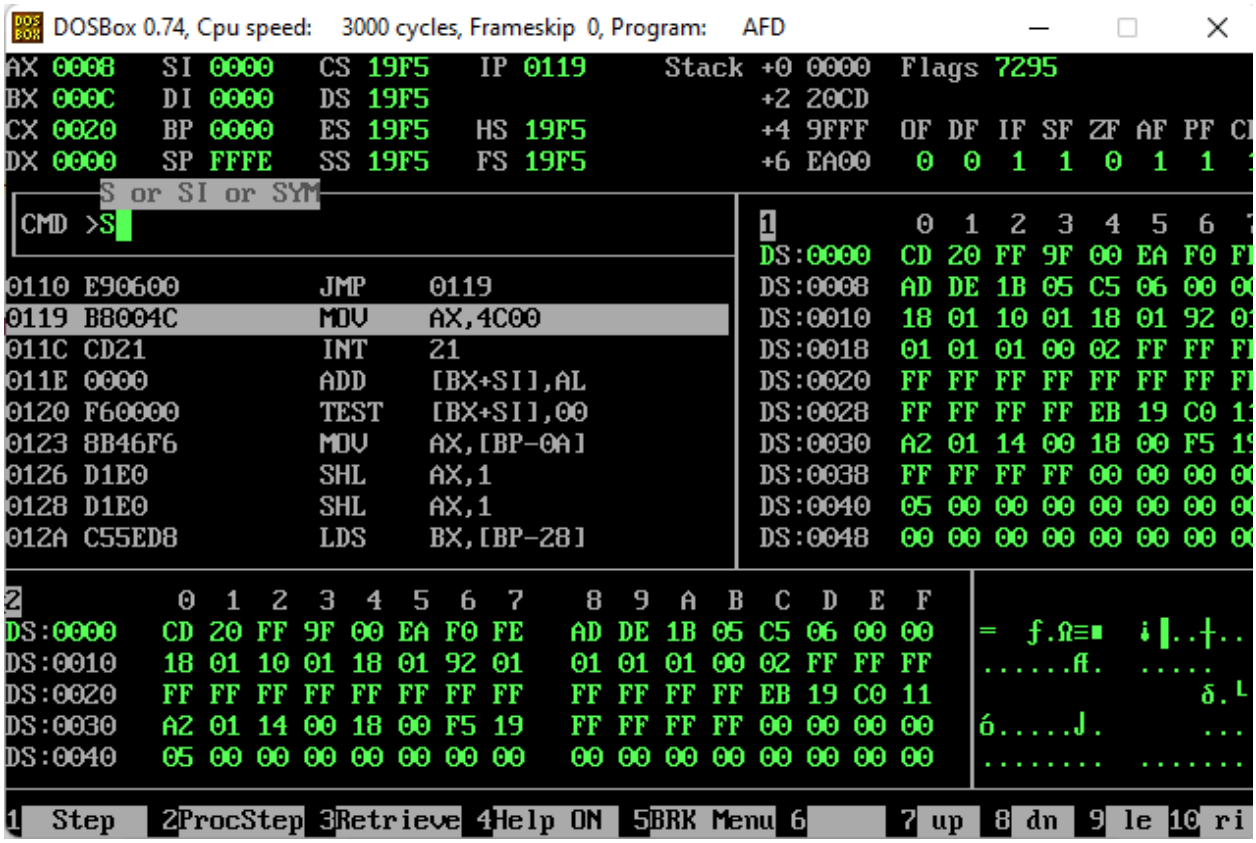
Question 1

Code

```
[org 0x0100]

    mov ax, 8      ; Put first number in AX
    mov bx, 12     ; Put second number in BX

    cmp ax, bx     ; Check if both numbers are the same

    je matches     ; Jump if both values match

    mov word [num], 0 ; Values don't match - save 0
    jmp done       ; Skip to the end

matches:
    mov word [num], 1 ; Values match - save 1

done:
    mov ax, 0x4c00
    int 0x21

num: dw 0
```

output

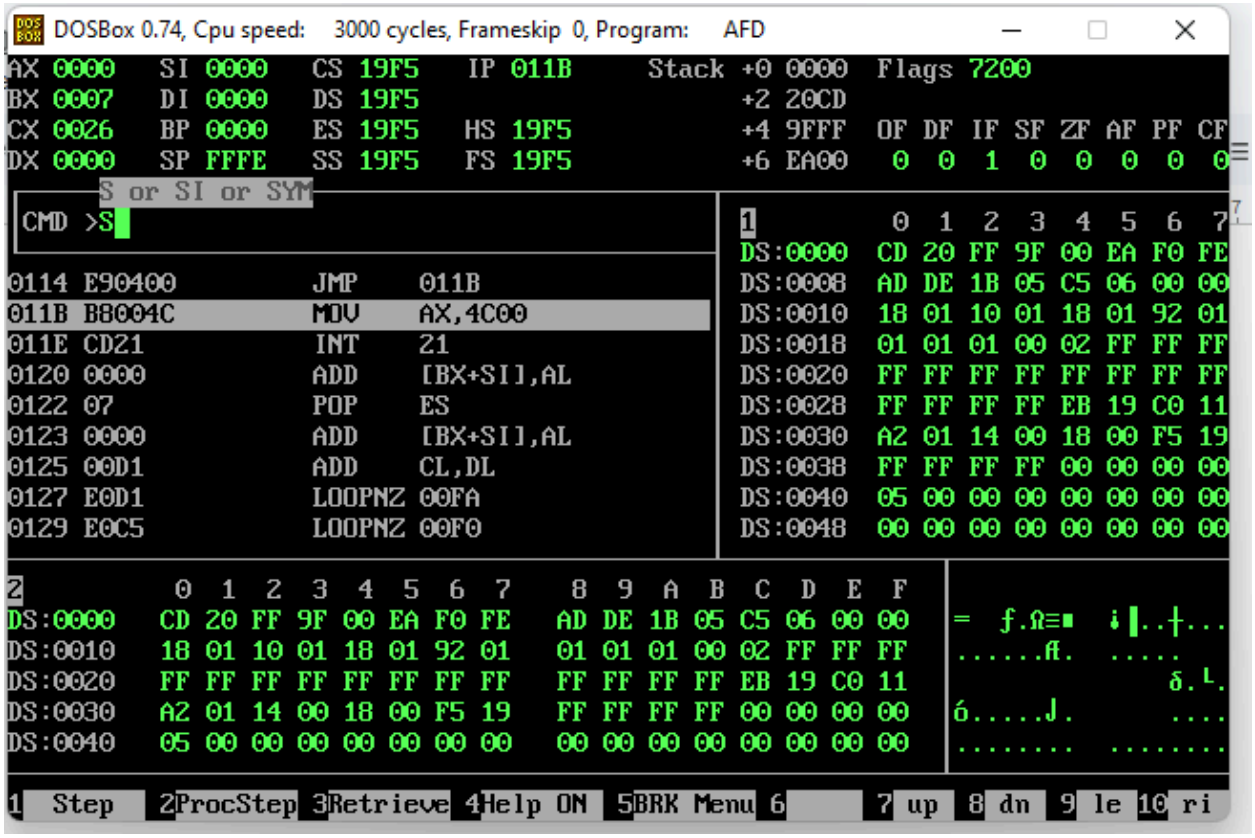


Question 2

Code

```
[org 0x0100]

    mov bx, 7     ; Put test value in BX

    test bx, bx   ; Check value by ANDing with itself
    ; Sets zero flag if BX = 0
    ; Sets sign flag based on bit 15

    jz is_zero    ; Jump if value equals zero
    jns is_positive ; Jump if value is non-negative (positive)

    mov word [neg_result], bx ; Store negative value
    jmp complete

is_positive:
    mov word [pos_result], bx ; Store positive value
    jmp complete

is_zero:
    mov word [zero_result], bx ; Store zero value

complete:
    mov ax, 0x4c00
    int 0x21

zero_result: dw 0    ; Memory for zero case
pos_result: dw 0     ; Memory for positive case
neg_result: dw 0     ; Memory for negative case
```

Output

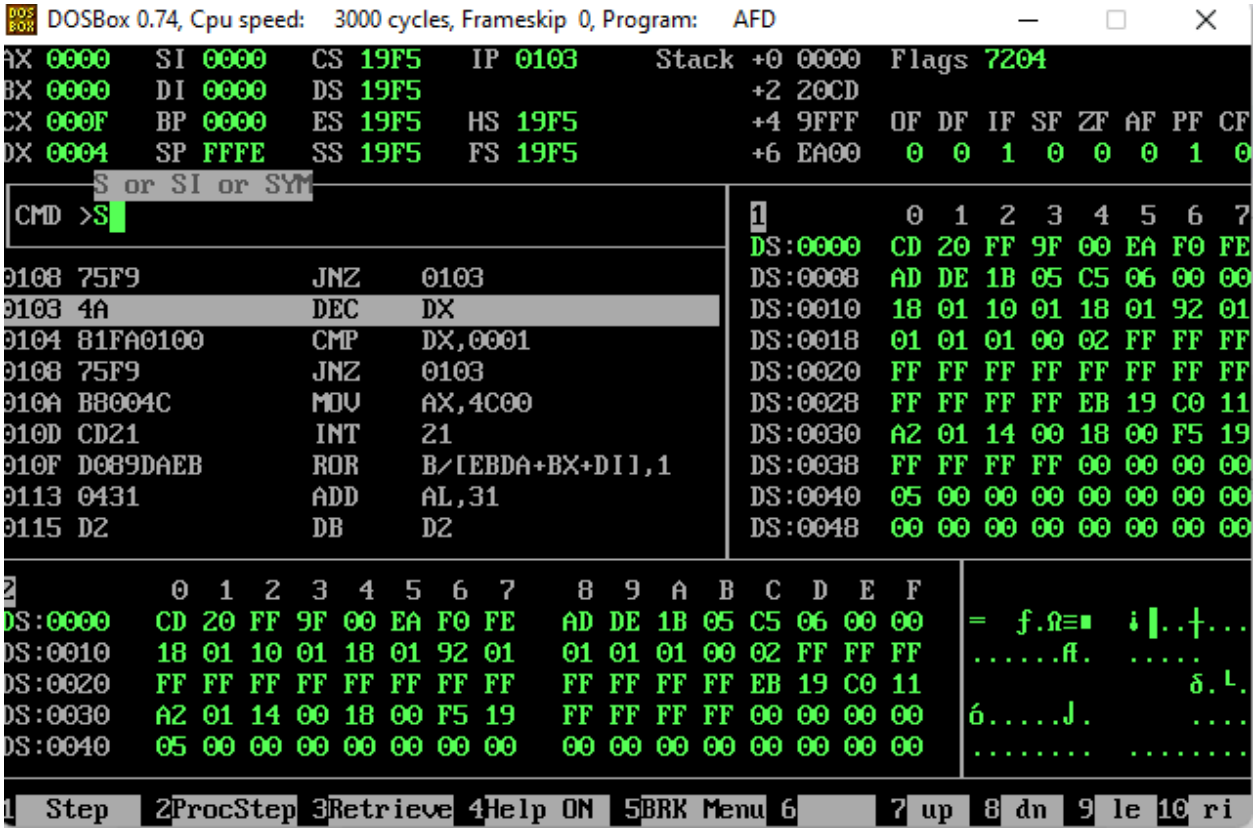


Question 3

Code

```
org 0x0100

    mov dx, 5    ; Initialize counter with starting value 5

countdown:
    dec dx       ; Reduce counter by 1
    cmp dx, 1    ; Check if counter reached 1
    jnz countdown ; Continue looping if not yet at 1

    mov ax, 0x4c00
    int 0x21
```

Output


DOSBox 0.74, Cpu speed: 3000 cycles, Frameskip 0, Program: AFD
AX 0000 SI 0000 CS 19F5 IP 0103 Stack +0 0000 Flags 7204
BX 0000 DI 0000 DS 19F5 +2 20CD
CX 000F BP 0000 ES 19F5 HS 19F5 +4 9FFF OF DF IF SF ZF AF PF CF
DX 0004 SP FFFE SS 19F5 FS 19F5 +6 EA00 0 0 1 0 0 0 1 0
S or SI or SYM
CMD >S
0108 75F9 JNZ 0103
0103 4A DEC DX
0104 81FA0100 CMP DX,0001
0108 75F9 JNZ 0103
010A B8004C MOV AX,4C00
010D CD21 INT 21
010F D089DAEB ROR B/[EBDA+BX+DI],1
0113 0431 ADD AL,31
0115 D2 DB D2
1 0 1 2 3 4 5 6 7
DS:0000 CD 20 FF 9F 00 EA F0 FE
DS:0008 AD DE 1B 05 C5 06 00 00
DS:0010 18 01 10 01 18 01 92 01
DS:0018 01 01 01 00 02 FF FF FF
DS:0020 FF FF FF FF FF FF FF FF
DS:0028 FF FF FF FF EB 19 C0 11
DS:0030 A2 01 14 00 18 00 F5 19
DS:0038 FF FF FF FF 00 00 00 00
DS:0040 05 00 00 00 00 00 00 00
DS:0048 00 00 00 00 00 00 00 00
2 0 1 2 3 4 5 6 7 8 9 A B C D E F
DS:0000 CD 20 FF 9F 00 EA F0 FE AD DE 1B 05 C5 06 00 00
DS:0010 18 01 10 01 18 01 92 01 01 01 01 00 02 FF FF FF
DS:0020 FF FF FF FF FF FF FF FF FF FF FF FF EB 19 C0 11
DS:0030 A2 01 14 00 18 00 F5 19 FF FF FF FF 00 00 00 00
DS:0040 05 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
1 Step 2ProcStep 3Retrieve 4Help ON 5BRK Menu 6 7 up 8 dn 9 le 10 ri