COAL

LAB04

23K2001

BCS-3J

Finding Errors

MOV AX 3d

Syntax error: Must use , after destination & before source. E.g: MOV AX,3d

MOV 23, AX

Cannot move reg value to an immediate value. Should have been MOV AX,23

MOV CX, CH

MOV operator only works for the same size of both source & destination

MOVE AX, 1h

Syntax error: MOV is the operand to be used not 'MOVE'

ADD 2, CX

Cannot add reg value to an immediate value. Should have been ADD CX,2

ADD 3, 6

Cannot add immediate values to each other. Should use a reg to MOV one, then add

INC AX, 2

INC operator increments the operand by only one, so forcing '2' is a syntax error. More than 1 increment can be achieved by ADD AX,2

Q2:

```
TITLE My Fourth Lab Tasks (Lab04.asm)
INCLUDE Irvine32.inc

.code
main PROC
mov eax, 0
mov ebx, 0
mov ecx, 0
mov edx,0

mov eax, 778590d ; M-77 U-85 Z-90
call DumpRegs

exit
main ENDP
END main
```
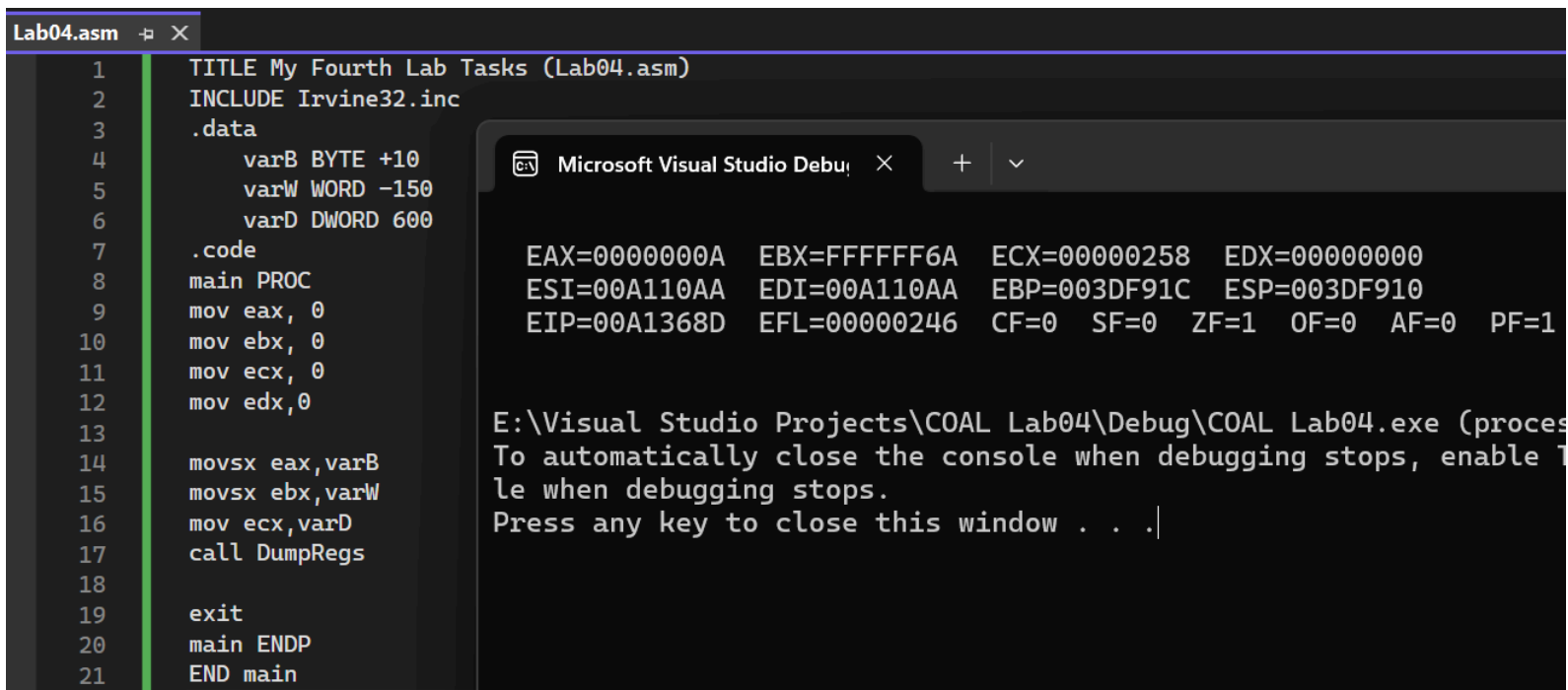
Q3:

```
TITLE My Fourth Lab Tasks (Lab04.asm)
INCLUDE Irvine32.inc
.data
        varB BYTE +10
        varW WORD -150
        varD DWORD 600
.code
main PROC
mov eax, 0
mov ebx, 0
mov ecx, 0
mov edx,0

movsx eax,varB
movsx ebx,varW
mov ecx,varD
call DumpRegs

exit
main ENDP
END main
```

Lab04.asm

```
1    TITLE My Fourth Lab Tasks (Lab04.asm)
2    INCLUDE Irvine32.inc
3    .data
4        varB BYTE +10
5        varW WORD -150
6        varD DWORD 600
7    .code
8    main PROC
9    mov eax, 0
10   mov ebx, 0
11   mov ecx, 0
12   mov edx,0
13
14   movsx eax,varB
15   movsx ebx,varW
16   mov ecx,varD
17   call DumpRegs
18
19   exit
20   main ENDP
21   END main
```

Microsoft Visual Studio Debug

```
EAX=0000000A  EBX=FFFFFF6A  ECX=00000258  EDX=00000000
ESI=00A110AA  EDI=00A110AA  EBP=003DF91C  ESP=003DF910
EIP=00A1368D  EFL=00000246  CF=0  SF=0  ZF=1  OF=0  AF=0  PF=1

E:\Visual Studio Projects\COAL Lab04\Debug\COAL Lab04.exe (proces
To automatically close the console when debugging stops, enable
le when debugging stops.
Press any key to close this window . . .|
```
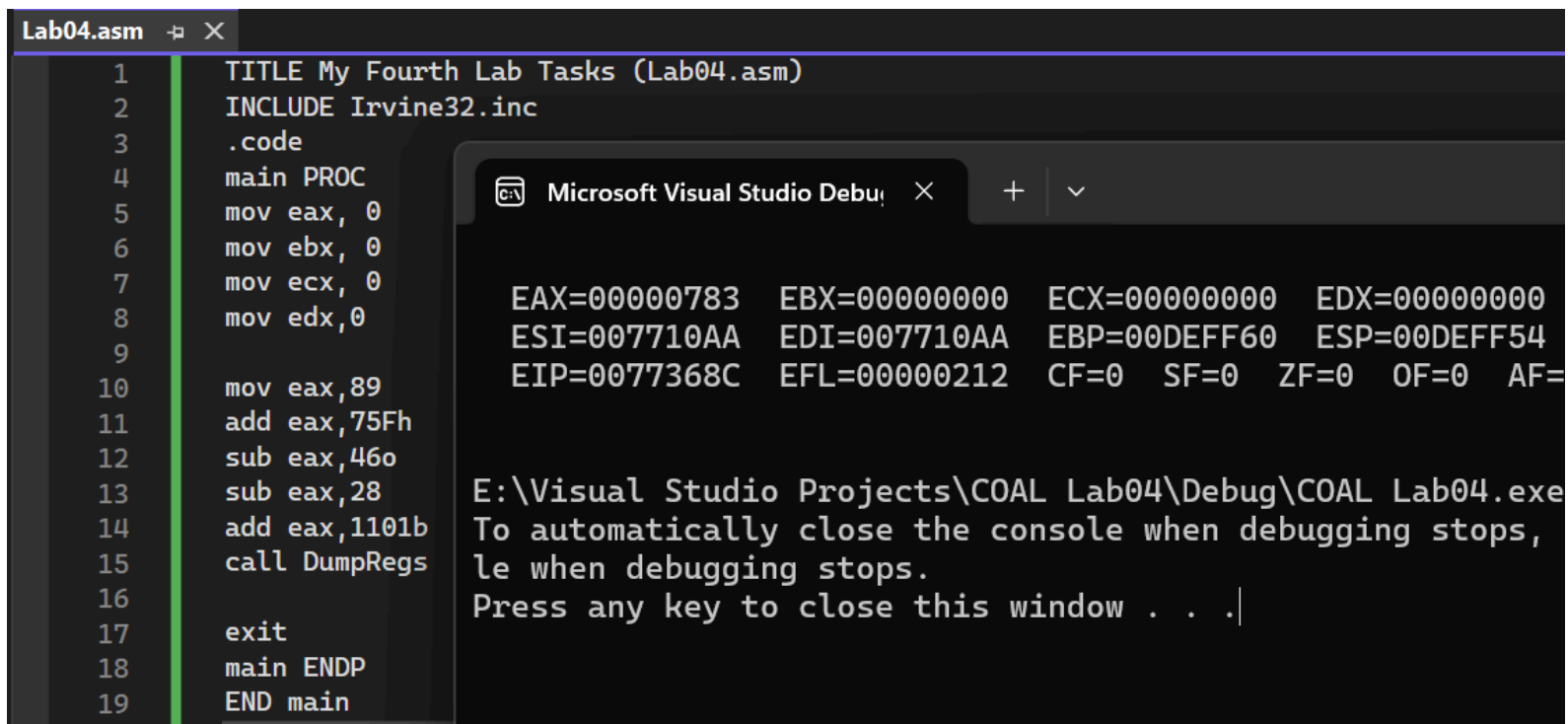
<mark>Q4:</mark>

Part I:

```
TITLE My Fourth Lab Tasks (Lab04.asm)
INCLUDE Irvine32.inc
.code
main PROC
mov eax, 0
mov ebx, 0
mov ecx, 0
mov edx,0

mov eax,89
add eax,75Fh
sub eax,46o
sub eax,28
add eax,1101b
call DumpRegs

exit
main ENDP
END main
```

Part II:

```
TITLE My Fourth Lab Tasks (Lab04.asm)
INCLUDE Irvine32.inc
.data
        val1 DWORD 25h
        val2 BYTE 36o
        val3 WORD 20d
.code
main PROC
mov eax, 0
mov ebx, 0
mov ecx, 0
mov edx,0

mov eax,val1
movzx ebx,val2
add eax,ebx
sub eax,654h
movzx ebx,val3
add eax,ebx
call DumpRegs

exit
main ENDP
END main
```

Q5:

```
TITLE My Fourth Lab Tasks (Lab04.asm)
INCLUDE Irvine32.inc
.data
        secondsInDay = 24*60*60
.code
main PROC
mov eax, 0
mov ebx, 0
mov ecx, 0
mov edx,0

mov eax,secondsInDay
call DumpRegs

exit
main ENDP
END main
```



```
Lab04.asm
1    TITLE My Fourth Lab Tasks (Lab04.asm)
2    INCLUDE Irvine32.inc
3    .data
4        secondsInDay = 24*60*60
5    .code
6    main PROC
7    mov eax, 0
8    mov ebx, 0
9    mov ecx, 0
10   mov edx,0
11
12   mov eax,secondsInDay
13   call DumpRegs
14
15   exit
16   main ENDP
17   END main
18
19
```

Microsoft Visual Studio Debug

```
EAX=00015180  EBX=00000000  ECX=00000000  EDX=00000000
ESI=00E610AA  EDI=00E610AA  EBP=004FF900  ESP=004FF8F4
EIP=00E6367E  EFL=00000246  CF=0  SF=0  ZF=1  OF=0  AF=0  PF=1


E:\Visual Studio Projects\COAL Lab04\Debug\COAL Lab04.exe (process
To automatically close the console when debugging stops, enable Too
le when debugging stops.
Press any key to close this window . . .
```

Q6:

```
TITLE My Fourth Lab Tasks (Lab04.asm)
INCLUDE Irvine32.inc
.data
        A DWORD 0FF10h
        B DWORD 0E10Bh
.code
main PROC
mov eax, 0
mov ebx, 0
mov ecx, 0
mov edx,0

mov eax,A
mov ebx,B
xchg eax,ebx
mov A,eax
mov B,ebx
call DumpRegs

exit
main ENDP
END main
```

```
Lab04.asm
 1    TITLE My Fourth Lab Tasks (Lab04.asm)
 2    INCLUDE Irvine32.inc
 3    .data
 4        A DWORD 0FF10h
 5        B DWORD 0E10Bh
 6    .code
 7    main PROC
 8    mov eax, 0
 9    mov ebx, 0
10    mov ecx, 0
11    mov edx,0
12
13    mov eax,A
14    mov ebx,B
15    xchg eax,ebx
16    mov A,eax
17    mov B,ebx
18    call DumpRegs
19
20    exit
21    main ENDP
22    END main
```

```
Microsoft Visual Studio Debug    X    +    ∨

  EAX=0000E10B  EBX=0000FF10  ECX=00000000  EDX=00000000
  ESI=004410AA  EDI=004410AA  EBP=00EFFED8  ESP=00EFFECC
  EIP=00443690  EFL=00000246  CF=0  SF=0  ZF=1  OF=0  AF=0  PF=1

E:\Visual Studio Projects\COAL Lab04\Debug\COAL Lab04.exe (process
To automatically close the console when debugging stops, enable To
le when debugging stops.
Press any key to close this window . . .
```

Q7:

```asm
TITLE My Fourth Lab Tasks (Lab04.asm)
INCLUDE Irvine32.inc
.data
        val1 BYTE 10h
        val2 WORD 8000h
        val3 DWORD 0FFFFh
        val4 WORD 7FFFh
.code
main PROC
mov eax, 0
mov ebx, 0
mov ecx, 0
mov edx,0

INC val2
mov ax,val2

sub ebx,val3

mov cx,val2
sub cx,val4
call DumpRegs
exit
main ENDP
END main
```

Lab04.asm ⊣ X

```
1       TITLE My Fourth Lab Tasks (Lab04.asm)
2       INCLUDE Irvine32.inc
3       .data
4           val1 BYTE 10h
5           val2 WORD 8000h
6           val3 DWORD 0FFFFh
7           val4 WORD 7FFFh
8       .code
9       main PROC
10      mov eax, 0
11      mov ebx, 0
12      mov ecx, 0
13      mov edx,0
14
15      INC val2
16      mov ax,val2
17
18      sub ebx,val3
19
20      mov cx,val2
21      sub cx,val4
22      call DumpRegs
23      exit
24      main ENDP
25      END main
```

Microsoft Visual Studio Debug X   + ∨

```
EAX=00008001  EBX=FFFF0001  ECX=00000002  EDX=00000000
ESI=00DC10AA  EDI=00DC10AA  EBP=0093FEA8  ESP=0093FE9C
EIP=00DC369A  EFL=00000A12  CF=0  SF=0  ZF=0  OF=1  AF=1  PF=0


E:\Visual Studio Projects\COAL Lab04\Debug\COAL Lab04.exe (proces
To automatically close the console when debugging stops, enable T
le when debugging stops.
Press any key to close this window . . .
```