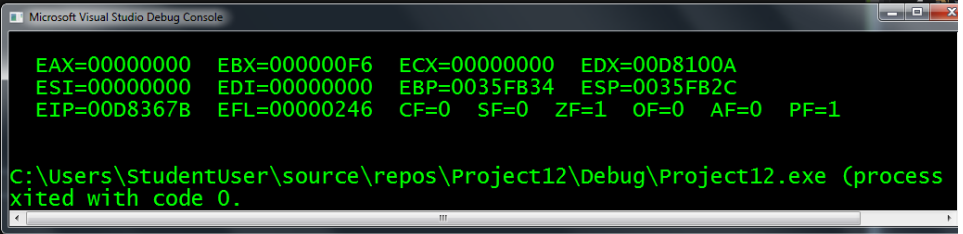


COAL Lab 03

Name: Sufiyaan Usmani
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Section: BCS-3J
Instructor: Sir Kashan Hussain

Task 1:

```
1 ; Sufiyaan Usmani
2 ; 21K-3195
3 ; BCS-3J
4 ; Task 1
5
6 INCLUDE Irvine32.inc
7
8 .data
9     val1 WORD ?
10    val2 SBYTE -10
11
12 .code
13 main PROC
14     mov eax, 0
15     mov ebx, 0
16     mov ax, val1
17     mov bl, val2
18
19     call DumpRegs
20     exit
21 main ENDP
22 END main
```



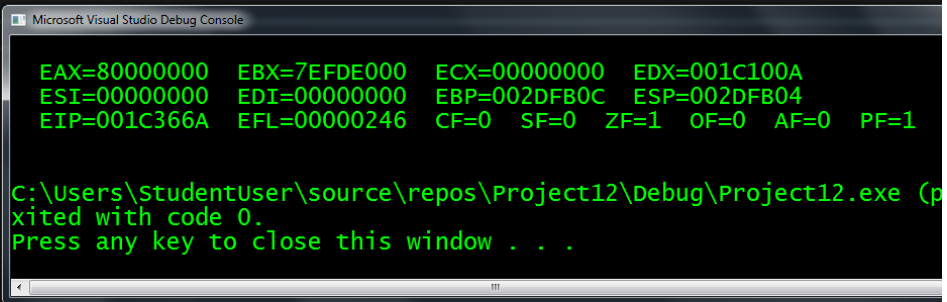
Microsoft Visual Studio Debug Console

```
EAX=00000000 EBX=000000F6 ECX=00000000 EDX=00D8100A
ESI=00000000 EDI=00000000 EBP=0035FB34 ESP=0035FB2C
EIP=00D8367B EFL=00000246 CF=0 SF=0 ZF=1 OF=0 AF=0 PF=1

C:\Users\StudentUser\source\repos\Project12\Debug\Project12.exe (process
xited with code 0.
```

Task 2:

```
1 ; Sufiyaan Usmani
2 ; 21K-3195
3 ; BCS-3J
4 ; Task 2
5
6 INCLUDE Irvine32.inc
7
8 .data
9     val3 SDWORD -2147483648
10
11 .code
12 main PROC
13     mov eax, val3
14
15     call DumpRegs
16     exit
17 main ENDP
18 END main
```



Microsoft Visual Studio Debug Console

```
EAX=80000000 EBX=7EFDE000 ECX=00000000 EDX=001C100A
ESI=00000000 EDI=00000000 EBP=002DFB0C ESP=002DFB04
EIP=001C366A EFL=00000246 CF=0 SF=0 ZF=1 OF=0 AF=0 PF=1

C:\Users\StudentUser\source\repos\Project12\Debug\Project12.exe (p
xited with code 0.
Press any key to close this window . . .
```

Task 3:

```
1 ; Sufiyaan Usmani
2 ; 21K-3195
3 ; BCS-3J
4 ; Task 3
5
6 INCLUDE Irvine32.inc
7
8 .data
9     arr WORD 1, 2, 3
10
11 .code
12     main PROC
13
14         call DumpRegs
15         exit
16     main ENDP
17     END main
```

Microsoft Visual Studio Debug Console

```
EAX=00EFA8C EBX=00DC6000 ECX=003710AA EDX=003710AA
ESI=003710AA EDI=003710AA EBP=00EFA40 ESP=00EFA34
EIP=00373665 EFL=00000246 CF=0 SF=0 ZF=1 OF=0 AF=0 PF=1
C:\Users\Sufyan\source\repos\COAL-Lab\Debug\COAL-Lab.exe (process
```

Task 4:

```
1 ; Sufiyaan Usmani
2 ; 21K-3195
3 ; BCS-3J
4 ; Task 4
5
6 INCLUDE Irvine32.inc
7
8 .data
9     color BYTE "black",0
10     varA WORD 12
11     varB WORD 2
12     varC WORD 13
13     varD WORD 8
14     varE WORD 14
15 .code
16     main PROC
17
18         call DumpRegs
19         exit
20     main ENDP
21     END main
```

Microsoft Visual Studio Debug Console

```
EAX=009FF8EC EBX=00AC4000 ECX=008910AA EDX=008910AA
ESI=008910AA EDI=008910AA EBP=009FF8A0 ESP=009FF894
EIP=00893665 EFL=00000246 CF=0 SF=0 ZF=1 OF=0 AF=0 PF=1
C:\Users\Sufyan\source\repos\COAL-Lab\Debug\COAL-Lab.exe (process
```

Task 5:

```
1 ; Sufiyaan Usmani
2 ; 21K-3195
3 ; BCS-3J
4 ; Task 5
5
6 INCLUDE Irvine32.inc
7
8 .data
9     varA BYTE 10h
10    varB BYTE 15h
11    varC BYTE 20h
12    varD BYTE 30h
13
14 .code
15     main PROC
16         mov eax, 0
17         mov edx, 0
18         mov al, varA
19         mov ah, varB
20         add al, ah
21         mov dl, al
22         mov al, varA
23         sub al, ah
24         sub dl, al
25         add dl, varC
26         add dl, varD
27
28         call DumpRegs
29         exit
30     main ENDP
31     END main
```

Microsoft Visual Studio Debug Console

```
EAX=000015FB  EBX=7EFDE000  ECX=00000000  EDX=0000007A
ESI=00000000  EDI=00000000  EBP=0036FC98  ESP=0036FC90
EIP=00EB3693  EFL=00000202  CF=0  SF=0  ZF=0  OF=0  AF=0  PF=0

C:\Users\StudentUser\source\repos\Project12\Debug\Project12.exe (process 8304)
Exited with code 0.
Press any key to close this window . . .
```

Task 6:

```
1 ; Sufiyaan Usmani
2 ; 21K-3195
3 ; BCS-3J
4 ; Task 6
5
6 INCLUDE Irvine32.inc
7
8 .data
9     varA BYTE 00010000b
10    varB BYTE 00010101b
11    varC BYTE 00100000b
12    varD BYTE 00110000b
13
14 .code
15     main PROC
16         mov eax, 0
17         mov edx, 0
18         mov al, varA
19         mov ah, varB
20         add al, ah
21         mov dl, al
22         mov al, varA
23         sub al, ah
24         sub dl, al
25         add dl, varC
26         add dl, varD
27         call WriteDec
28         call DumpRegs
29         exit
30     main ENDP
31     END main
```

Microsoft Visual Studio Debug Console

```
5627
EAX=000015FB  EBX=00818000  ECX=00B610AA  EDX=0000007A
ESI=00B610AA  EDI=00B610AA  EBP=0079FC1C  ESP=0079FC10
EIP=00B63698  EFL=00000202  CF=0  SF=0  ZF=0  OF=0  AF=0  PF=0

C:\Users\Sufyan\source\repos\COAL-Lab\Debug\COAL-Lab.exe (process 8304)
```

Task 7:

```
1 ; Sufiyaan Usmani
2 ; 21K-3195
3 ; BCS-3J
4 ; Task 7
5
6 INCLUDE Irvine32.inc
7
8 .data
9     imm8 EQU 20
10    ; We can also use: imm8 = 20
11    Data1 WORD 8
12    Data2 WORD 15
13    Data3 WORD 20
14
15 .code
16     main PROC
17         mov eax, 0
18         mov al, imm8
19         add ax, Data1
20         sub ax, Data3
21         add al, imm8
22         add ax, Data2
23         call DumpRegs
24         exit
25     main ENDP
26     END main
```

Select Microsoft Visual Studio Debug Console

```
EAX=0000002B  EBX=00A62000  ECX=008D10AA  EDX=008D10AA
ESI=008D10AA  EDI=008D10AA  EBP=009DF7FC  ESP=009DF7F0
EIP=008D3683  EFL=00000216  CF=0   SF=0   ZF=0   OF=0   AF=1   PF=1
```

C:\Users\Sufyan\source\repos\COAL-Lab\Debug\COAL-Lab.exe (process