COAL

LAB02

23K2001

BCS-3J

Q1:

Part 1:

```
Lab02Q1.asm
1   TITLE My Second Lab Tasks (Lab02.asm)
2   INCLUDE Irvine32.inc
3   .code
4   main PROC
5   mov eax, 0
6   mov ebx, 0
7   mov ecx, 0
8   mov edx,0
9
10  mov eax, 47
11  mov ebx, 39
12  mov ecx, 60
13  add eax, ebx
14  add eax, ecx
15  mov ebx, 85
16  mov ecx, 64
17  add eax, ebx
18  add eax, ecx
19  add eax, 54o
20  sub eax, 0Ah
21  call DumpRegs
22  exit
23  main ENDP
24  END main
```

```
Microsoft Visual Studio Debug Console

  EAX=00000149  EBX=00000055  ECX=00000040  EDX=00000000
  ESI=008210AA  EDI=008210AA  EBP=012FFC5C  ESP=012FFC50
  EIP=008236A0  EFL=00000212  CF=0  SF=0  ZF=0  OF=0  AF=1  PF=0


C:\Users\k232001\source\repos\Lab02\Debug\Lab02.exe (process 8052) exited with code 0.
Press any key to close this window . . .
```

Part 2:

```
Lab02Q1.asm
1   TITLE My Second Lab Tasks (Lab02.asm)
2   INCLUDE Irvine32.inc
3   .code
4   main PROC
5   mov eax, 0
6   mov ebx, 0
7   mov ecx, 0
8   mov edx,0
9
10  mov eax, 30
11  sub eax, 9
12  add eax, 186
13  sub eax, 150
14
15  call DumpRegs
16  exit
17  main ENDP
18  END main
```

```
Microsoft Visual Studio Debug Console

  EAX=00000039  EBX=00000000  ECX=00000000  EDX=00000000
  ESI=006310AA  EDI=006310AA  EBP=010FFB9C  ESP=010FFB90
  EIP=0063368B  EFL=00000206  CF=0  SF=0  ZF=0  OF=0  AF=0  PF=1


C:\Users\k232001\source\repos\Lab02\Debug\Lab02.exe (process 15572) exited with code 0.
Press any key to close this window . . .
```

Part 3:

```
Lab02Q1.asm  ⊕ X
  1    TITLE My Second Lab Tasks (Lab02.asm)
  2    INCLUDE Irvine32.inc
  3    .code
  4    main PROC
  5    mov eax, 0
  6    mov ebx, 0
  7    mov ecx, 0
  8    mov edx,0
  9
 10    mov eax, 101110b
 11    add eax, 50Ah
 12    add eax, 6710d
 13    add eax, 1010001b
 14    add eax, 0Fh
 15
 16    call DumpRegs
 17    exit
 18    main ENDP
 19    END main
```

```
Microsoft Visual Studio Debug Console

  EAX=00001FCE   EBX=00000000   ECX=00000000   EDX=00000000
  ESI=00B010AA   EDI=00B010AA   EBP=00C0FAA4   ESP=00C0FA98
  EIP=00B0368E   EFL=00000212   CF=0  SF=0  ZF=0  OF=0  AF=1  PF=0


C:\Users\k232001\source\repos\Lab02\Debug\Lab02.exe (process 1322
Press any key to close this window . . .
```

Part 4:

```
Lab02Q1.asm  ⊕ X
  1    TITLE My Second Lab Tasks (Lab02.asm)
  2    INCLUDE Irvine32.inc
  3    .code
  4    main PROC
  5    mov eax, 0
  6    mov ebx, 0
  7    mov ecx, 0
  8    mov edx,0
  9
 10    mov eax, 10001101b
 11    sub eax, 0D83h
 12    add eax, 385
 13    add eax, 10
 14    add eax, 1111101b
 15    sub eax, 0Eh
 16    add eax, 0Fh
 17
 18    call DumpRegs
 19    exit
 20    main ENDP
 21    END main
```

```
Microsoft Visual Studio Debug Console

  EAX=FFFFF513   EBX=00000000   ECX=00000000   EDX=00000000
  ESI=002F10AA   EDI=002F10AA   EBP=00B8FDCC   ESP=00B8FDC0
  EIP=002F3694   EFL=00000292   CF=0  SF=1  ZF=0  OF=0  AF=1  PF=0


C:\Users\k232001\source\repos\Lab02\Debug\Lab02.exe (process 14440
Press any key to close this window . . .
```

Q2:

Part 1:

```
Lab02Q2.asm

1      TITLE My Second Lab Tasks (Lab02.asm)
2      INCLUDE Irvine32.inc
3      .code
4      main PROC
5      mov eax, 0
6      mov ebx, 0
7      mov ecx, 0
8      mov edx,0
9
10     mov eax, 27
11     mov ebx, 24
12     mov ecx, 16
13     add eax, 1
14     add eax, ebx
15     sub eax, ecx
16     add eax, 0Ah
17     sub eax, 65o
18     add eax, 73d
19     mov edx, eax
20
21     call DumpRegs
22     exit
23     main ENDP
24     END main
```

```
Microsoft Visual Studio Debug    ×    +    ∨

EAX=00000042   EBX=00000018   ECX=00000010   EDX=00000042
ESI=009210AA   EDI=009210AA   EBP=006FFE80   ESP=006FFE74
EIP=0092369A   EFL=00000217   CF=1   SF=0   ZF=0   OF=0   AF=1   PF=1


E:\Visual Studio Projects\COAL Lab02\Debug\COAL Lab02.exe (process 1
Press any key to close this window . . .
```

Part 2:

```
Lab02Q2.asm

1      TITLE My Second Lab Tasks (Lab02.asm)
2      INCLUDE Irvine32.inc
3      .code
4      main PROC
5      mov eax, 0
6      mov ebx, 0
7      mov ecx, 0
8      mov edx,0
9
10     mov eax,5ADh
11     mov ebx, 24
12     sub eax, ebx
13     add eax, 65o
14     add eax, 65d
15     sub eax, 11110111b
16     add eax, 150
17
18     call DumpRegs
19     exit
20     main ENDP
21     END main
```

```
Microsoft Visual Studio Debug    ×    +    ∨

EAX=000005AA   EBX=00000018   ECX=00000000   EDX=00000000
ESI=006010AA   EDI=006010AA   EBP=007CFB80   ESP=007CFB74
EIP=00603695   EFL=00000206   CF=0   SF=0   ZF=0   OF=0   AF=0   PF=1


E:\Visual Studio Projects\COAL Lab02\Debug\COAL Lab02.exe (proces
Press any key to close this window . . .
```

Part 3:

Lab02Q2.asm

```asm
1        TITLE My Second Lab Tasks (Lab02.asm)
2        INCLUDE Irvine32.inc
3        .code
4        main PROC
5        mov eax, 0
6        mov ebx, 0
7        mov ecx, 0
8        mov edx,0
9
10       mov eax,24
11       mov ebx, 5ADh
12       sub ebx, eax
13       add ebx, 65d
14       add ebx,73o
15       sub ebx, 11100101b
16       add ebx, 7Bh
17
18       call DumpRegs
19       exit
20       main ENDP
21       END main
```

Microsoft Visual Studio Debug

```
EAX=00000018  EBX=000005A7  ECX=00000000  EDX=00000000
ESI=004810AA  EDI=004810AA  EBP=010FF87C  ESP=010FF870
EIP=00483694  EFL=00000212  CF=0  SF=0  ZF=0  OF=0  AF=1  PF=0

E:\Visual Studio Projects\COAL Lab02\Debug\COAL Lab02.exe (proces
Press any key to close this window . . .
```

Part 4:

Lab02Q2.asm

```asm
1        TITLE My Second Lab Tasks (Lab02.asm)
2        INCLUDE Irvine32.inc
3        .code
4        main PROC
5        mov eax, 0
6        mov ebx, 0
7        mov ecx, 0
8        mov edx,0
9
10       mov ecx, 110010101101b
11       mov ebx, 27
12       add ecx, 45h
13       sub ecx, 73o
14       add ecx, ebx
15       sub ecx,ecx
16       add ecx,1
17
18       call DumpRegs
19       exit
20       main ENDP
21       END main
```

Microsoft Visual Studio Debug

```
EAX=00000000  EBX=0000001B  ECX=00000001  EDX=00000000
ESI=00A410AA  EDI=00A410AA  EBP=00B4F858  ESP=00B4F84C
EIP=00A43690  EFL=00000202  CF=0  SF=0  ZF=0  OF=0  AF=0  PF=0

E:\Visual Studio Projects\COAL Lab02\Debug\COAL Lab02.exe (proces
Press any key to close this window . . .
```

Task01:

Part 1:

```
Lab02Q2.asm
 1      TITLE My Second Lab Tasks (Lab02.asm)
 2      INCLUDE Irvine32.inc
 3      .code
 4      main PROC
 5      mov eax, 0
 6      mov ebx, 0
 7      mov ecx, 0
 8      mov edx,0
 9
10      mov eax, 50
11      add eax, 31
12      add eax, 20
13      add eax, 15
14      add eax, 74
15      add eax, 14
16      sub eax, 0Bh
17
18      call DumpRegs
19      exit
20      main ENDP
21      END main
```

```
Microsoft Visual Studio Debug    ×    +    ∨

EAX=000000C1  EBX=00000000  ECX=00000000  EDX=00000000
ESI=00E810AA  EDI=00E810AA  EBP=00F8FE68  ESP=00F8FE5C
EIP=00E83690  EFL=00000202  CF=0  SF=0  ZF=0  OF=0  AF=0  PF=0


E:\Visual Studio Projects\COAL Lab02\Debug\COAL Lab02.exe (process
Press any key to close this window . . .
```

Part 2:

```
Lab02Q2.asm
 1      TITLE My Second Lab Tasks (Lab02.asm)
 2      INCLUDE Irvine32.inc
 3      .code
 4      main PROC
 5      mov eax, 0
 6      mov ebx, 0
 7      mov ecx, 0
 8      mov edx,0
 9
10      mov eax, 10
11      sub eax, 4
12      add eax, 200
13      sub eax, 150
14
15      call DumpRegs
16      exit
17      main ENDP
18      END main
```

```
Microsoft Visual Studio Debug    ×    +    ∨

EAX=00000038  EBX=00000000  ECX=00000000  EDX=00000000
ESI=006310AA  EDI=006310AA  EBP=009AFC48  ESP=009AFC3C
EIP=0063368B  EFL=00000202  CF=0  SF=0  ZF=0  OF=0  AF=0  PF=0


E:\Visual Studio Projects\COAL Lab02\Debug\COAL Lab02.exe (process
Press any key to close this window . . .
```

Part 3:

```
Lab02Q2.asm

 1        TITLE My Second Lab Tasks (Lab02.asm)
 2        INCLUDE Irvine32.inc
 3        .code
 4        main PROC
 5        mov eax, 0
 6        mov ebx, 0
 7        mov ecx, 0
 8        mov edx,0
 9
10        mov eax, 10111b
11        add eax, 40Bh
12        add eax, 205d
13        add eax, 1010001b
14        add eax, 0Eh
15
16        call DumpRegs
17        exit
18        main ENDP
19        END main
```

```
Microsoft Visual Studio Debug    ×    +    ∨

  EAX=0000054E   EBX=00000000   ECX=00000000   EDX=00000000
  ESI=006C10AA   EDI=006C10AA   EBP=00AFFEAC   ESP=00AFFEA0
  EIP=006C368E   EFL=00000206   CF=0   SF=0   ZF=0   OF=0   AF=0   PF=1


E:\Visual Studio Projects\COAL Lab02\Debug\COAL Lab02.exe (proces
Press any key to close this window . . .
```

Part 4:

```
Lab02Q2.asm

 1        TITLE My Second Lab Tasks (Lab02.asm)
 2        INCLUDE Irvine32.inc
 3        .code
 4        main PROC
 5        mov eax, 0
 6        mov ebx, 0
 7        mov ecx, 0
 8        mov edx,0
 9
10        mov eax, 10001101b
11        sub eax, 062h
12        add eax, 255
13        add eax, 5
14        add eax, 11101b
15        sub eax, 0Ah
16        add eax, 0Bh
17
18        call DumpRegs
19        exit
20        main ENDP
21        END main
```
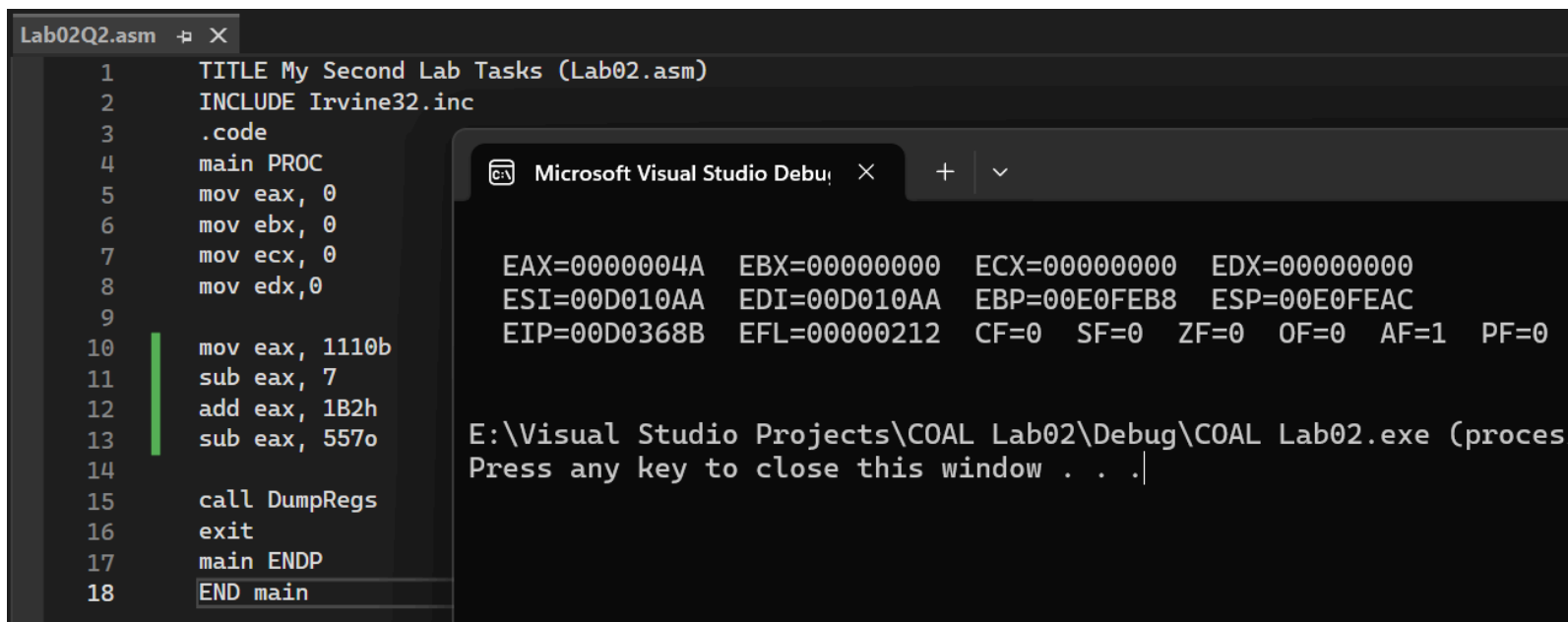
```
Microsoft Visual Studio Debug    ×    +    ∨

  EAX=0000014D   EBX=00000000   ECX=00000000   EDX=00000000
  ESI=003010AA   EDI=003010AA   EBP=00DDFA70   ESP=00DDFA64
  EIP=00303692   EFL=00000206   CF=0   SF=0   ZF=0   OF=0   AF=0   PF=1


E:\Visual Studio Projects\COAL Lab02\Debug\COAL Lab02.exe (proces
To automatically close the console when debugging stops, enable T
le when debugging stops.
Press any key to close this window . . .
```

Part 5:

```
Lab02Q2.asm    X
1    TITLE My Second Lab Tasks (Lab02.asm)
2    INCLUDE Irvine32.inc
3    .code
4    main PROC
5    mov eax, 0
6    mov ebx, 0
7    mov ecx, 0
8    mov edx,0
9
10   mov eax, 1110b
11   sub eax, 7
12   add eax, 1B2h
13   sub eax, 557o
14
15   call DumpRegs
16   exit
17   main ENDP
18   END main
```

Microsoft Visual Studio Debug

```
EAX=0000004A   EBX=00000000   ECX=00000000   EDX=00000000
ESI=00D010AA   EDI=00D010AA   EBP=00E0FEB8   ESP=00E0FEAC
EIP=00D0368B   EFL=00000212   CF=0   SF=0   ZF=0   OF=0   AF=1   PF=0


E:\Visual Studio Projects\COAL Lab02\Debug\COAL Lab02.exe (proces
Press any key to close this window . . .
```

Task02:

Part 1:

```asm
Lab02Q2.asm
   1        TITLE My Second Lab Tasks (Lab02.asm)
   2        INCLUDE Irvine32.inc
   3        .code
   4        main PROC
   5        mov eax, 0
   6        mov ebx, 0
   7        mov ecx, 0
   8        mov edx,0
   9
  10        add edx, eax
  11        add edx, 2
  12        add edx, ebx
  13        sub edx, ecx
  14        add edx, 0Eh
  15        sub edx, 23o
  16        add edx, 63d
  17
  18        call DumpRegs
  19        exit
  20        main ENDP
  21        END main
```

```
Microsoft Visual Studio Debug

  EAX=00000000   EBX=00000000   ECX=00000000   EDX=0000003C
  ESI=00FF10AA   EDI=00FF10AA   EBP=0053FE28   ESP=0053FE1C
  EIP=00FF368B   EFL=00000217   CF=1   SF=0   ZF=0   OF=0   AF=1   PF=1


E:\Visual Studio Projects\COAL Lab02\Debug\COAL Lab02.exe (proces
Press any key to close this window . . .
```

Part 2:

```asm
Lab02Q2.asm
   1        TITLE My Second Lab Tasks (Lab02.asm)
   2        INCLUDE Irvine32.inc
   3        .code
   4        main PROC
   5        mov eax, 0
   6        mov ebx, 0
   7        mov ecx, 0
   8        mov edx,0
   9
  10        mov eax, 6ABh
  11        sub eax, ebx
  12        add eax, 47o
  13        add eax, 55d
  14        sub eax, 110111b
  15        add eax, 130
  16
  17        call DumpRegs
  18        exit
  19        main ENDP
  20        END main
```

```
Microsoft Visual Studio Debug

  EAX=00000754   EBX=00000000   ECX=00000000   EDX=00000000
  ESI=003E10AA   EDI=003E10AA   EBP=00D5FB24   ESP=00D5FB18
  EIP=003E368E   EFL=00000202   CF=0   SF=0   ZF=0   OF=0   AF=0   PF=0


E:\Visual Studio Projects\COAL Lab02\Debug\COAL Lab02.exe (process
Press any key to close this window . . .
```

Part 3:

```
Lab02Q2.asm

 1     TITLE My Second Lab Tasks (Lab02.asm)
 2     INCLUDE Irvine32.inc
 3     .code
 4     main PROC
 5     mov eax, 0
 6     mov ebx, 0
 7     mov ecx, 0
 8     mov edx,0
 9
10     mov ebx, 6BEh
11     sub ebx, eax
12     add ebx, 23d
13     add ebx, 61o
14     sub ebx, 11100101b
15     add ebx, 6Ah
16
17     call DumpRegs
18     exit
19     main ENDP
20     END main
```

Microsoft Visual Studio Debug

```
EAX=00000000  EBX=0000068B  ECX=00000000  EDX=00000000
ESI=00F710AA  EDI=00F710AA  EBP=00B7FE6C  ESP=00B7FE60
EIP=00F7368F  EFL=00000206  CF=0  SF=0  ZF=0  OF=0  AF=0  PF=1


E:\Visual Studio Projects\COAL Lab02\Debug\COAL Lab02.exe (proces
Press any key to close this window . . .|
```

Part 4:

```
Lab02Q2.asm

 1     TITLE My Second Lab Tasks (Lab02.asm)
 2     INCLUDE Irvine32.inc
 3     .code
 4     main PROC
 5     mov eax, 0
 6     mov ebx, 0
 7     mov ecx, 0
 8     mov edx,0
 9
10     mov ecx, 1100101101b
11     add ecx, 25h
12     sub ecx, 13o
13     add ecx, ebx
14     sub ecx, ecx
15     add ecx, 5
16
17     call DumpRegs
18     exit
19     main ENDP
20     END main
```

Microsoft Visual Studio Debug

```
EAX=00000000  EBX=00000000  ECX=00000005  EDX=00000000
ESI=008110AA  EDI=008110AA  EBP=00BFFBB4  ESP=00BFFBA8
EIP=0081368B  EFL=00000206  CF=0  SF=0  ZF=0  OF=0  AF=0  PF=1


E:\Visual Studio Projects\COAL Lab02\Debug\COAL Lab02.exe (process
Press any key to close this window . . .|
```