

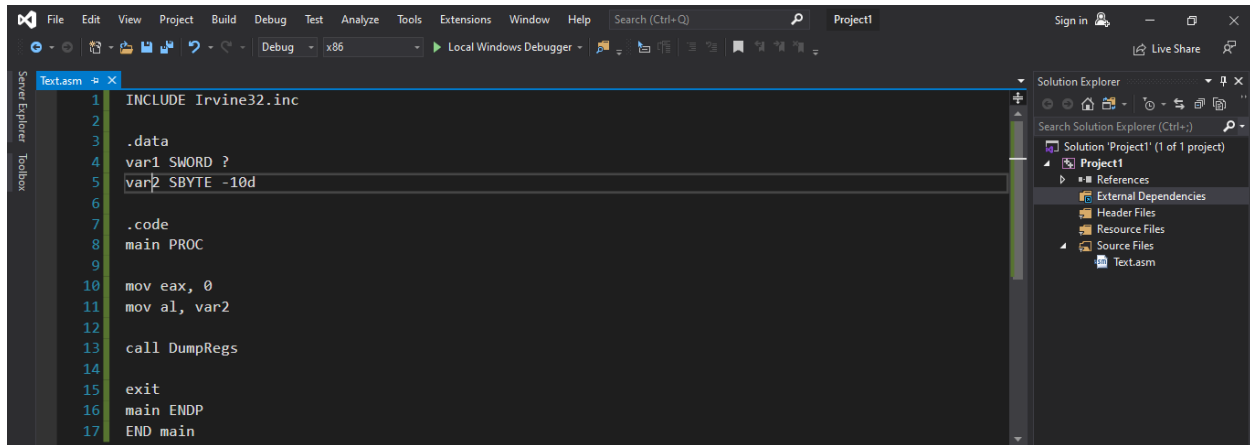
LAB TASK # 03

Mohammad Basil Ali Khan

20K-0477

Task#01:

- Code

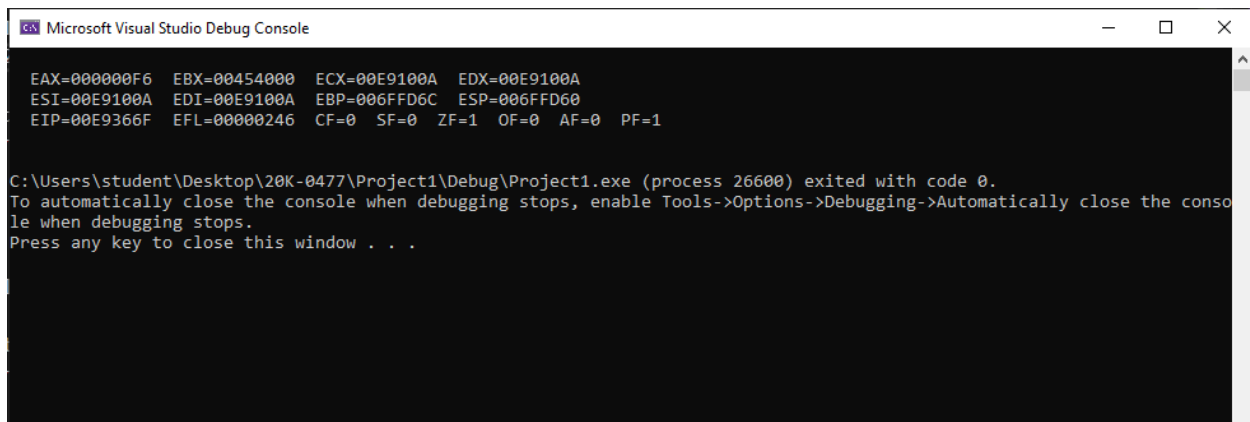


The screenshot shows the Visual Studio IDE with a project named 'Project1'. The main window displays the assembly file 'Text.asm' with the following code:

```
1 INCLUDE Irvine32.inc
2
3 .data
4 var1 SWORD ?
5 var2 SBYTE -10d
6
7 .code
8 main PROC
9
10 mov eax, 0
11 mov al, var2
12
13 call DumpRegs
14
15 exit
16 main ENDP
17 END main
```

The Solution Explorer on the right shows the project structure with 'Text.asm' listed under 'Source Files'.

- Output



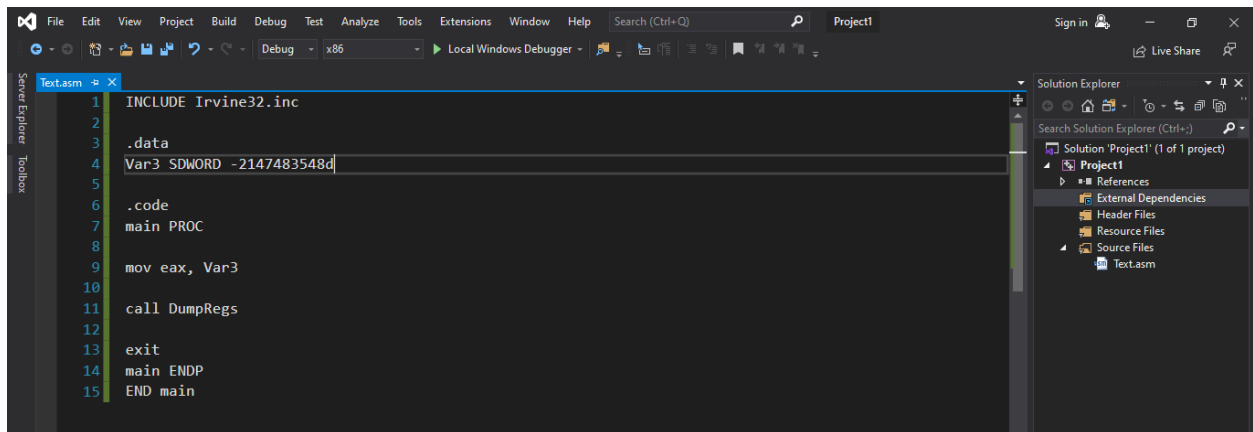
The screenshot shows the Microsoft Visual Studio Debug Console window. It displays the following register values and program status:

```
EAX=000000F6 EBX=00454000 ECX=00E9100A EDX=00E9100A
ESI=00E9100A EDI=00E9100A EBP=006FFD6C ESP=006FFD60
EIP=00E9366F EFL=00000246 CF=0 SF=0 ZF=1 OF=0 AF=0 PF=1
```

Below the register values, the console shows the message: "C:\Users\student\Desktop\20K-0477\Project1\Debug\Project1.exe (process 26600) exited with code 0." followed by instructions to automatically close the console when debugging stops and a prompt to press any key to close the window.

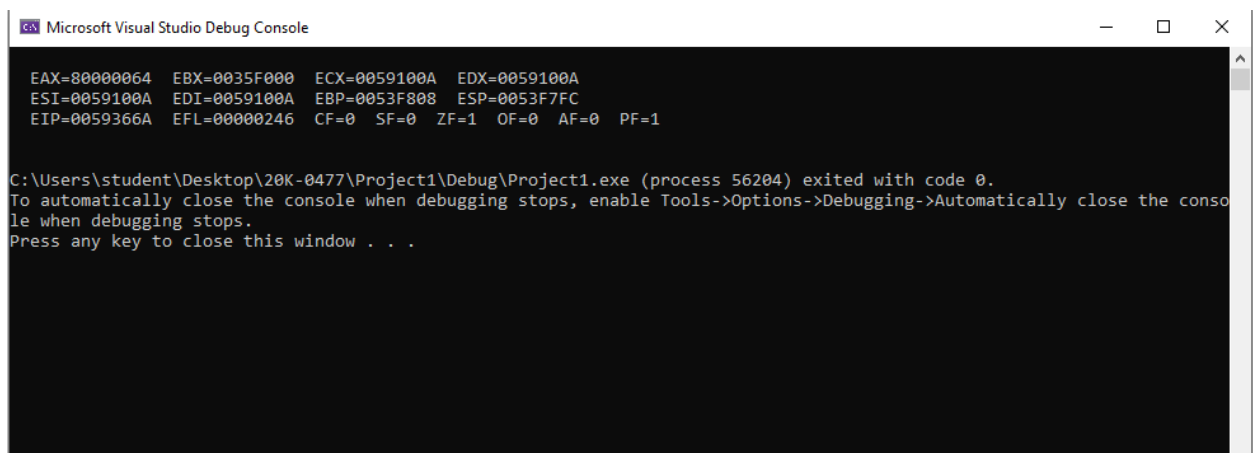
Task#02:

- Code



```
1 INCLUDE Irvine32.inc
2
3 .data
4 Var3 SDWORD -2147483548d
5
6 .code
7 main PROC
8
9     mov eax, Var3
10
11     call DumpRegs
12
13     exit
14 main ENDP
15 END main
```

- Output

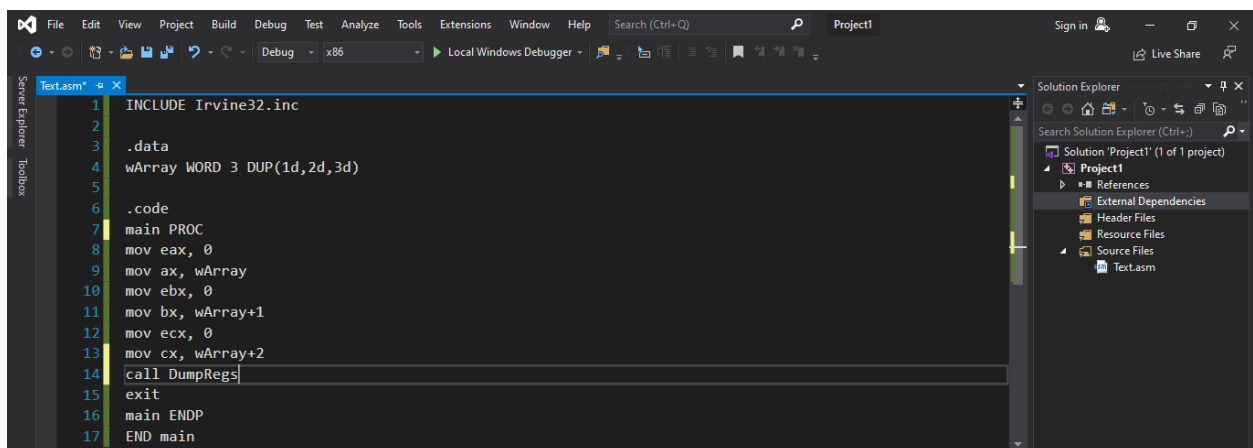


```
EAX=80000064 EBX=0035F000 ECX=0059100A EDX=0059100A
ESI=0059100A EDI=0059100A EBP=0053F808 ESP=0053F7FC
EIP=0059366A EFL=00000246 CF=0 SF=0 ZF=1 OF=0 AF=0 PF=1

C:\Users\student\Desktop\20K-0477\Project1\Debug\Project1.exe (process 56204) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .
```

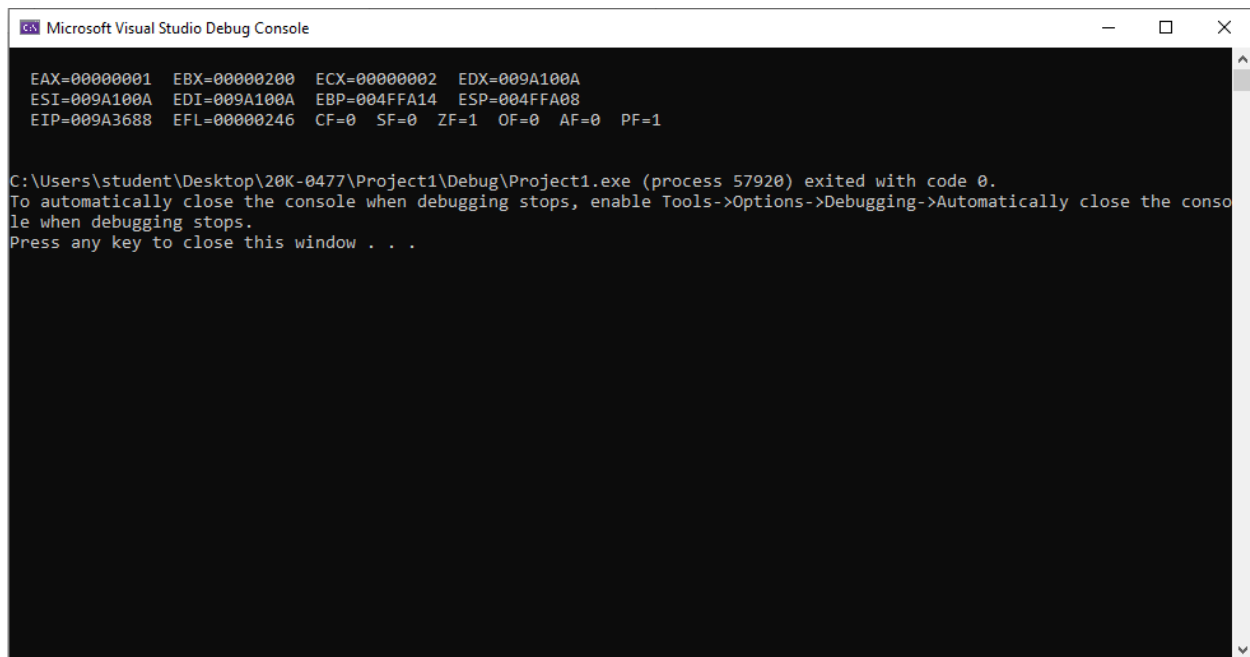
Task#03:

- Code



```
1 INCLUDE Irvine32.inc
2
3 .data
4 wArray WORD 3 DUP(1d,2d,3d)
5
6 .code
7 main PROC
8     mov eax, 0
9     mov ax, wArray
10    mov ebx, 0
11    mov bx, wArray+1
12    mov ecx, 0
13    mov cx, wArray+2
14    call DumpRegs
15    exit
16 main ENDP
17 END main
```

- Output



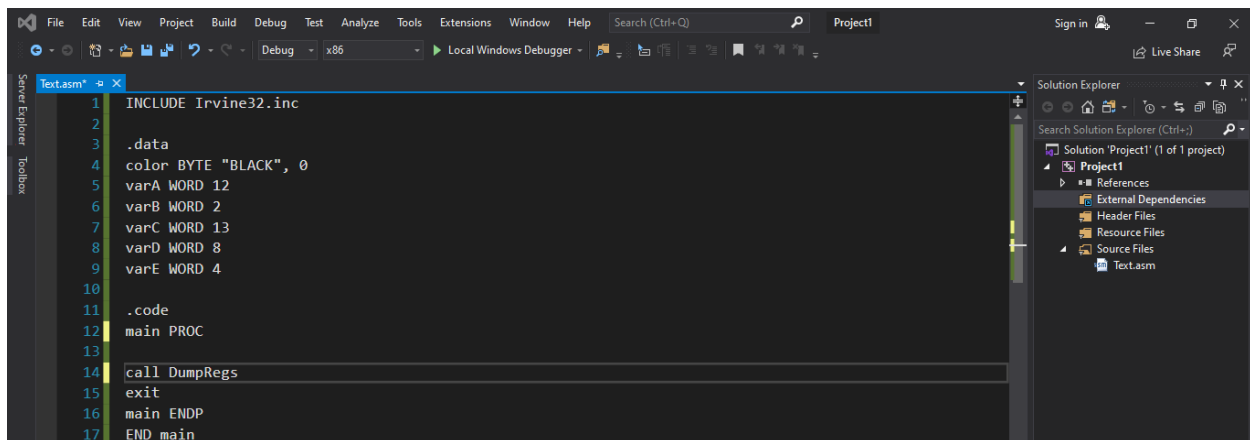
```
Microsoft Visual Studio Debug Console

EAX=00000001 EBX=00000200 ECX=00000002 EDX=009A100A
ESI=009A100A EDI=009A100A EBP=004FFA14 ESP=004FFA08
EIP=009A3688 EFL=00000246 CF=0 SF=0 ZF=1 OF=0 AF=0 PF=1

C:\Users\student\Desktop\20K-0477\Project1\Debug\Project1.exe (process 57920) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .
```

Task#04:

- Code



```
File Edit View Project Build Debug Test Analyze Tools Extensions Window Help Search (Ctrl+Q) Project1
Debug x86 Local Windows Debugger Live Share

Text.asm
1 INCLUDE Irvine32.inc
2
3 .data
4 color BYTE "BLACK", 0
5 varA WORD 12
6 varB WORD 2
7 varC WORD 13
8 varD WORD 8
9 varE WORD 4
10
11 .code
12 main PROC
13
14 call DumpRegs
15 exit
16 main ENDP
17 END main

Solution Explorer
Solution Explorer (Ctrl+;)
Project1 (1 of 1 project)
Project1
References
External Dependencies
Header Files
Resource Files
Source Files
Text.asm
```

- Output

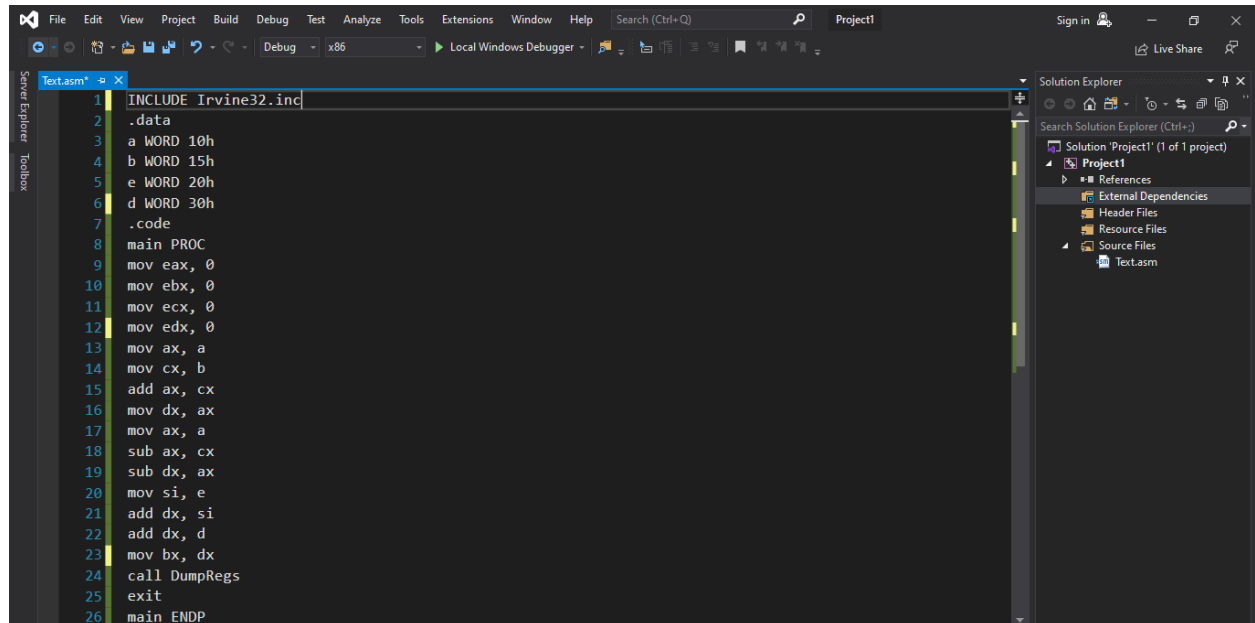
```
Microsoft Visual Studio Debug Console

EAX=00AFFBB8  EBX=009DF000  ECX=0002100A  EDX=0002100A
ESI=0002100A  EDI=0002100A  EBP=00AFFB6C  ESP=00AFFB60
EIP=00023665  EFL=00000246  CF=0  SF=0  ZF=1  OF=0  AF=0  PF=1

C:\Users\student\Desktop\20K-0477\Project1\Debug\Project1.exe (process 62880) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .
```

Task#05:

- Code

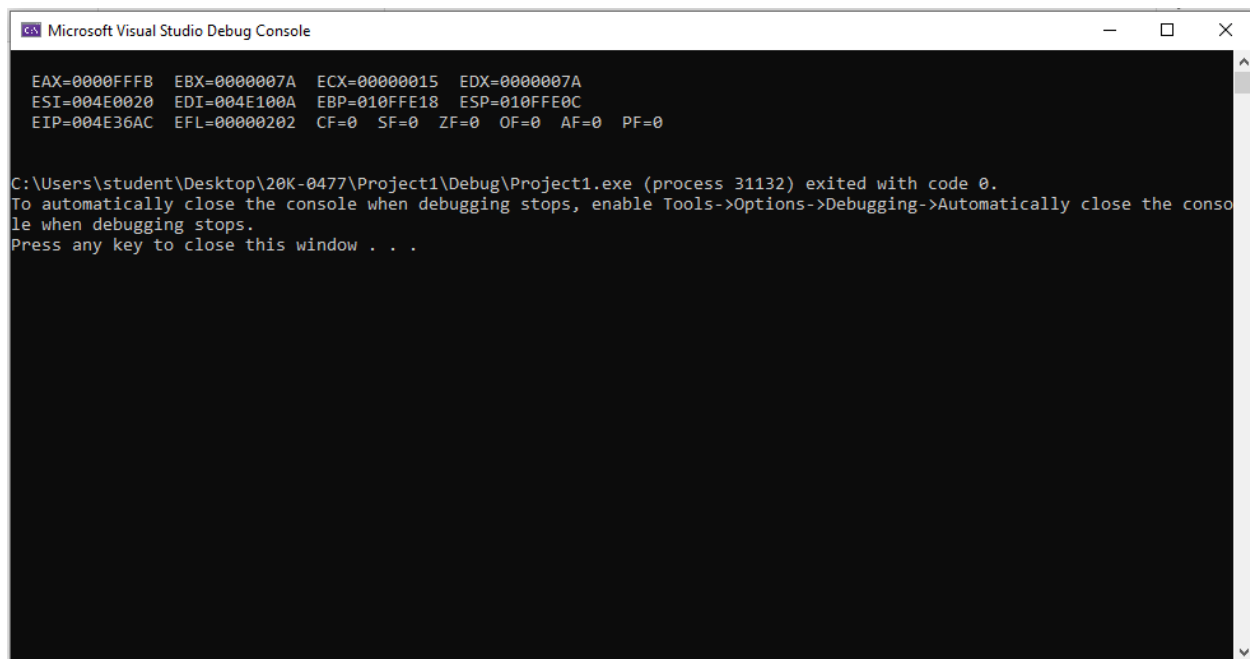


```
File Edit View Project Build Debug Test Analyze Tools Extensions Window Help Search (Ctrl+Q) Project1
Debug x86 Local Windows Debugger Live Share

Text.asm
1 INCLUDE Irvine32.inc
2 .data
3 a WORD 10h
4 b WORD 15h
5 e WORD 20h
6 d WORD 30h
7 .code
8 main PROC
9 mov eax, 0
10 mov ebx, 0
11 mov ecx, 0
12 mov edx, 0
13 mov ax, a
14 mov cx, b
15 add ax, cx
16 mov dx, ax
17 mov ax, a
18 sub ax, cx
19 sub dx, ax
20 mov si, e
21 add dx, si
22 add dx, d
23 mov bx, dx
24 call DumpRegs
25 exit
26 main ENDP

Solution Explorer
Solution Explorer (Ctrl+J)
Solution 'Project1' (1 of 1 project)
  Project1
    References
    External Dependencies
    Header Files
    Resource Files
    Source Files
      Text.asm
```

- Output



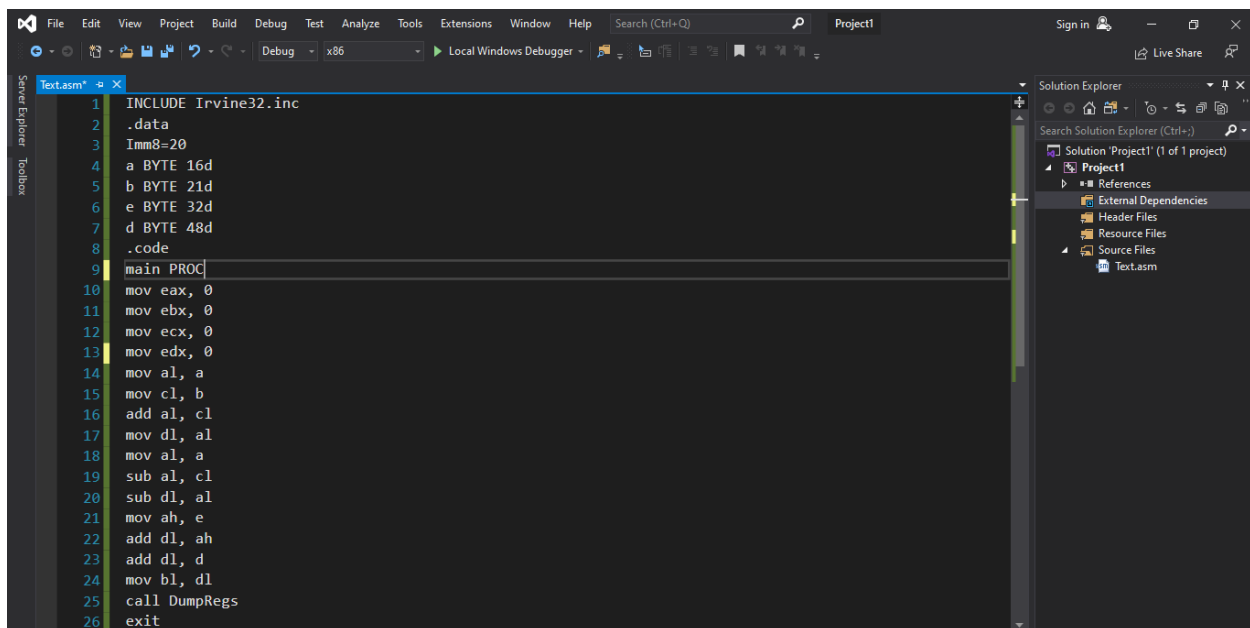
```
Microsoft Visual Studio Debug Console

EAX=0000FFF8  EBX=0000007A  ECX=00000015  EDX=0000007A
ESI=004E0020  EDI=004E100A  EBP=010FFE18  ESP=010FFE0C
EIP=004E36AC  EFL=00000202  CF=0   SF=0   ZF=0   OF=0   AF=0   PF=0

C:\Users\student\Desktop\20K-0477\Project1\Debug\Project1.exe (process 31132) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .
```

Task#06:

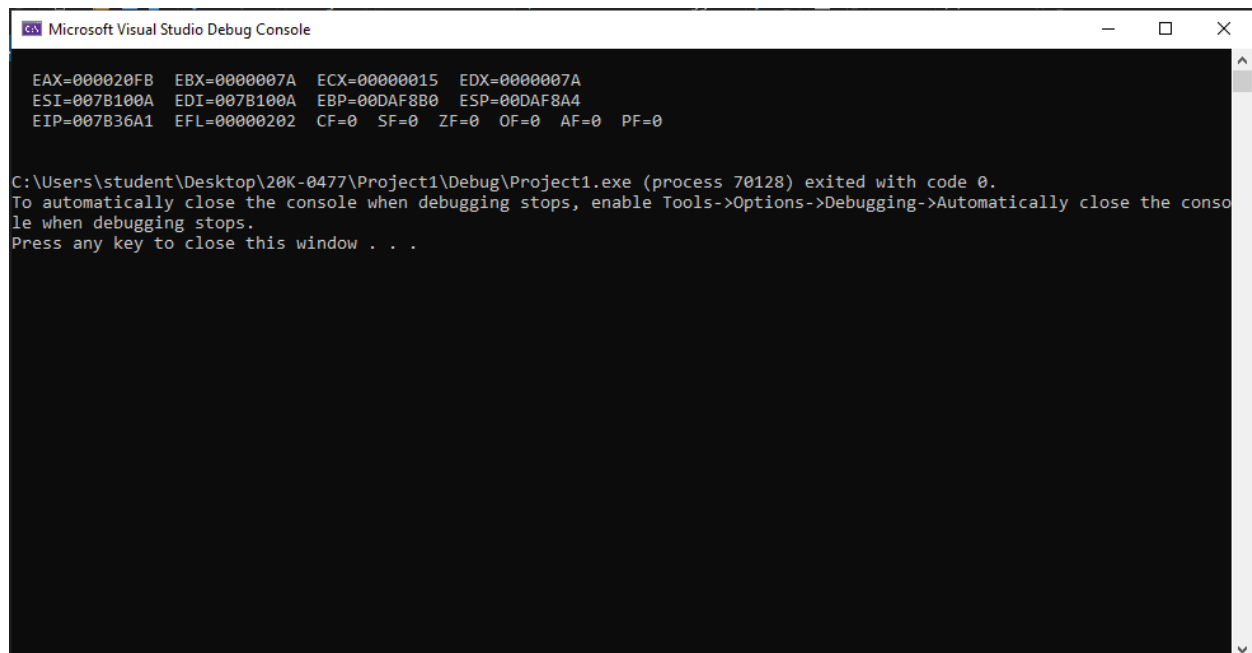
- Code



```
File Edit View Project Build Debug Test Analyze Tools Extensions Window Help Search (Ctrl+Q) Project1
Debug x86 Local Windows Debugger Live Share

Text.asm
1 INCLUDE Irvine32.inc
2 .data
3 Imm8=20
4 a BYTE 16d
5 b BYTE 21d
6 e BYTE 32d
7 d BYTE 48d
8 .code
9 main PROC
10 mov eax, 0
11 mov ebx, 0
12 mov ecx, 0
13 mov edx, 0
14 mov al, a
15 mov cl, b
16 add al, cl
17 mov dl, al
18 mov al, a
19 sub al, cl
20 sub dl, al
21 mov ah, e
22 add dl, ah
23 add dl, d
24 mov bl, dl
25 call DumpRegs
26 exit
```

- Output



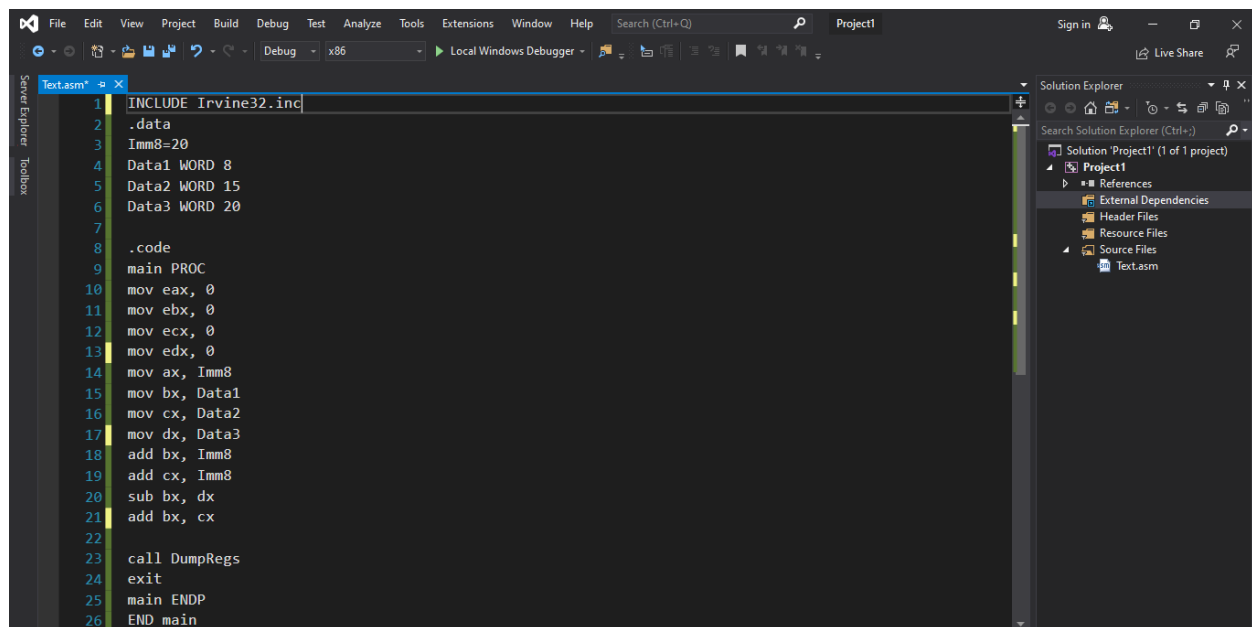
```
Microsoft Visual Studio Debug Console

EAX=000020FB  EBX=0000007A  ECX=00000015  EDX=0000007A
ESI=007B100A  EDI=007B100A  EBP=00DAF8B0  ESP=00DAF8A4
EIP=007B36A1  EFL=00000202  CF=0   SF=0   ZF=0   OF=0   AF=0   PF=0

C:\Users\student\Desktop\20K-0477\Project1\Debug\Project1.exe (process 70128) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .
```

Task#07:

- Code



```
File Edit View Project Build Debug Test Analyze Tools Extensions Window Help Search (Ctrl+Q) Project1
Debug x86 Local Windows Debugger

Text.asm
1 INCLUDE Irvine32.inc
2 .data
3 Imm8=20
4 Data1 WORD 8
5 Data2 WORD 15
6 Data3 WORD 20
7
8 .code
9 main PROC
10 mov eax, 0
11 mov ebx, 0
12 mov ecx, 0
13 mov edx, 0
14 mov ax, Imm8
15 mov bx, Data1
16 mov cx, Data2
17 mov dx, Data3
18 add bx, Imm8
19 add cx, Imm8
20 sub bx, dx
21 add bx, cx
22
23 call DumpRegs
24 exit
25 main ENDP
26 END main

Solution Explorer
Solution Explorer (Ctrl+L)
Solution 'Project1' (1 of 1 project)
Project1
References
External Dependencies
Header Files
Resource Files
Source Files
Text.asm
```

- Output

```
Microsoft Visual Studio Debug Console

EAX=00000014  EBX=0000002B  ECX=00000023  EDX=00000014
ESI=0088100A  EDI=0088100A  EBP=007EFE14  ESP=007EFE08
EIP=008836A0  EFL=00000206  CF=0  SF=0  ZF=0  OF=0  AF=0  PF=1

C:\Users\student\Desktop\20K-0477\Project1\Debug\Project1.exe (process 40800) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .
```