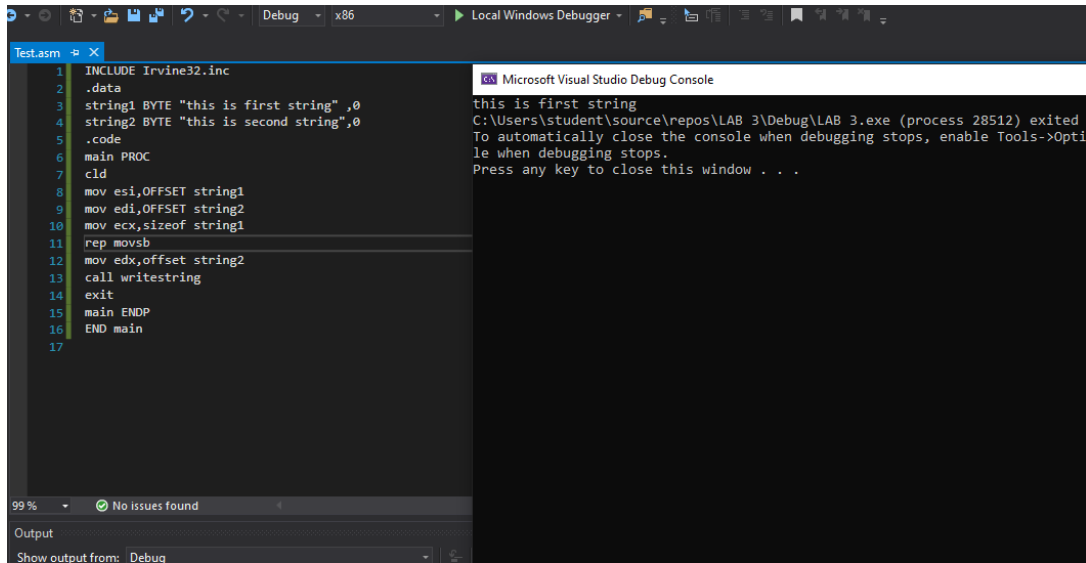


COAL LAB TASK 11

MOHAMMAD BASIL ALI KHAN

20K-0477

- **Example**



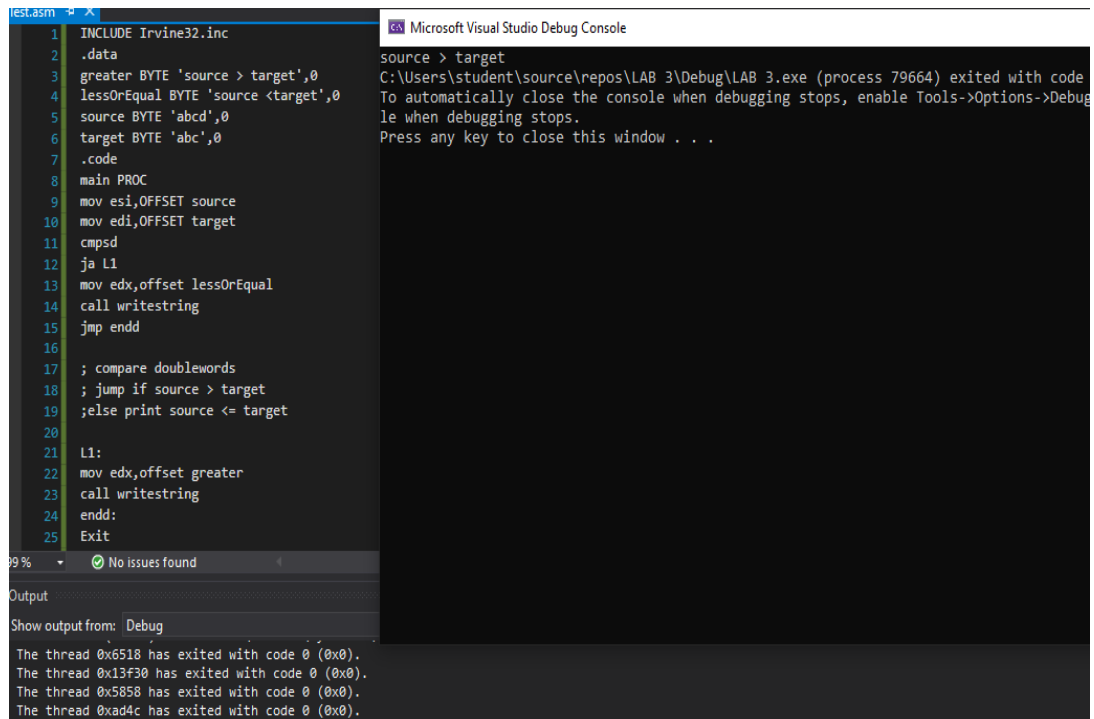
The screenshot shows the Visual Studio IDE with the assembly file `Test.asm` open. The code includes Irvine32.inc and defines two strings: `string1` ("this is first string") and `string2` ("this is second string"). The `main` procedure compares the strings and prints the first one. The Debug Console on the right shows the output: "this is first string".

```
1 INCLUDE Irvine32.inc
2 .data
3 string1 BYTE "this is first string",0
4 string2 BYTE "this is second string",0
5 .code
6 main PROC
7 cld
8 mov esi,OFFSET string1
9 mov edi,OFFSET string2
10 mov ecx,sizeof string1
11 rep movsb
12 mov edx,offset string2
13 call writestring
14 exit
15 main ENDP
16 END main
17
```

Microsoft Visual Studio Debug Console

```
this is first string
C:\Users\student\source\repos\LAB 3\Debug\LAB 3.exe (process 28512) 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 . . .
```

- **Example**



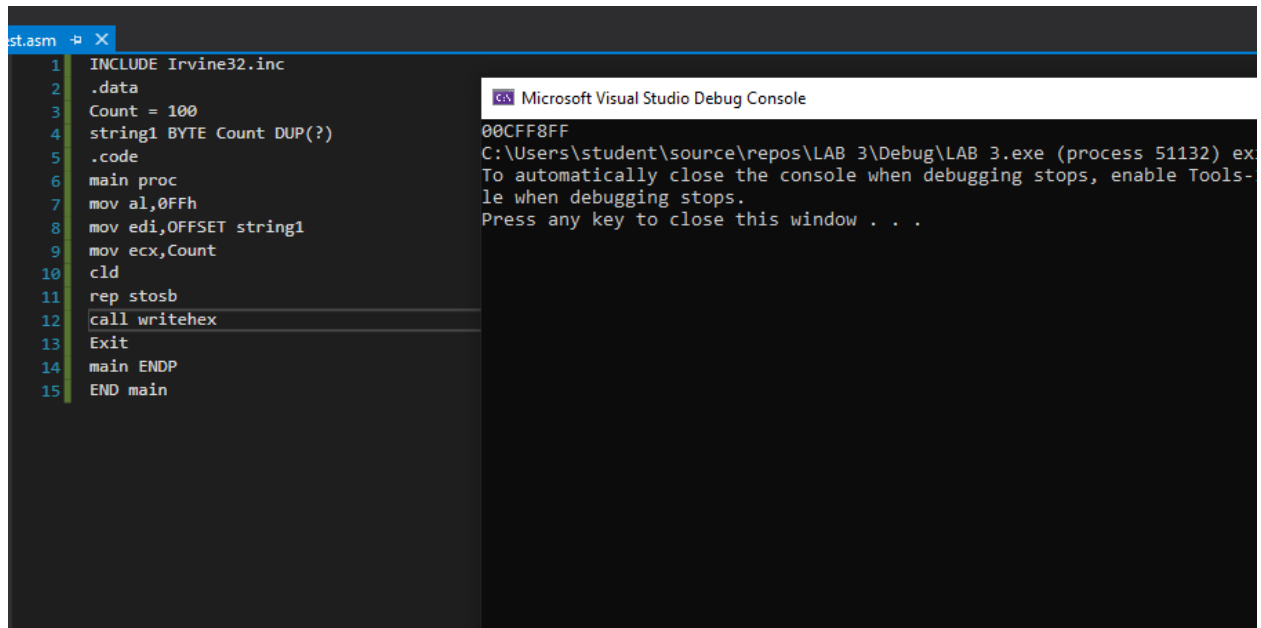
The screenshot shows the Visual Studio IDE with the assembly file `test.asm` open. The code includes Irvine32.inc and defines two strings: `source` ("abcd") and `target` ("abc"). The `main` procedure compares the strings and prints the first one. The Debug Console on the right shows the output: "source > target".

```
1 INCLUDE Irvine32.inc
2 .data
3 greater BYTE 'source > target',0
4 lessOrEqual BYTE 'source <= target',0
5 source BYTE 'abcd',0
6 target BYTE 'abc',0
7 .code
8 main PROC
9 mov esi,OFFSET source
10 mov edi,OFFSET target
11 cmpsd
12 ja L1
13 mov edx,offset lessOrEqual
14 call writestring
15 jmp endd
16
17 ; compare doublewords
18 ; jump if source > target
19 ;else print source <= target
20
21 L1:
22 mov edx,offset greater
23 call writestring
24 endd:
25 Exit
```

Microsoft Visual Studio Debug Console

```
source > target
C:\Users\student\source\repos\LAB 3\Debug\LAB 3.exe (process 79664) 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 . . .
```

- Example



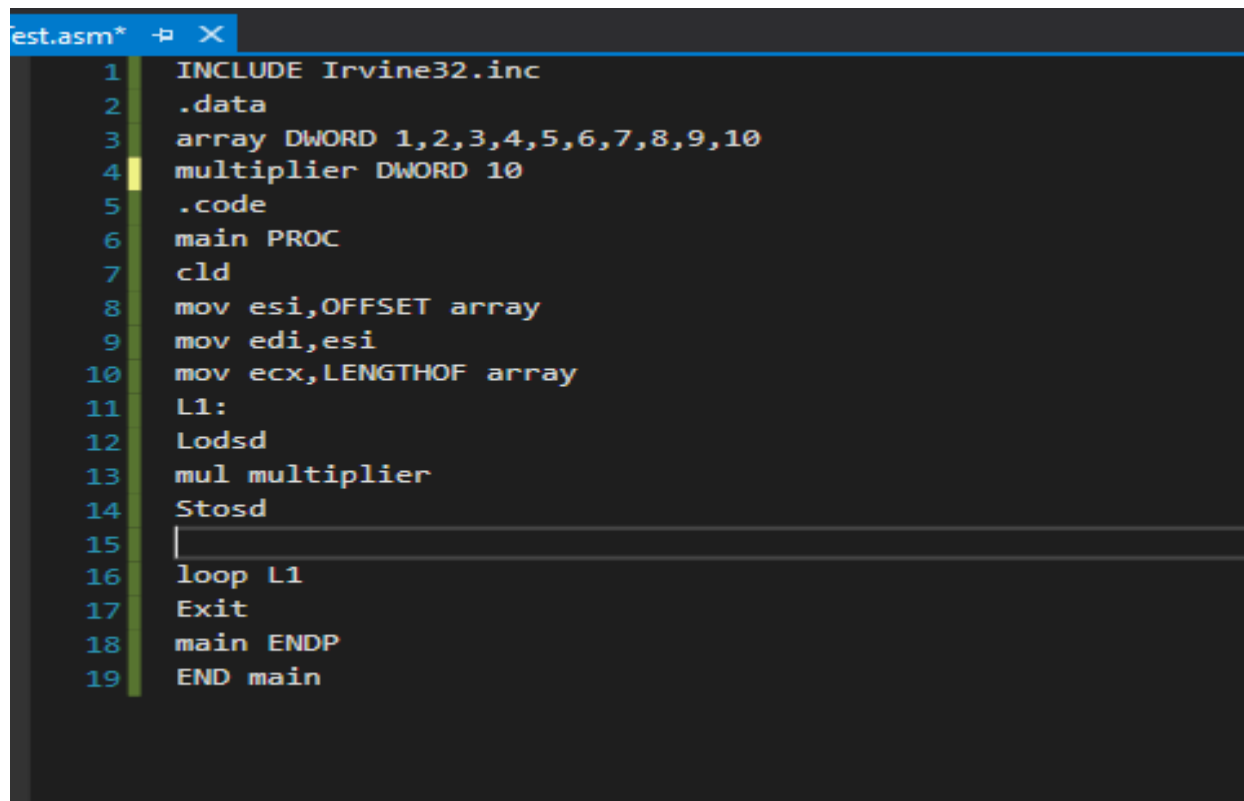
The screenshot shows the Visual Studio IDE with an assembly file named 'st.asm' open. The code is as follows:

```
1 INCLUDE Irvine32.inc
2 .data
3 Count = 100
4 string1 BYTE Count DUP(?)
5 .code
6 main proc
7 mov al,0FFh
8 mov edi,OFFSET string1
9 mov ecx,Count
10 cld
11 rep stosb
12 call writehex
13 Exit
14 main ENDP
15 END main
```

To the right, the 'Microsoft Visual Studio Debug Console' is open, displaying the following text:

```
00CFF8FF
C:\Users\student\source\repos\LAB 3\Debug\LAB 3.exe (process 51132) ex
To automatically close the console when debugging stops, enable Tools-
le when debugging stops.
Press any key to close this window . . .
```

- Example



The screenshot shows the Visual Studio IDE with an assembly file named 'test.asm*' open. The code is as follows:

```
1 INCLUDE Irvine32.inc
2 .data
3 array DWORD 1,2,3,4,5,6,7,8,9,10
4 multiplier DWORD 10
5 .code
6 main PROC
7 cld
8 mov esi,OFFSET array
9 mov edi,esi
10 mov ecx,LENGTHOF array
11 L1:
12 Lodsd
13 mul multiplier
14 Stosd
15
16 loop L1
17 Exit
18 main ENDP
19 END main
```

- Example

The screenshot shows the Visual Studio IDE with an assembly file open. The assembly code defines two strings, "abcdef" and "abcd", and compares them. The debug console shows the output of the program, indicating that "String 1 is greater than string 2".

```

1 INCLUDE Irvine32.inc
2 Include macros.inc
3 .data
4 string1 BYTE "abcdef",0
5 string2 BYTE "abcd",0
6 .code
7 main PROC
8 Str_compare PROTO
9 INVOKE Str_compare,ADDR string1,ADDR string2
10 jb l1
11 jmp l2
12 l1:
13 mwrite "String 1 is less than string 2"
14 jmp lexit
15 l2:
16 mwrite "String 1 is greater than string 2"
17
18 lexit:
19 exit
20 main ENDP
21 END main

```

Microsoft Visual Studio Debug Console

```

String 1 is greater than string 2
C:\Users\student\source\repos\LAB 3\Debug\LAB 3.exe (process 77344) exited
To automatically close the console when debugging stops, enable Tools->Options->
le when debugging stops.
Press any key to close this window . . .

```

- Example

The screenshot shows the Visual Studio IDE with an assembly file open. The assembly code defines a string "Hello World Hello" and calls the Str_length procedure to calculate its length. The debug console shows the output of the program, indicating that the string length is 17.

```

1 INCLUDE Irvine32.inc
2 .data
3 string1 BYTE "Hello World Hello",0
4 .code
5 main PROC
6 mov eax,0
7 Str_length PROTO
8 INVOKE Str_length, ADDR string1
9 call dumpRegs
10 call writedec
11 exit
12 main ENDP
13 END main

```

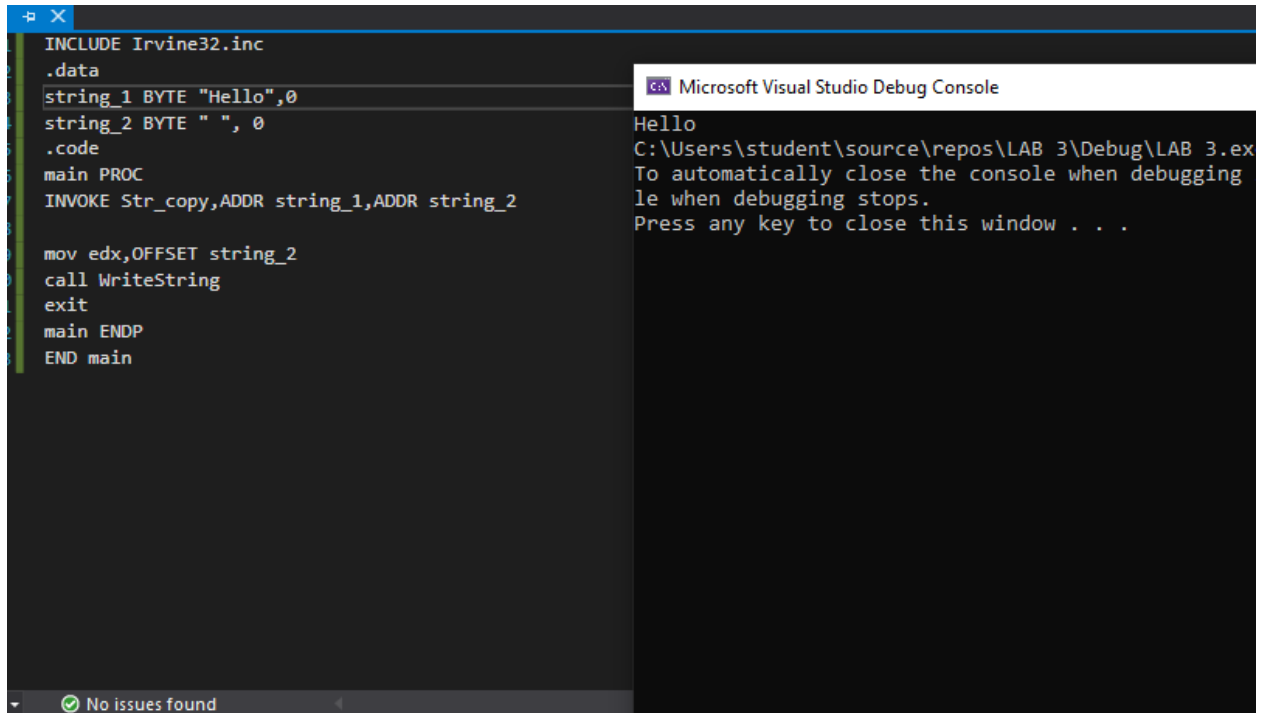
Microsoft Visual Studio Debug Console

```

EAX=00000011 EBX=00A7E000 ECX=00E2100A EDX=00E2100A
ESI=00E2100A EDI=00E2100A EBP=00D5FD64 ESP=00D5FD58
EIP=00E23674 EFL=00000246 CF=0 SF=0 ZF=1 OF=0 AF=0 PF=1
17
C:\Users\student\source\repos\LAB 3\Debug\LAB 3.exe (process 45220) exited
To automatically close the console when debugging stops, enable Tools->Options->
le when debugging stops.
Press any key to close this window . . .

```

- Example



The screenshot shows the Visual Studio IDE with an assembly file open. The assembly code defines two strings, 'Hello' and ' ', and uses the `Str_copy` instruction to copy the first string into the second. The `WriteString` instruction is then used to output the contents of the second string. The debug console on the right shows the output 'Hello' and the standard Windows debug message.

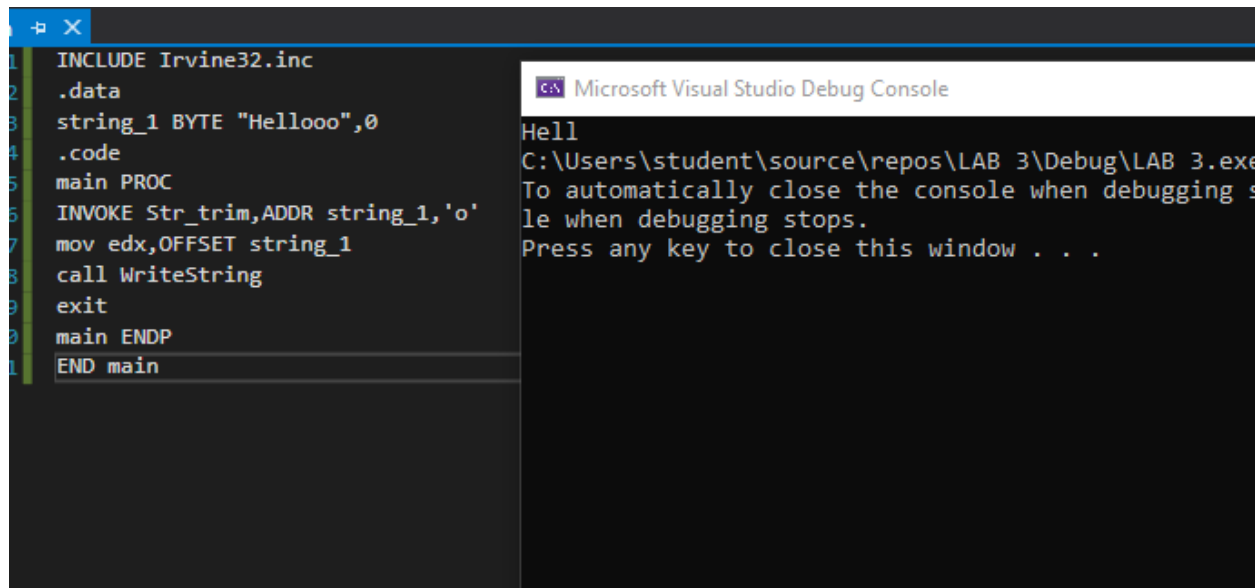
```
1 INCLUDE Irvine32.inc
2 .data
3 string_1 BYTE "Hello",0
4 string_2 BYTE " ",0
5 .code
6 main PROC
7 INVOKE Str_copy,ADDR string_1,ADDR string_2
8
9 mov edx,OFFSET string_2
10 call WriteString
11 exit
12 main ENDP
13 END main
```

Microsoft Visual Studio Debug Console

Hello
C:\Users\student\source\repos\LAB 3\Debug\LAB 3.exe
To automatically close the console when debugging s
le when debugging stops.
Press any key to close this window . . .

No issues found

- Example



The screenshot shows the Visual Studio IDE with an assembly file open. The assembly code defines a string 'Hellooo' and uses the `Str_trim` instruction to remove trailing 'o's. The `WriteString` instruction is then used to output the result. The debug console on the right shows the output 'Hell' and the standard Windows debug message.

```
1 INCLUDE Irvine32.inc
2 .data
3 string_1 BYTE "Hellooo",0
4 .code
5 main PROC
6 INVOKE Str_trim,ADDR string_1,'o'
7 mov edx,OFFSET string_1
8 call WriteString
9 exit
10 main ENDP
11 END main
```

Microsoft Visual Studio Debug Console

Hell
C:\Users\student\source\repos\LAB 3\Debug\LAB 3.exe
To automatically close the console when debugging s
le when debugging stops.
Press any key to close this window . . .

- Example

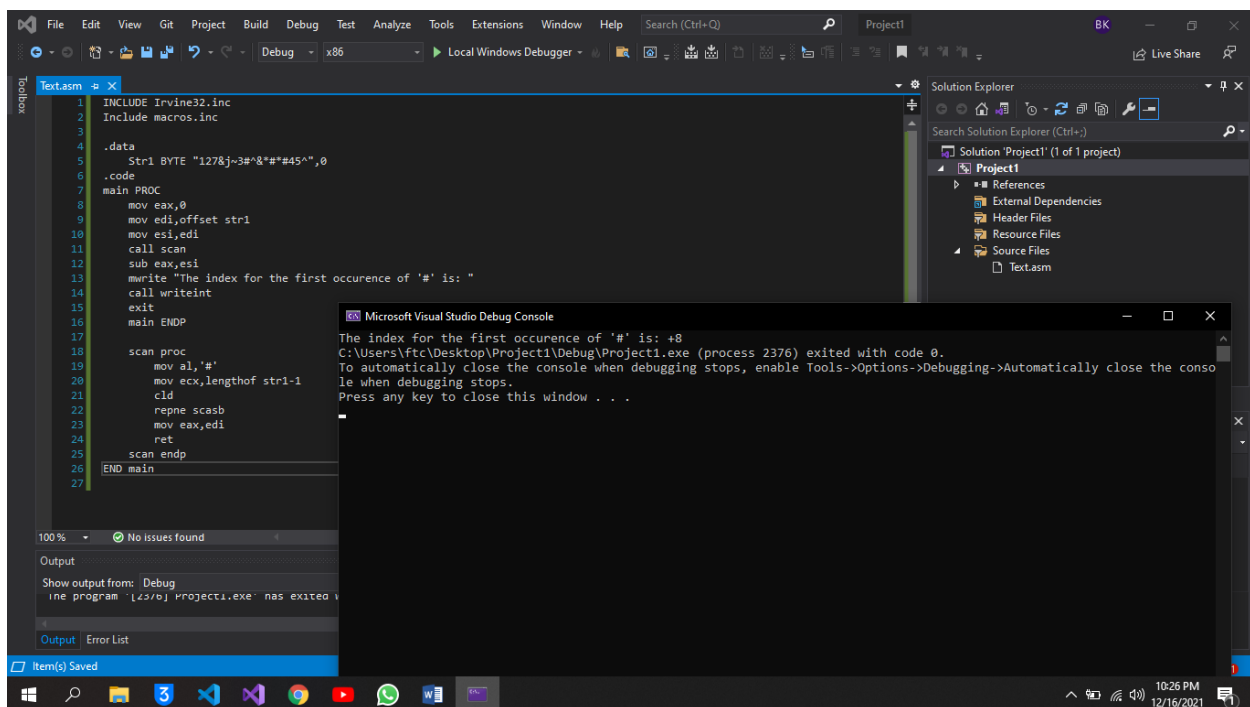
```
1 INCLUDE Irvine32.inc
2 .data
3 string_1 BYTE "My name is",0
4 .code
5 main PROC
6 INVOKE Str_ucase,ADDR string_1
7 mov edx,OFFSET string_1
8 call WriteString
9 exit
10 main ENDP
11 END main
```

Microsoft Visual Studio Debug Console

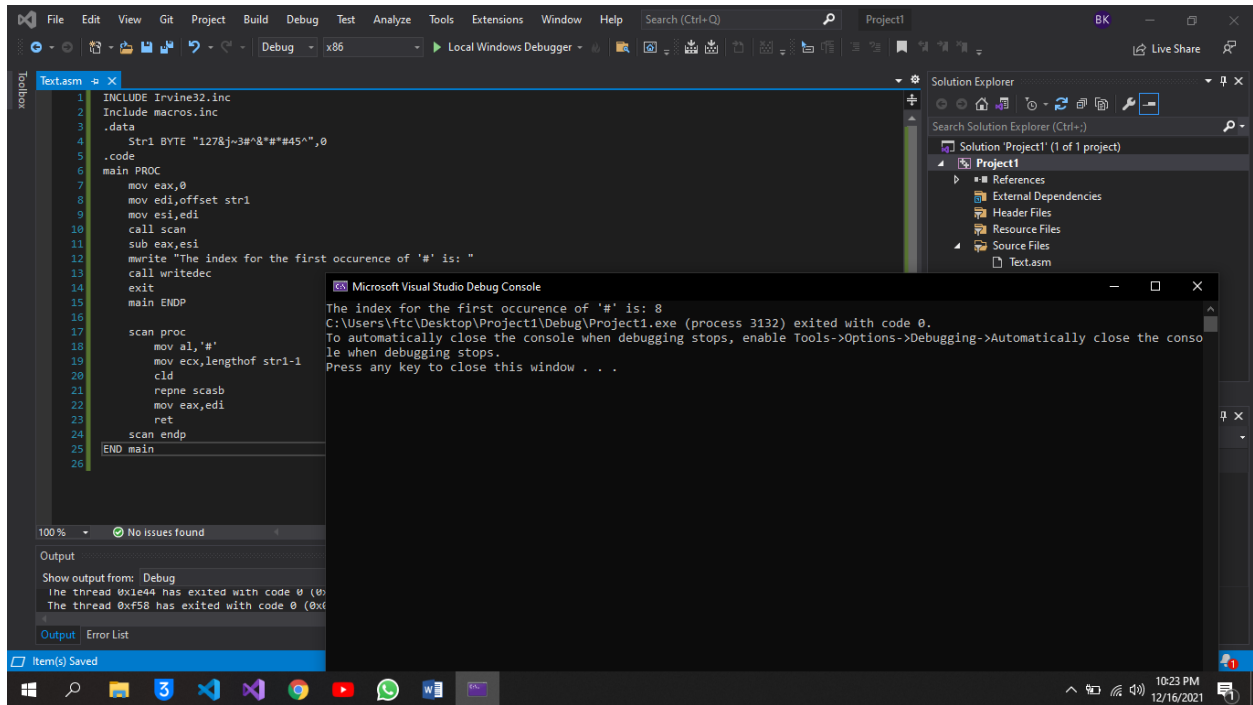
MY NAME IS

C:\Users\student\source\repos\LAB 3\Debug\LAB 3.exe (process 2376) 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 . . .

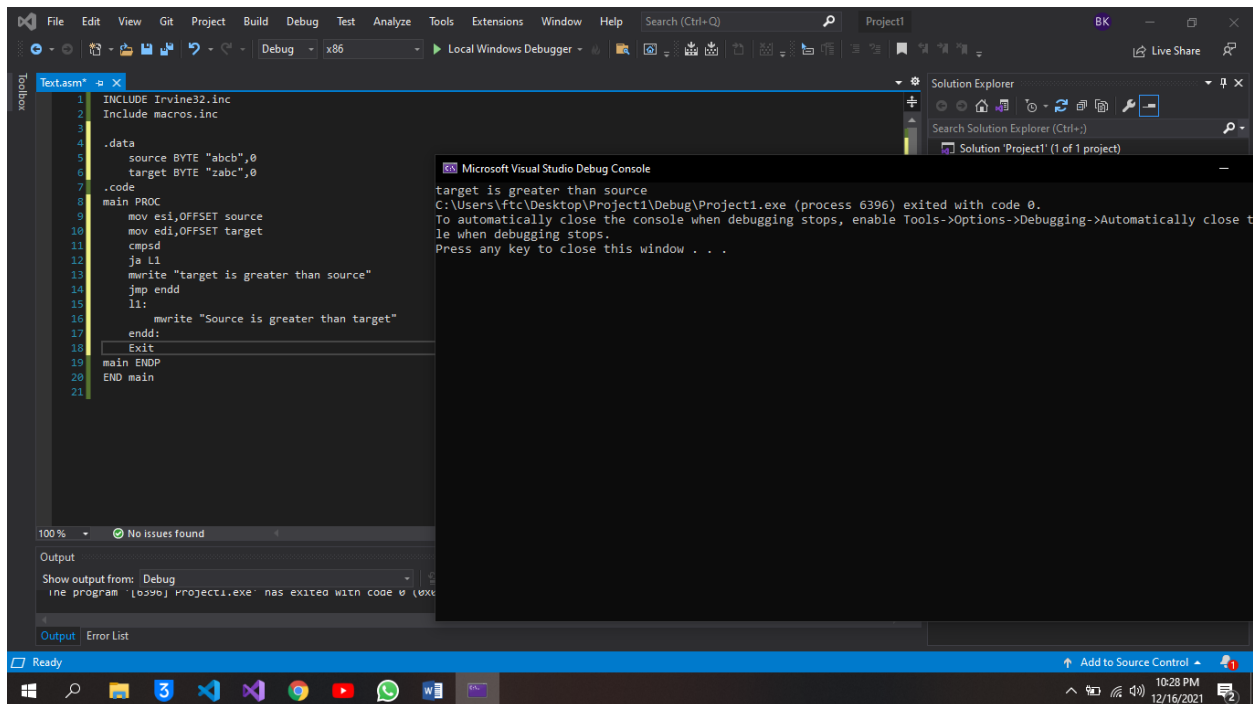
Task#01:



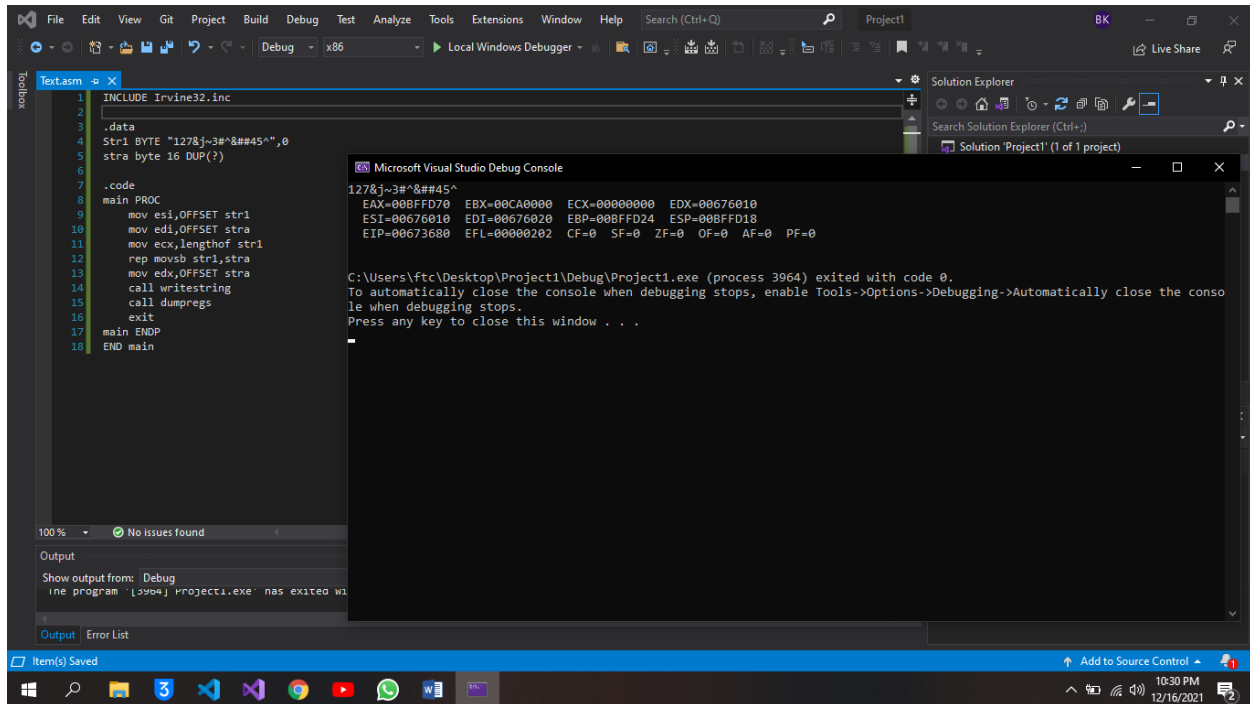
Task#02:



Task#03:



Task#04:



The screenshot shows the Visual Studio IDE with the following components:

- Text.asm:**

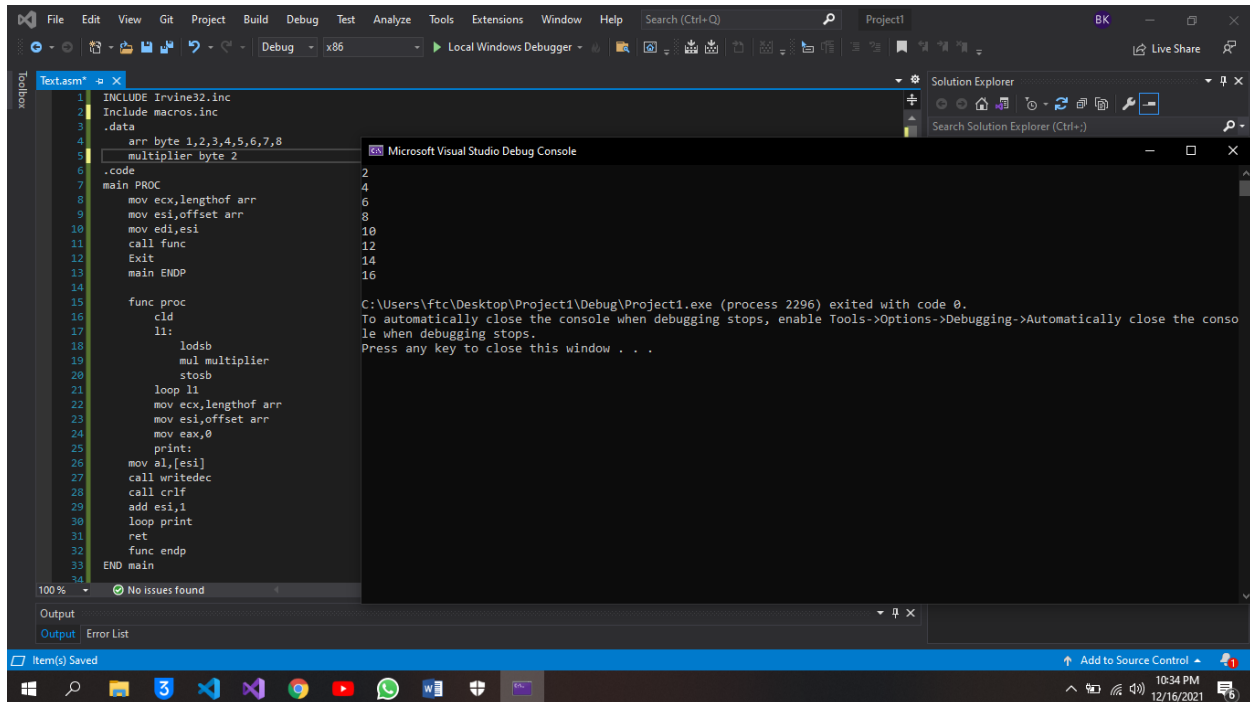
```
1 INCLUDE Irvine32.inc
2
3 .data
4 Str1 BYTE "1278j~3#^&##45^",0
5 str1 byte 16 DUP(?)
6
7 .code
8 main PROC
9     mov esi,OFFSET str1
10    mov edi,OFFSET str1
11    mov ecx,lengthof str1
12    rep movsb str1,str1
13    mov edx,OFFSET str1
14    call writestring
15    call dumpregs
16    exit
17 main ENDP
18 END main
```
- Microsoft Visual Studio Debug Console:**

```
1278j~3#^&##45^
EAX=00BFFD70 EBX=00CA0000 ECX=00000000 EDX=00676010
ESI=00676010 EDI=00676020 EBP=00BFFD24 ESP=00BFFD18
EIP=00673680 EFL=00000202 CF=0 SF=0 ZF=0 OF=0 AF=0 PF=0

C:\Users\ftc\Desktop\Project1\Debug\Project1.exe (process 3964) 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 . . .
```
- Output:**

```
Show output from: Debug
The program 'C:\Users\ftc\Desktop\Project1\Debug\Project1.exe' has exited with
```

Task#05:



The screenshot shows the Visual Studio IDE with the following components:

- Text.asm:**

```
1 INCLUDE Irvine32.inc
2 Include macros.inc
3 .data
4 arr byte 1,2,3,4,5,6,7,8
5 multiplier byte 2
6
7 .code
8 main PROC
9     mov ecx,lengthof arr
10    mov esi,offset arr
11    call func
12    Exit
13 main ENDP
14
15 func proc
16     cld
17     ll:
18         lodsb
19         mul multiplier
20         stosb
21     loop ll
22     mov ecx,lengthof arr
23     mov esi,offset arr
24     mov eax,0
25     print:
26     mov al,[esi]
27     call writedec
28     call crlf
29     add esi,1
30     loop print
31     ret
32 func endp
33 END main
```
- Microsoft Visual Studio Debug Console:**

```
C:\Users\ftc\Desktop\Project1\Debug\Project1.exe (process 2296) 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 . . .
```
- Output:**

```
Show output from: Debug
```

Task#06:

