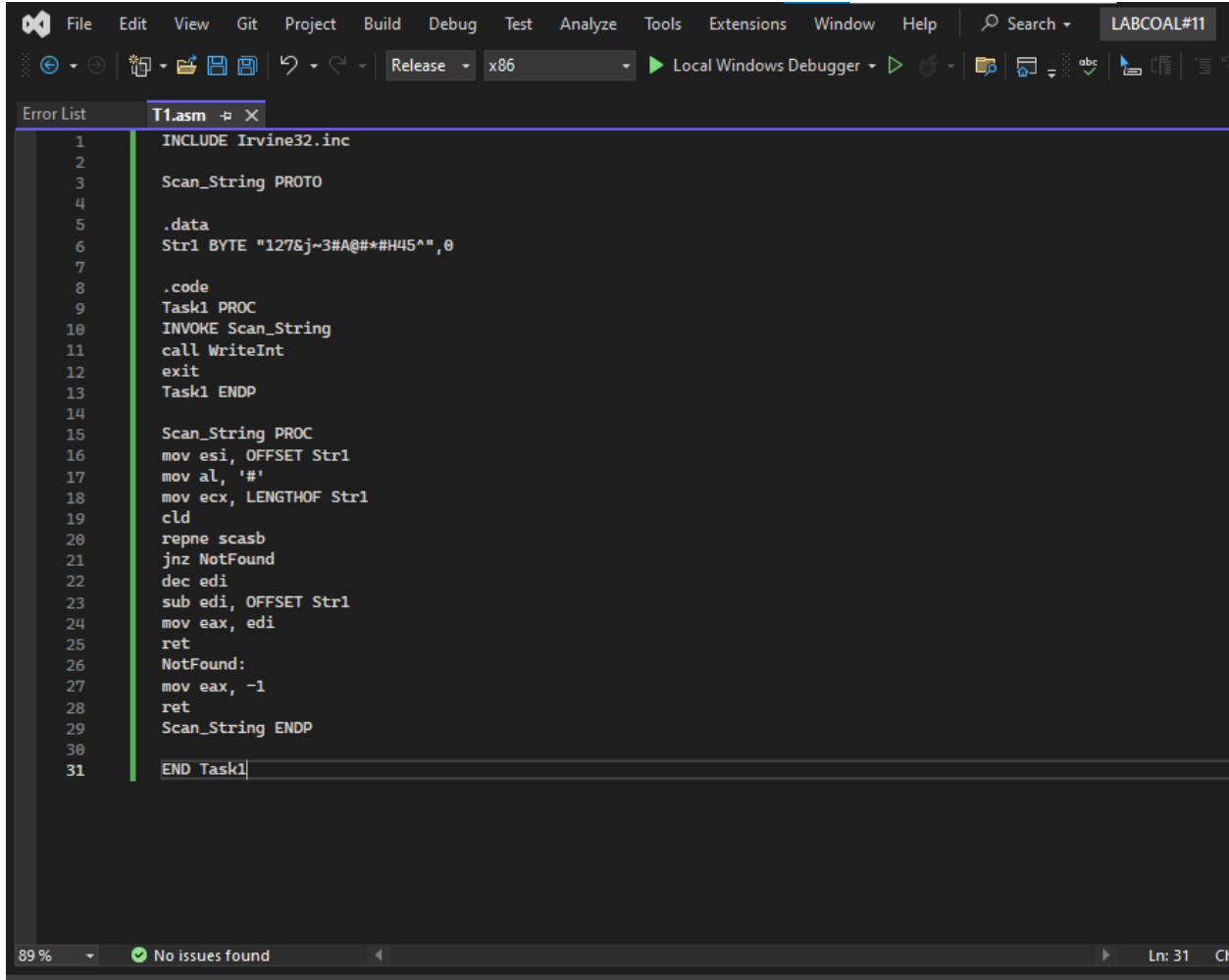


COAL LAB # 11

Task 1:

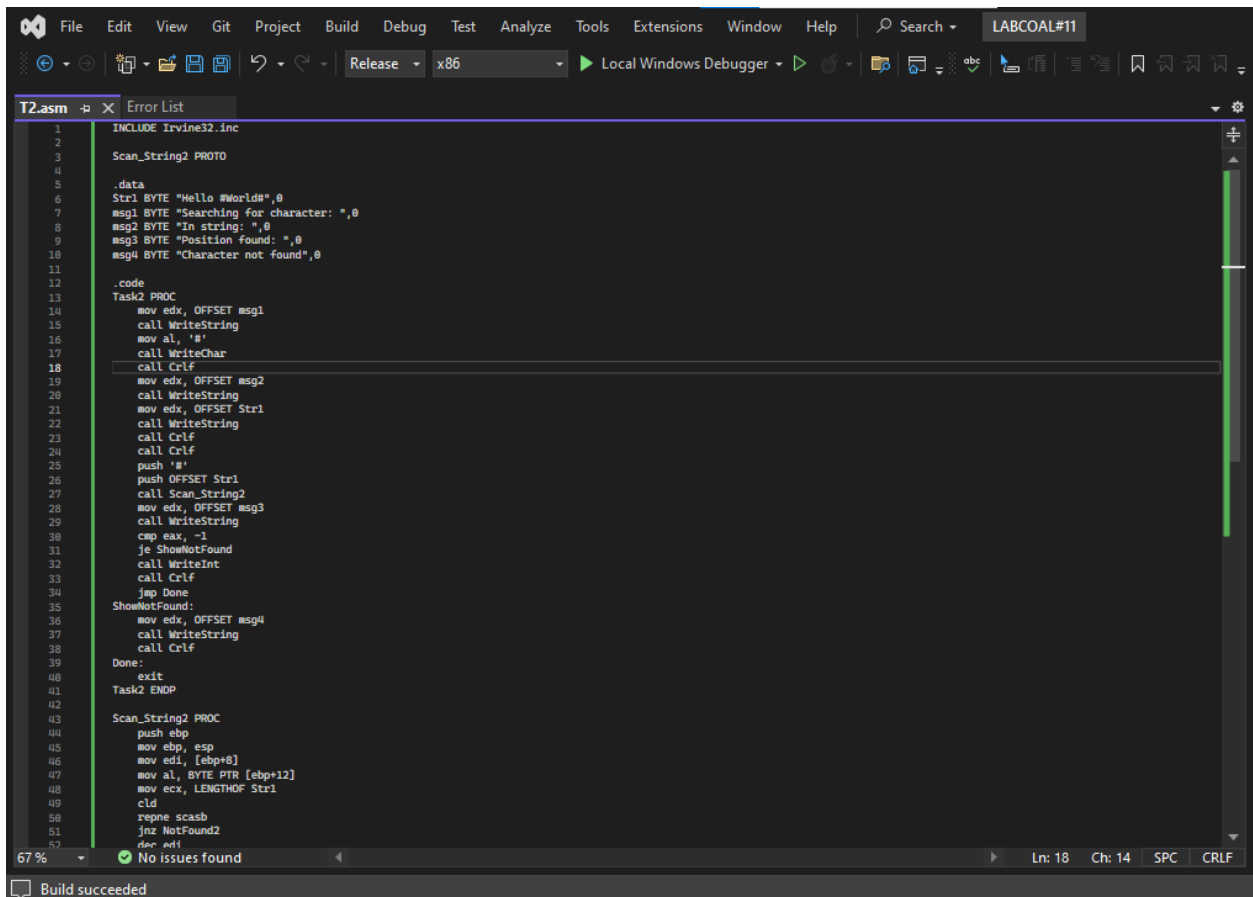


```
1  INCLUDE Irvine32.inc
2
3  Scan_String PROTO
4
5  .data
6  Str1 BYTE "127&j~3#A@#*#H45^",0
7
8  .code
9  Task1 PROC
10  INVOKE Scan_String
11  call WriteInt
12  exit
13  Task1 ENDP
14
15  Scan_String PROC
16  mov esi, OFFSET Str1
17  mov al, '#'
18  mov ecx, LENGTHOF Str1
19  cld
20  repne scasb
21  jnz NotFound
22  dec edi
23  sub edi, OFFSET Str1
24  mov eax, edi
25  ret
26  NotFound:
27  mov eax, -1
28  ret
29  Scan_String ENDP
30
31  END Task1
```

Output:

```
-1
C:\Users\Lenovo\OneDrive\Desktop\BAI-3\COAL LAB\LABCOAL#11\LABCOAL#11\Release\LABCOAL#11.exe (process 11492) exited with
code 0 (0x0).
Press any key to close this window . . .
```

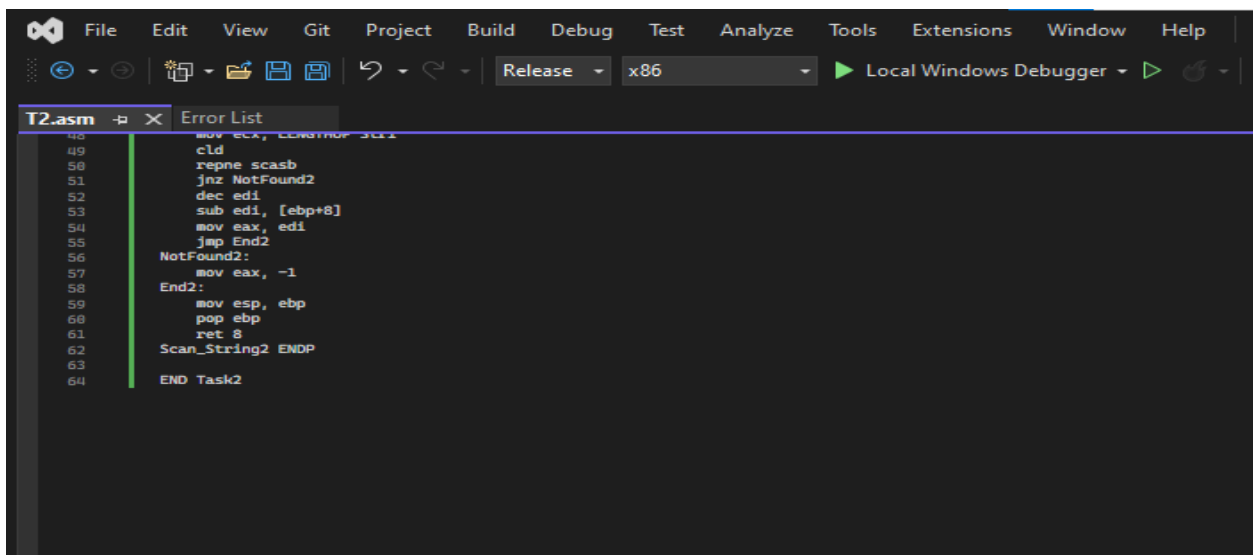
Task 2:



```
1  INCLUDE Irvine32.inc
2
3  Scan_String2 PROC
4
5  .data
6  Str1 BYTE "Hello #World#",0
7  msg1 BYTE "Searching for character: ",0
8  msg2 BYTE "In string: ",0
9  msg3 BYTE "Position found: ",0
10 msg4 BYTE "Character not found",0
11
12 .code
13 Task2 PROC
14     mov edx, OFFSET msg1
15     call WriteString
16     mov al, 'B'
17     call WriteChar
18     call CrLf
19     mov edx, OFFSET msg2
20     call WriteString
21     mov edx, OFFSET Str1
22     call WriteString
23     call CrLf
24     call CrLf
25     push 'B'
26     push OFFSET Str1
27     call Scan_String2
28     mov edx, OFFSET msg3
29     call WriteString
30     cmp eax, -1
31     je ShowNotFound
32     call WriteInt
33     call CrLf
34     jmp Done
35 ShowNotFound:
36     mov edx, OFFSET msg4
37     call WriteString
38     call CrLf
39 Done:
40     exit
41 Task2 ENDP
42
43 Scan_String2 PROC
44     push ebp
45     mov ebp, esp
46     mov edi, [ebp+8]
47     mov al, BYTE PTR [ebp+12]
48     mov ecx, LENGTHOF Str1
49     cld
50     repne scasb
51     jnz NotFound2
52     dec edi
53     sub edi, [ebp+8]
54     mov eax, edi
55     jmp End2
56 NotFound2:
57     mov eax, -1
58 End2:
59     mov esp, ebp
60     pop ebp
61     ret 8
62 Scan_String2 ENDP
63
64 END Task2
```

67 % No issues found Ln: 18 Ch: 14 SPC CRLF

Build succeeded



```
48     mov ecx, LENGTHOF Str1
49     cld
50     repne scasb
51     jnz NotFound2
52     dec edi
53     sub edi, [ebp+8]
54     mov eax, edi
55     jmp End2
56 NotFound2:
57     mov eax, -1
58 End2:
59     mov esp, ebp
60     pop ebp
61     ret 8
62 Scan_String2 ENDP
63
64 END Task2
```

67 % No issues found Ln: 18 Ch: 14 SPC CRLF

Build succeeded

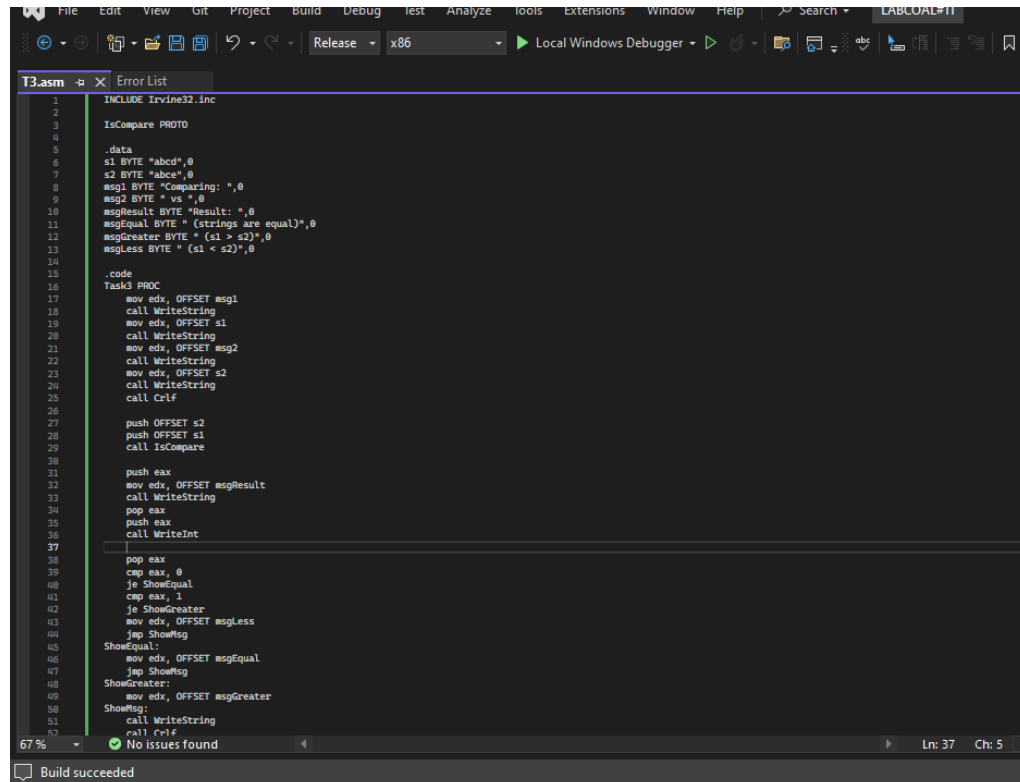
Output

```
Searching for character: #
In string: Hello #World#

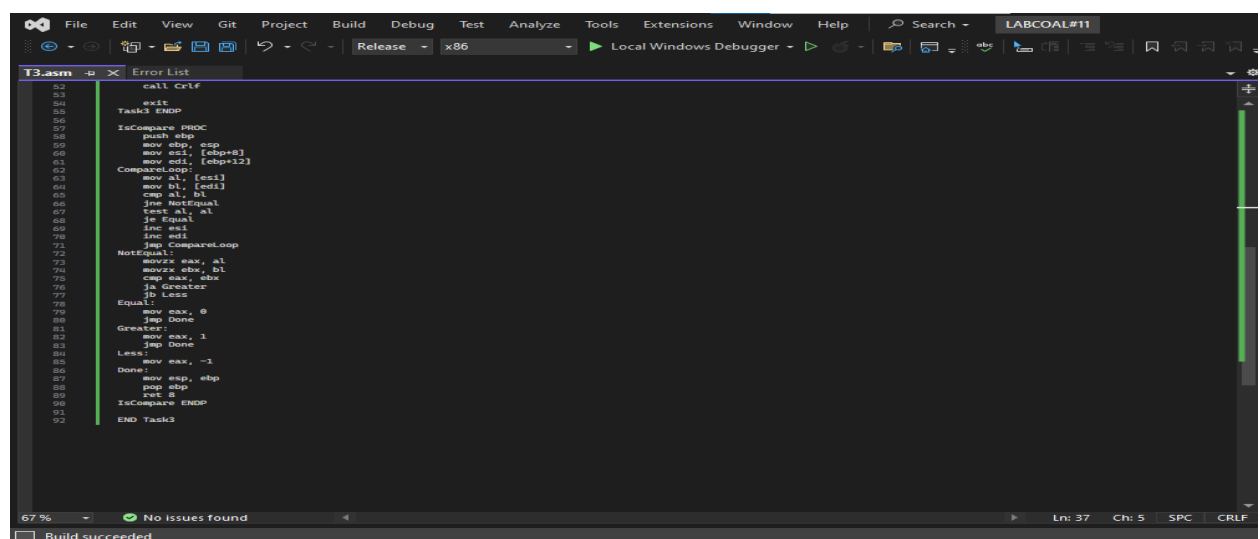
Position found: +6

C:\Users\Lenovo\OneDrive\Desktop\BAI-3\COAL LAB\LABCOAL#11\LABCOAL#11\Release\LABCOAL#11.exe (process 6184) exited with
code 0 (0x0).
Press any key to close this window . . .
```

Task 3:



```
T3.asm  Error List
1  INCLUDE Irvine32.inc
2
3  IsCompare PROTO
4
5  .data
6  s1 BYTE "abcd",0
7  s2 BYTE "abce",0
8  msg1 BYTE "Comparing: ",0
9  msg2 BYTE " vs ",0
10 msgResult BYTE "Result: ",0
11 msgEqual BYTE " (strings are equal)",0
12 msgGreater BYTE " (s1 > s2)",0
13 msgLess BYTE " (s1 < s2)",0
14
15 .code
16 Task3 PROC
17     mov edx, OFFSET msg1
18     call WriteString
19     mov edx, OFFSET s1
20     call WriteString
21     mov edx, OFFSET msg2
22     call WriteString
23     mov edx, OFFSET s2
24     call WriteString
25     call CrLf
26
27     push OFFSET s2
28     push OFFSET s1
29     call IsCompare
30
31     push eax
32     mov edx, OFFSET msgResult
33     call WriteString
34     pop eax
35     push eax
36     call WriteInt
37
38     pop eax
39     cmp eax, 0
40     je ShowEqual
41     cmp eax, 1
42     je ShowGreater
43     mov edx, OFFSET msgLess
44     jmp ShowMsg
45 ShowEqual:
46     mov edx, OFFSET msgEqual
47     jmp ShowMsg
48 ShowGreater:
49     mov edx, OFFSET msgGreater
50 ShowMsg:
51     call WriteString
52     call CrLf
53
54     exit
55 Task3 ENDP
56
57 IsCompare PROTO
58     push ebp
59     mov ebp, esp
60     mov esi, [ebp+8]
61     mov edi, [ebp+12]
62 CompareLoop:
63     mov al, [esi]
64     mov bl, [edi]
65     cmp al, bl
66     jne NotEqual
67     test al, al
68     je Equal
69     inc esi
70     inc edi
71     jmp CompareLoop
72 NotEqual:
73     movzx eax, al
74     movzx ebx, bl
75     cmp eax, ebx
76     ja Greater
77     jb Less
78 Equal:
79     mov eax, 0
80     jmp Done
81 Greater:
82     mov eax, 1
83     jmp Done
84 Less:
85     mov eax, -1
86 Done:
87     mov esp, ebp
88     pop ebp
89     ret 8
90 IsCompare ENDP
91
92 END Task3
```



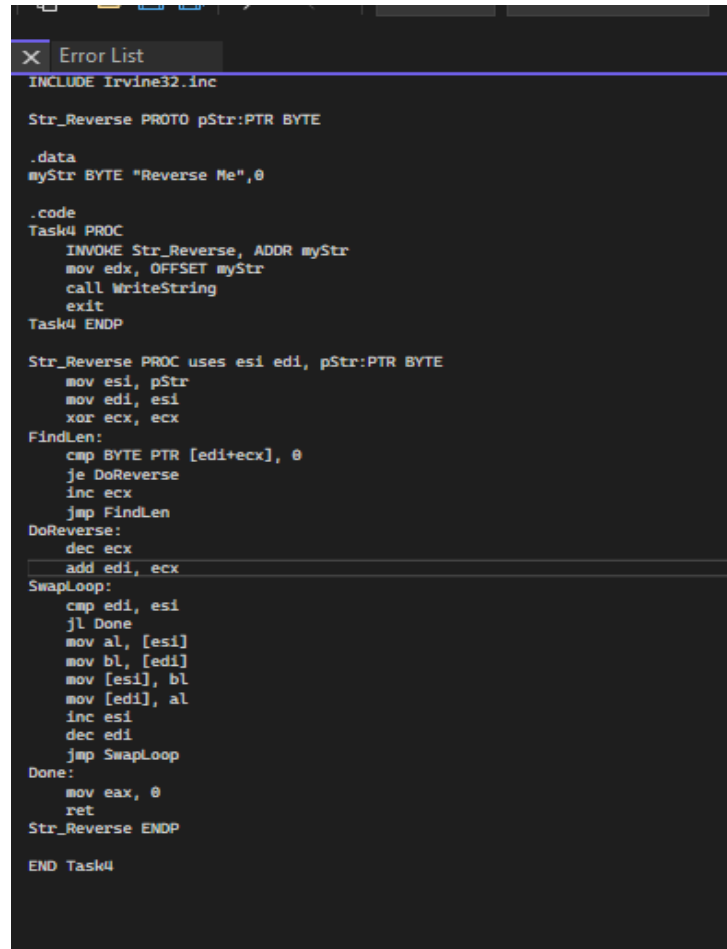
```
T3.asm  Error List
53     call CrLf
54     exit
55 Task3 ENDP
56
57 IsCompare PROTO
58     push ebp
59     mov ebp, esp
60     mov esi, [ebp+8]
61     mov edi, [ebp+12]
62 CompareLoop:
63     mov al, [esi]
64     mov bl, [edi]
65     cmp al, bl
66     jne NotEqual
67     test al, al
68     je Equal
69     inc esi
70     inc edi
71     jmp CompareLoop
72 NotEqual:
73     movzx eax, al
74     movzx ebx, bl
75     cmp eax, ebx
76     ja Greater
77     jb Less
78 Equal:
79     mov eax, 0
80     jmp Done
81 Greater:
82     mov eax, 1
83     jmp Done
84 Less:
85     mov eax, -1
86 Done:
87     mov esp, ebp
88     pop ebp
89     ret 8
90 IsCompare ENDP
91
92 END Task3
```

Output:

```
Comparing: abcd vs abce
Result: -1 (s1 < s2)

C:\Users\Lenovo\OneDrive\Desktop\BAI-3\COAL LAB\LABCOAL#11\LABCOAL#11\Release\LABCOAL#11.exe (process 5540) exited with
code 0 (0x0).
```

Task 4:



```
INCLUDE Irvine32.inc

Str_Reverse PROTO pStr:PTR BYTE

.data
myStr BYTE "Reverse Me",0

.code
Task4 PROC
    INVOKE Str_Reverse, ADDR myStr
    mov edx, OFFSET myStr
    call WriteString
    exit
Task4 ENDP

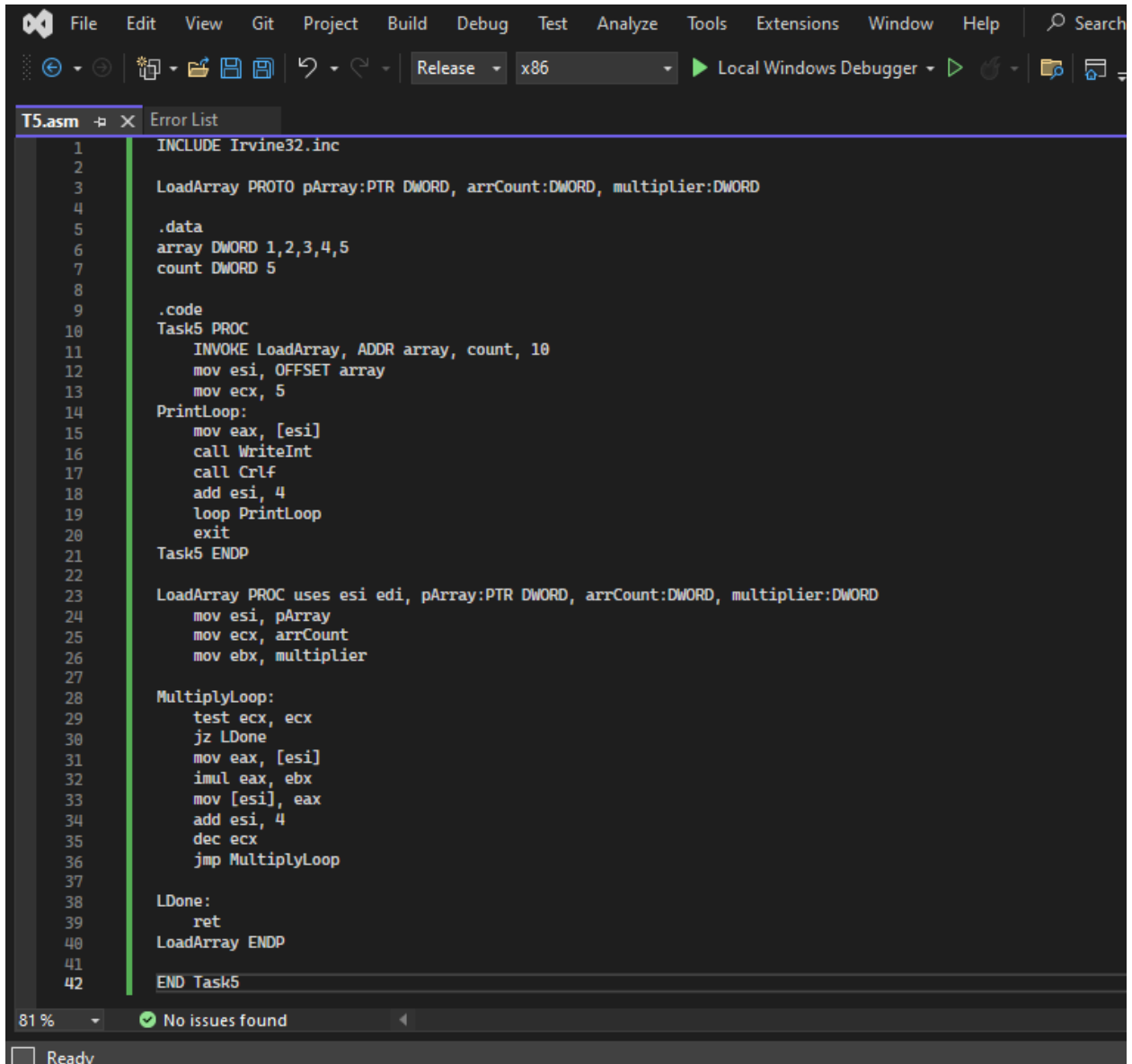
Str_Reverse PROC uses esi edi, pStr:PTR BYTE
    mov esi, pStr
    mov edi, esi
    xor ecx, ecx
FindLen:
    cmp BYTE PTR [edi+ecx], 0
    je DoReverse
    inc ecx
    jmp FindLen
DoReverse:
    dec ecx
    add edi, ecx
SwapLoop:
    cmp edi, esi
    jl Done
    mov al, [esi]
    mov bl, [edi]
    mov [esi], bl
    mov [edi], al
    inc esi
    dec edi
    jmp SwapLoop
Done:
    mov eax, 0
    ret
Str_Reverse ENDP

END Task4
```

Output:

```
eM esrever
C:\Users\Lenovo\OneDrive\Desktop\BAI-3\COAL LAB\LABCOAL#11\LABCOAL#11\Release\LABCOAL#11.exe (process 3104) exited with
code 0 (0x0).
Press any key to close this window . . .
```

Task 5:

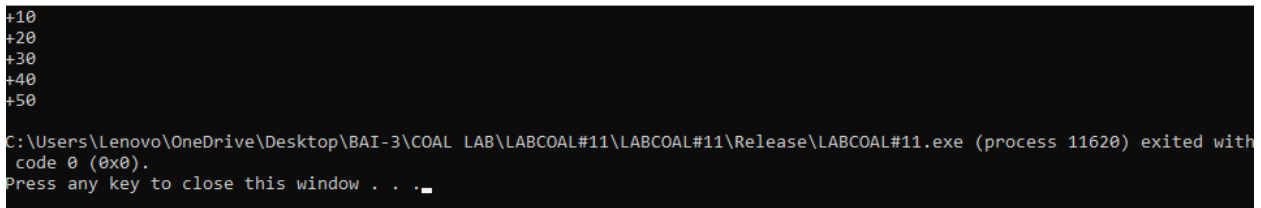


```
1  INCLUDE Irvine32.inc
2
3  LoadArray PROTO pArray:PTR DWORD, arrCount:DWORD, multiplier:DWORD
4
5  .data
6  array DWORD 1,2,3,4,5
7  count DWORD 5
8
9  .code
10 Task5 PROC
11     INVOKE LoadArray, ADDR array, count, 10
12     mov esi, OFFSET array
13     mov ecx, 5
14 PrintLoop:
15     mov eax, [esi]
16     call WriteInt
17     call Crlf
18     add esi, 4
19     loop PrintLoop
20     exit
21 Task5 ENDP
22
23 LoadArray PROC uses esi edi, pArray:PTR DWORD, arrCount:DWORD, multiplier:DWORD
24     mov esi, pArray
25     mov ecx, arrCount
26     mov ebx, multiplier
27
28 MultiplyLoop:
29     test ecx, ecx
30     jz LDone
31     mov eax, [esi]
32     imul eax, ebx
33     mov [esi], eax
34     add esi, 4
35     dec ecx
36     jmp MultiplyLoop
37
38 LDone:
39     ret
40 LoadArray ENDP
41
42 END Task5
```

81 % No issues found

Ready

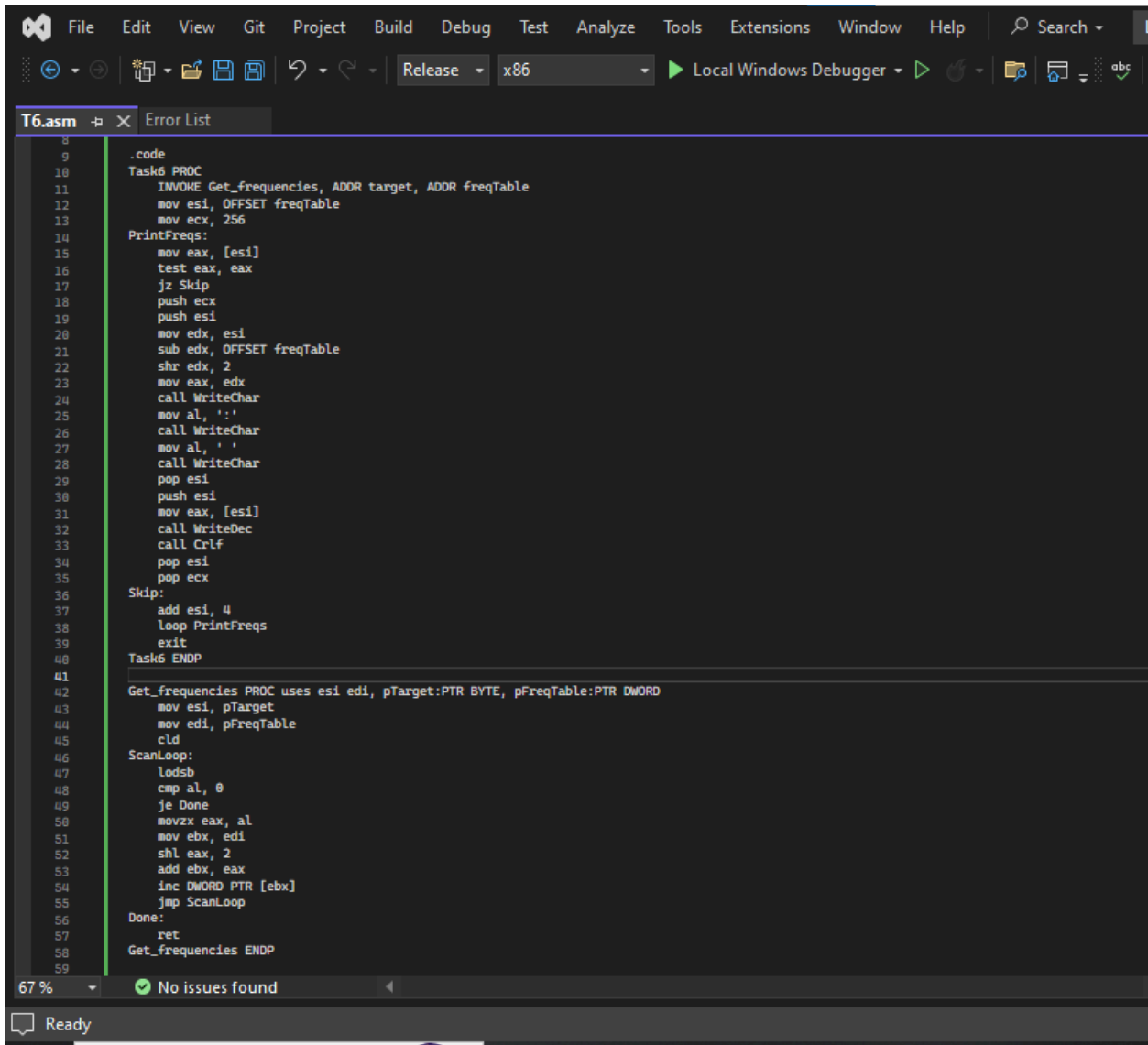
Output:



```
+10
+20
+30
+40
+50

C:\Users\Lenovo\OneDrive\Desktop\BAI-3\COAL LAB\LABCOAL#11\LABCOAL#11\Release\LABCOAL#11.exe (process 11620) exited with
code 0 (0x0).
Press any key to close this window . . .
```

Task 6:



```
8
9
10 .code
11 Task6 PROC
12     INVOKE Get_frequencies, ADDR target, ADDR freqTable
13     mov esi, OFFSET freqTable
14     mov ecx, 256
15     PrintFreqs:
16     mov eax, [esi]
17     test eax, eax
18     jz Skip
19     push ecx
20     push esi
21     mov edx, esi
22     sub edx, OFFSET freqTable
23     shr edx, 2
24     mov eax, edx
25     call WriteChar
26     mov al, ':'
27     call WriteChar
28     mov al, ' '
29     call WriteChar
30     pop esi
31     push esi
32     mov eax, [esi]
33     call WriteDec
34     call CrLf
35     pop esi
36     pop ecx
37     Skip:
38     add esi, 4
39     loop PrintFreqs
40     exit
41 Task6 ENDP
42
43 Get_frequencies PROC uses esi edi, pTarget:PTR BYTE, pFreqTable:PTR DWORD
44     mov esi, pTarget
45     mov edi, pFreqTable
46     cld
47     ScanLoop:
48     lodsb
49     cmp al, 0
50     je Done
51     movzx eax, al
52     mov ebx, edi
53     shl eax, 2
54     add ebx, eax
55     inc DWORD PTR [ebx]
56     jmp ScanLoop
57 Done:
58     ret
59 Get_frequencies ENDP
```

67 % No issues found

Ready

Output:

```
: 2
A: 2
B: 3
C: 2
D: 1
E: 1
F: 1

C:\Users\Lenovo\OneDrive\Desktop\BAI-3\COAL LAB\LABCOAL#11\LABCOAL#11\Release\LABCOAL#11.exe (process 1448) exited with
code 0 (0x0).
Press any key to close this window . . .
```

MUHAMMAD BAQAR LAGHARI

24K-0006

BAI-3A