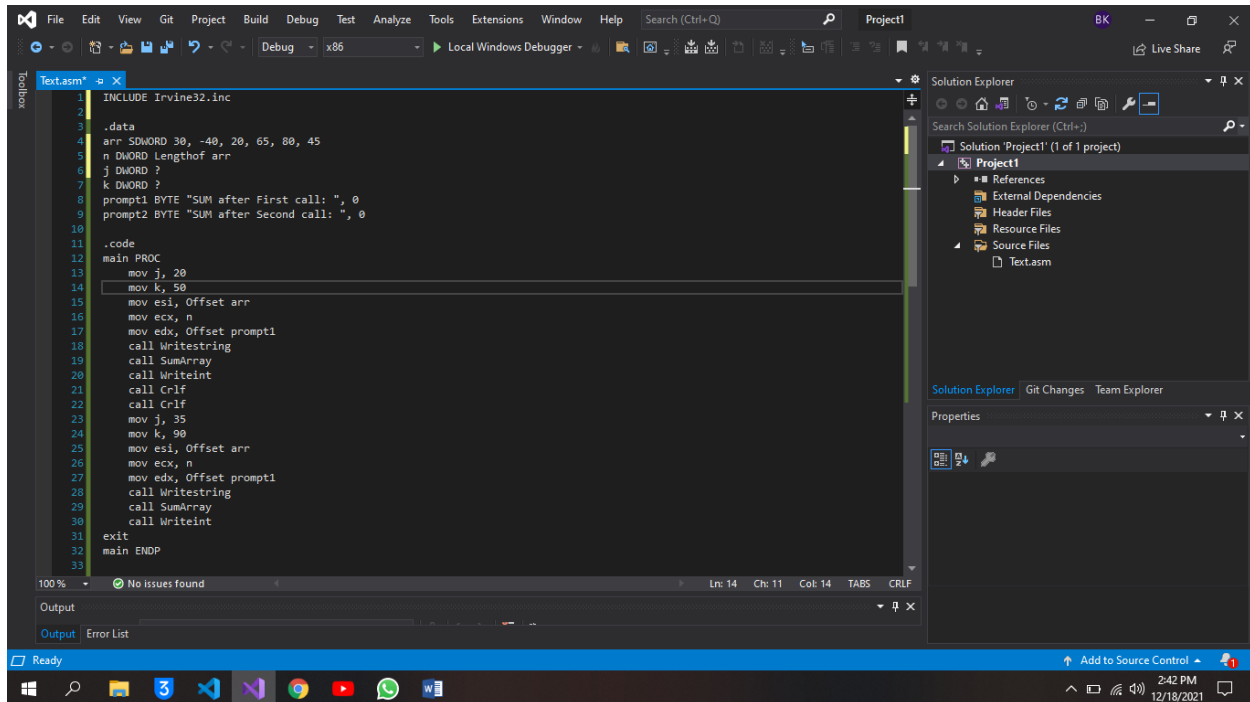


# COAL ASSIGNMENT 02

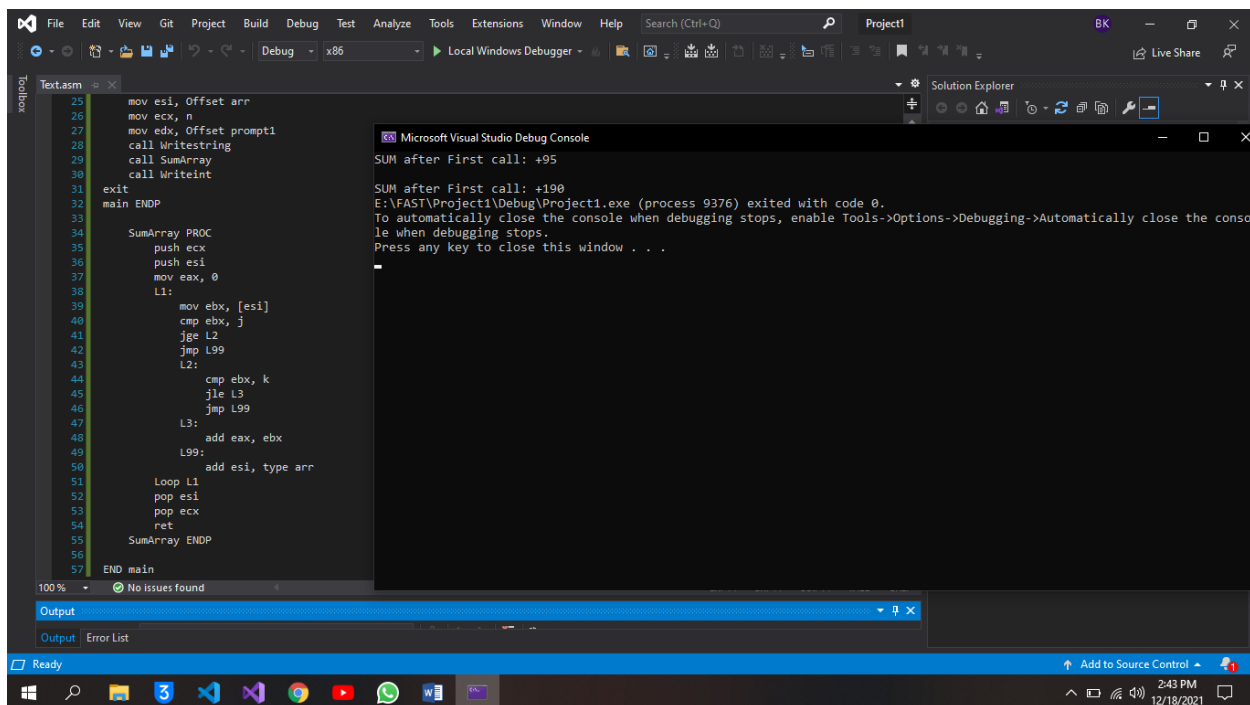
## MOHAMMAD BASIL ALI KHAN

### 20K-0477

- **Question#01:**



```
1 INCLUDE Irvine32.inc
2
3 .data
4 arr SDWORD 30, -40, 20, 65, 80, 45
5 n DWORD Lengthof arr
6 j DWORD ?
7 k DWORD ?
8 prompt1 BYTE "SUM after First call: ", 0
9 prompt2 BYTE "SUM after Second call: ", 0
10
11 .code
12 main PROC
13     mov j, 20
14     mov k, 50
15     mov esi, Offset arr
16     mov ecx, n
17     mov edx, Offset prompt1
18     call WriteString
19     call SumArray
20     call WriteInt
21     call Crlf
22     call Crlf
23     mov j, 35
24     mov k, 90
25     mov esi, Offset arr
26     mov ecx, n
27     mov edx, Offset prompt1
28     call WriteString
29     call SumArray
30     call WriteInt
31     exit
32 main ENDP
33
```

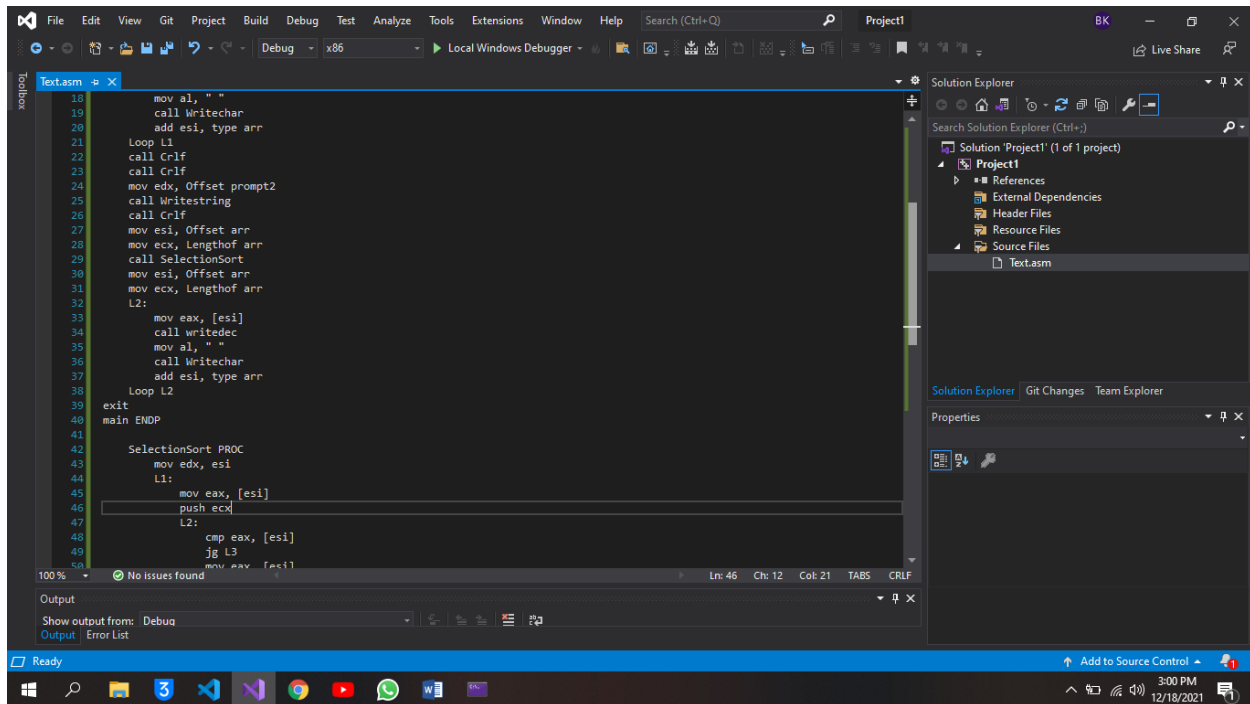
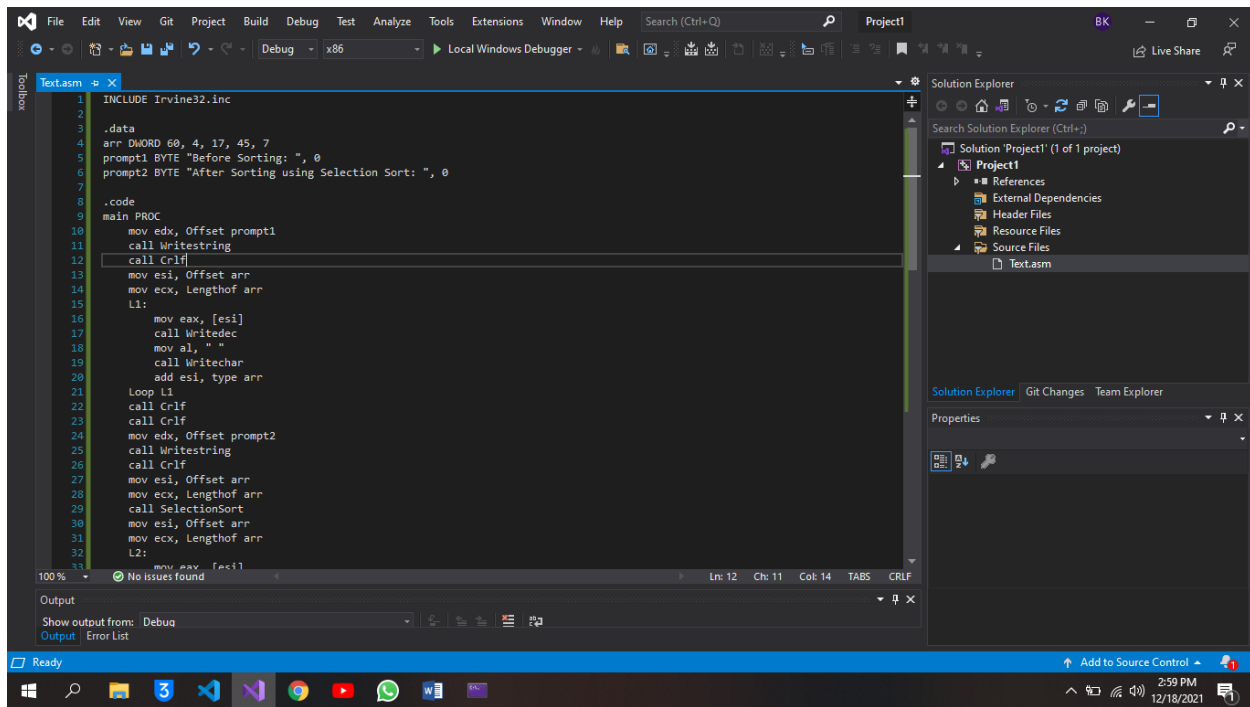


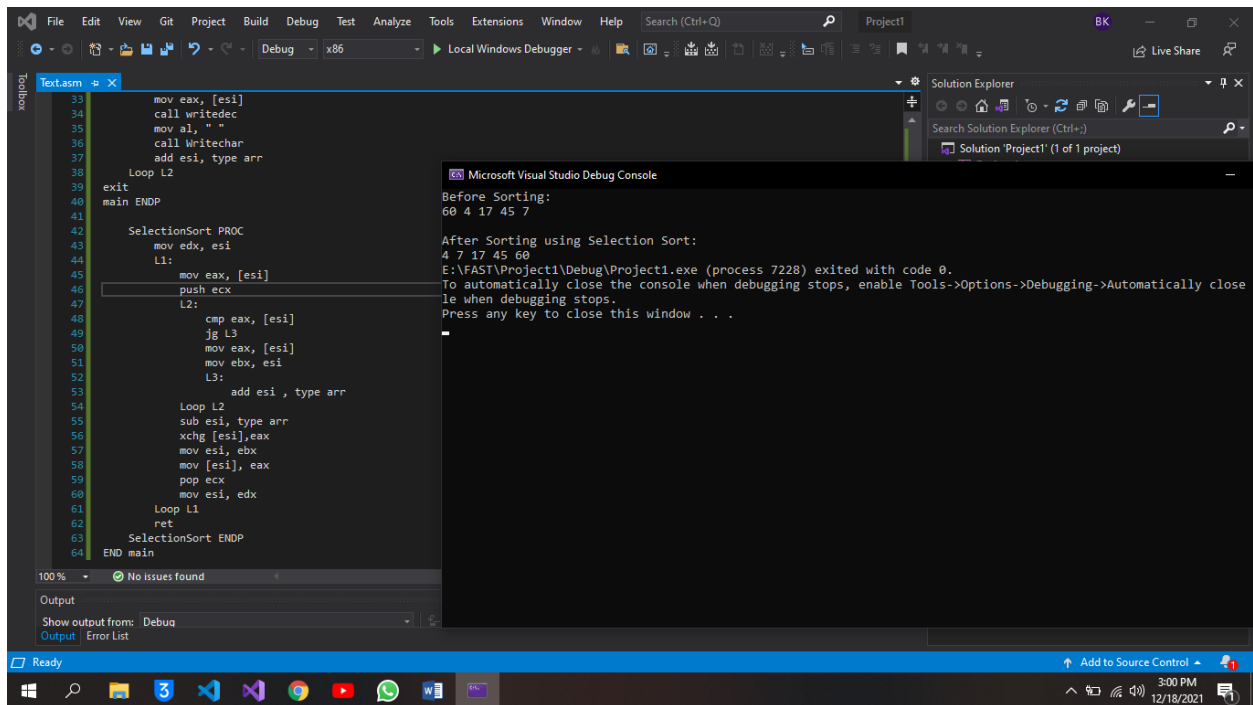
```
25     mov esi, Offset arr
26     mov ecx, n
27     mov edx, Offset prompt1
28     call WriteString
29     call SumArray
30     call WriteInt
31     exit
32 main ENDP
33
34 SumArray PROC
35     push ecx
36     push esi
37     mov eax, 0
38     L1:
39         mov ebx, [esi]
40         cmp ebx, j
41         jge L2
42         jmp L99
43     L2:
44         cmp ebx, k
45         jle L3
46         jmp L99
47     L3:
48         add eax, ebx
49     L99:
50         add esi, type arr
51     Loop L1
52     pop esi
53     pop ecx
54     ret
55 SumArray ENDP
56
57 END main
```

Microsoft Visual Studio Debug Console

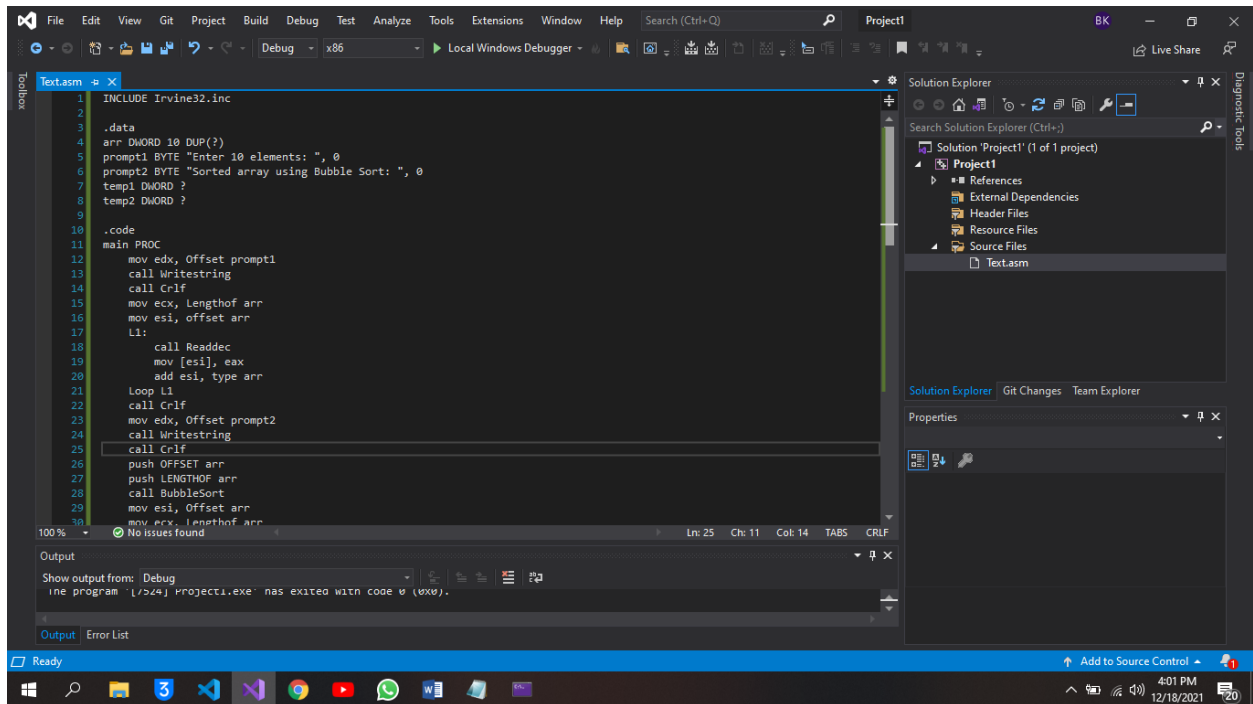
```
SUM after First call: +95
SUM after First call: +190
E:\FAST\Project1\Debug\Project1.exe (process 9376) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .
```

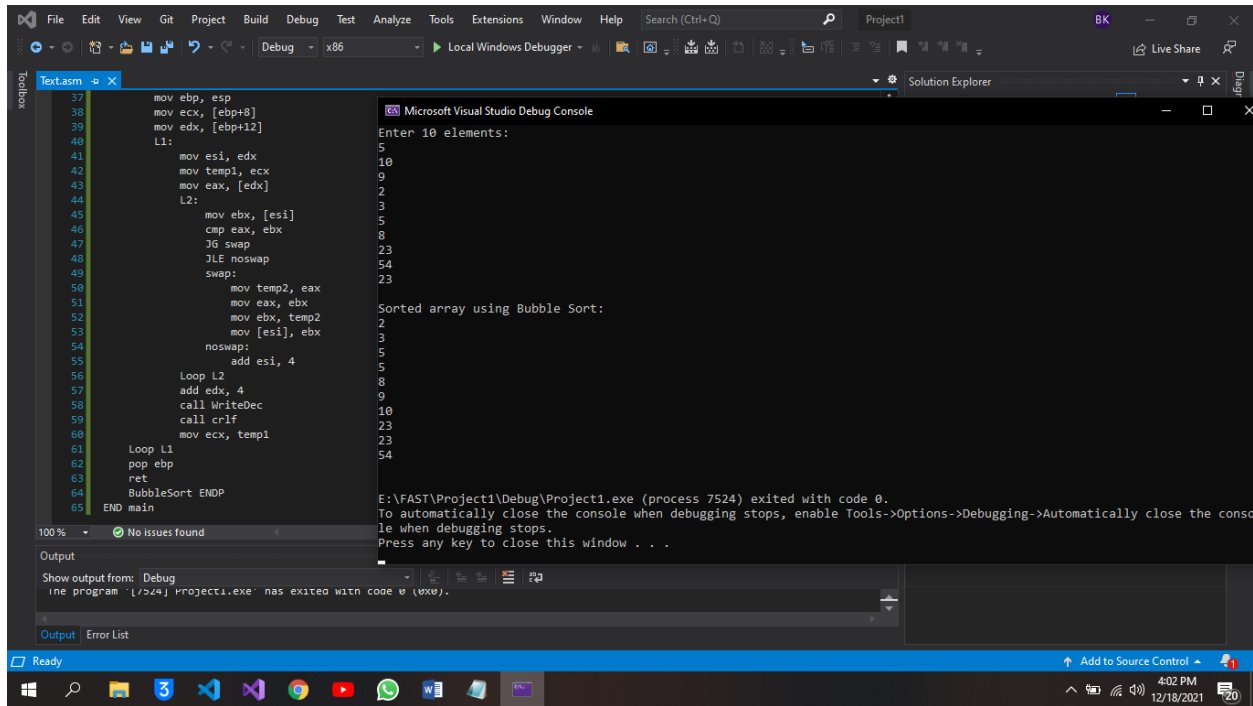
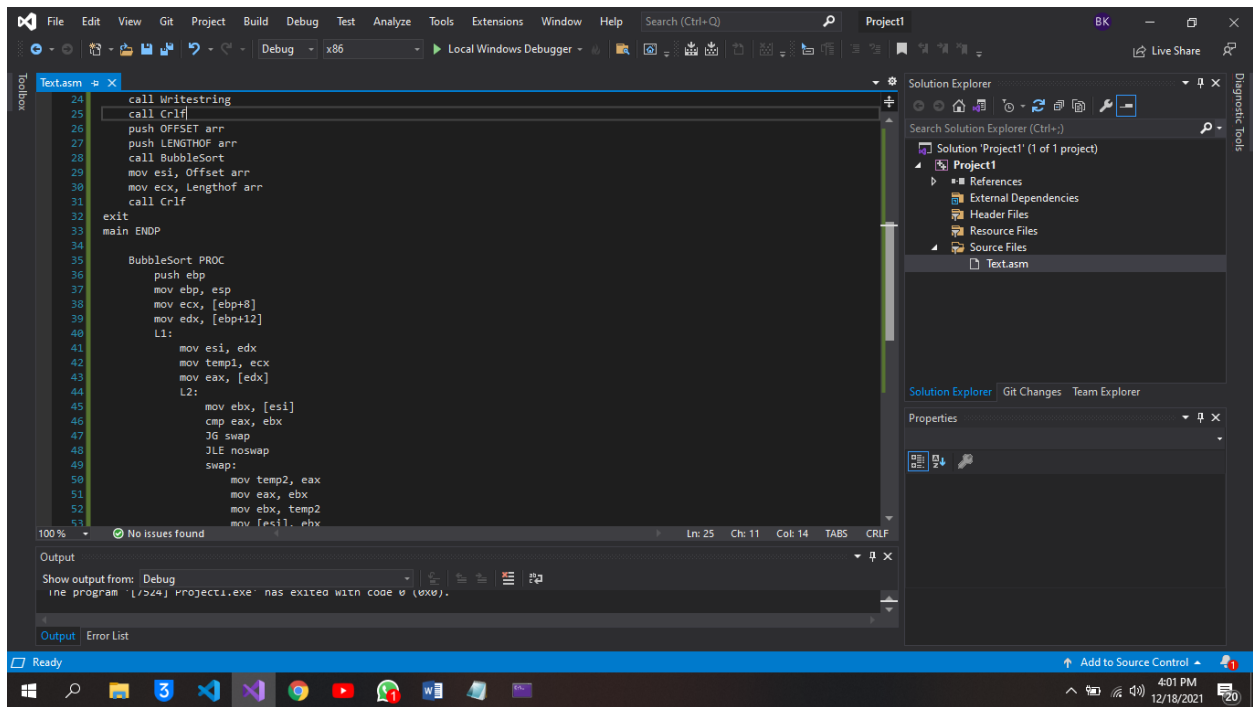
## • Question#02:





### • Question#03:





## • Question#04:

The screenshot shows the Visual Studio IDE with a project named 'Project1'. The main window displays assembly code in 'Text.asm'. The code includes Irvine32.inc and implements a factorial function. The debug console shows the program's execution, where the user enters '5' and the program outputs 'Factorial of given number is: 120'.

```

1 INCLUDE Irvine32.inc
2
3 .data
4 prompt1 BYTE "Enter number for factorial: ", 0
5 prompt2 BYTE "Factorial of given number is: ", 0
6
7 .code
8 main proc
9     mov edx, Offset prompt1
10    call WriteString
11    call ReadDec
12    mov ecx, eax
13    mov ebx, eax
14    dec ecx
15    call Factorial
16    mov edx, Offset prompt2
17    call WriteString
18    call WriteDec
19    exit
20 main endp
21
22 Factorial proc
23     mul ecx
24     dec ecx
25     cmp ecx, 0
26     jle L2
27     call Factorial
28     L2:
29     ret
30 Factorial endp
31 END main

```

Microsoft Visual Studio Debug Console

```

Enter number for factorial: 5
Factorial of given number is: 120
E:\FAST\Project1\Debug\Project1.exe (process 2804) 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 . . .

```

## • Question#05:

The screenshot shows the Visual Studio IDE with a project named 'Project1'. The main window displays assembly code in 'Text.asm'. The code includes Irvine32.inc and implements a program that reads a character, displays its ASCII code in binary, and counts the number of 1 bits. The debug console shows the program's execution, where the user enters 'A' and the program outputs 'The ASCII code in binary is : 0000 0000 0000 0000 0000 0100 0001' and 'The number of 1 Bits are : 2'.

```

1 INCLUDE Irvine32.inc
2
3 .data
4 prompt1 BYTE "Type a character : ", 0
5 prompt2 BYTE "The ASCII code in binary is : ", 0
6 prompt3 BYTE "The number of 1 Bits are : ", 0
7
8 .code
9 main proc
10    mov edx, Offset prompt1
11    call WriteString
12    call ReadChar
13    call CrLf
14    mov edx, Offset prompt2
15    call WriteString
16    mov bl, al
17    movzx eax, bl
18    call WriteBin
19    call CrLf
20    mov ebx, 0
21    mov ecx, 8
22    L1:
23        shr eax, 1
24        jnc L2
25        inc ebx
26    L2:
27    loop L1
28    mov edx, Offset prompt3
29    call WriteString
30    mov eax, ebx
31    call WriteDec
32    exit
33 main ENDP
34 END main

```

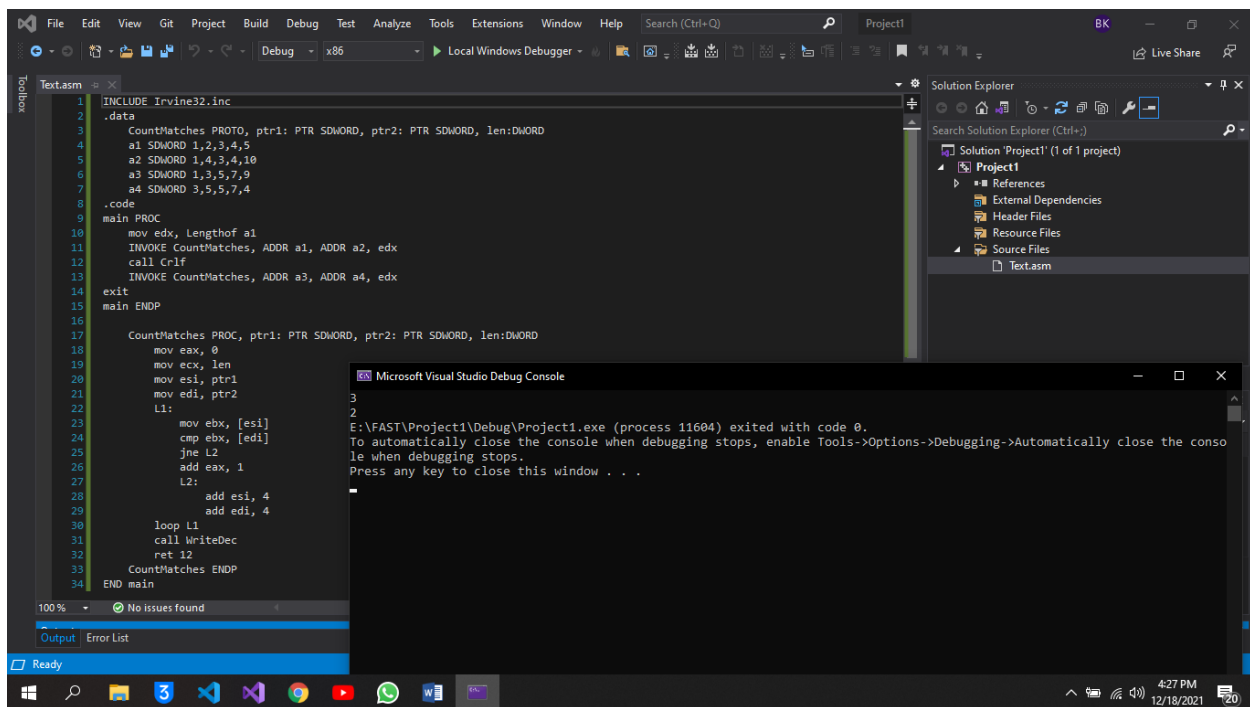
Microsoft Visual Studio Debug Console

```

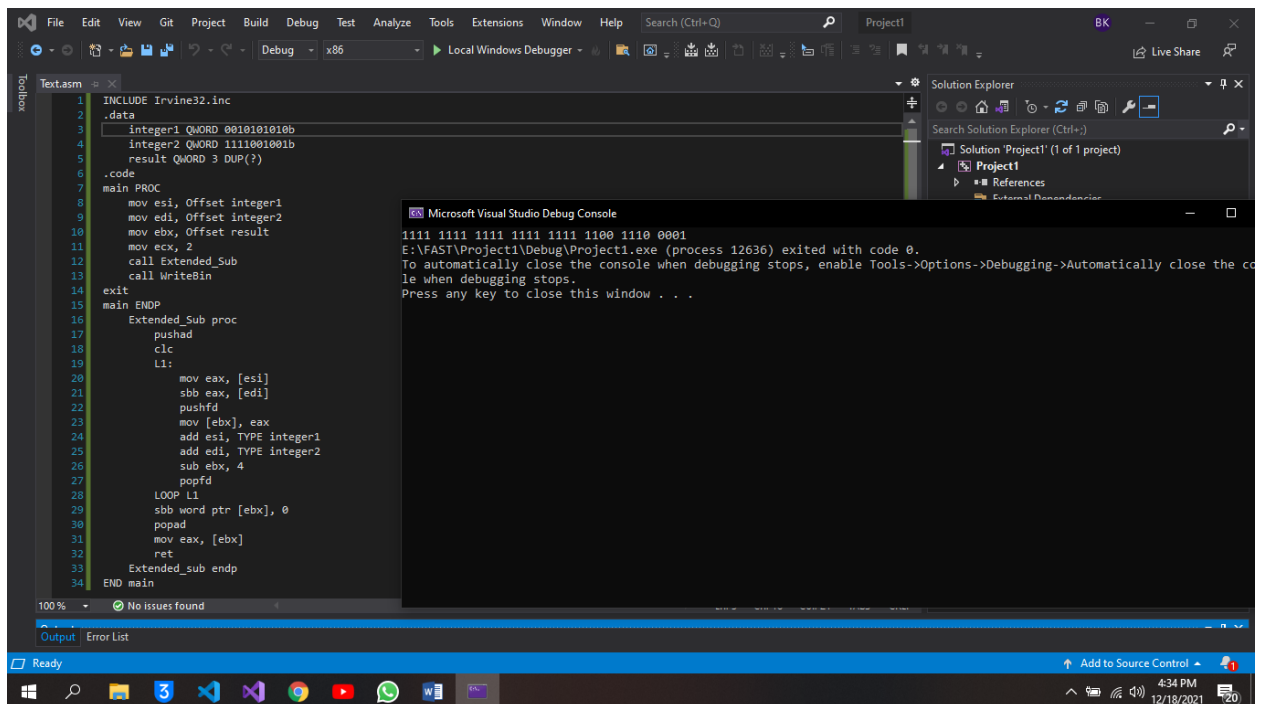
Type a character : A
The ASCII code in binary is : 0000 0000 0000 0000 0000 0100 0001
The number of 1 Bits are : 2
E:\FAST\Project1\Debug\Project1.exe (process 11208) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .

```

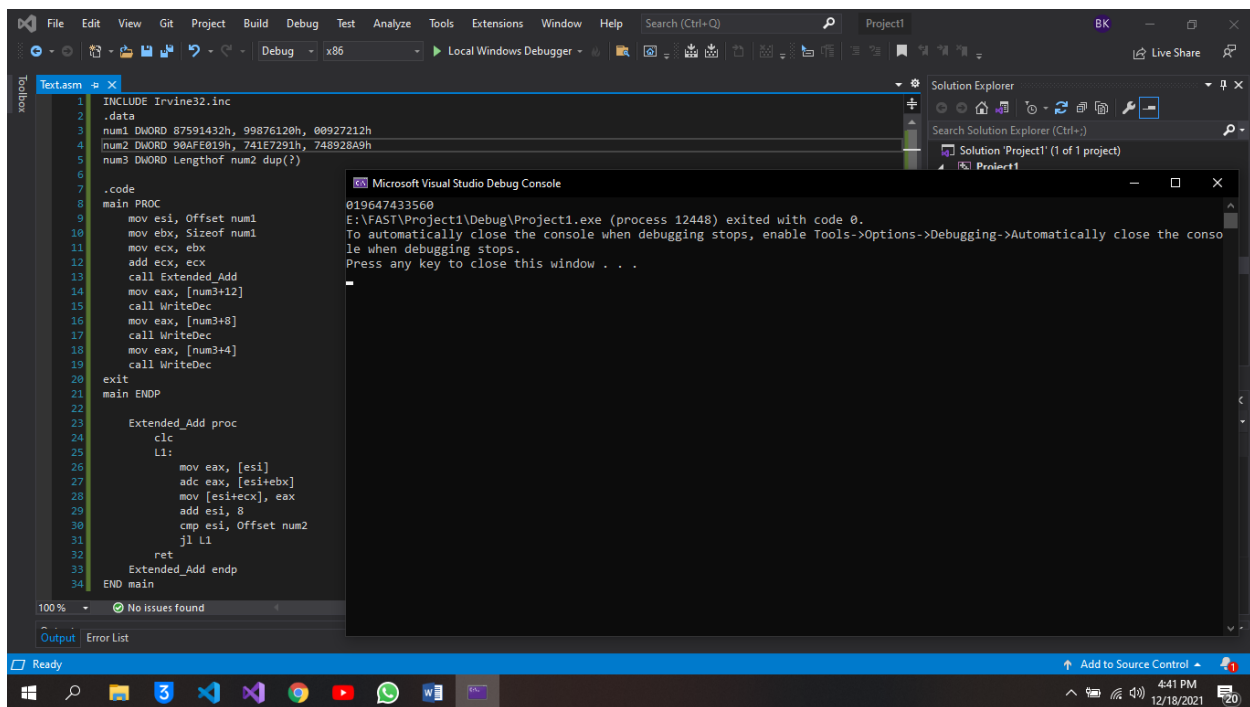
## • Question#06:



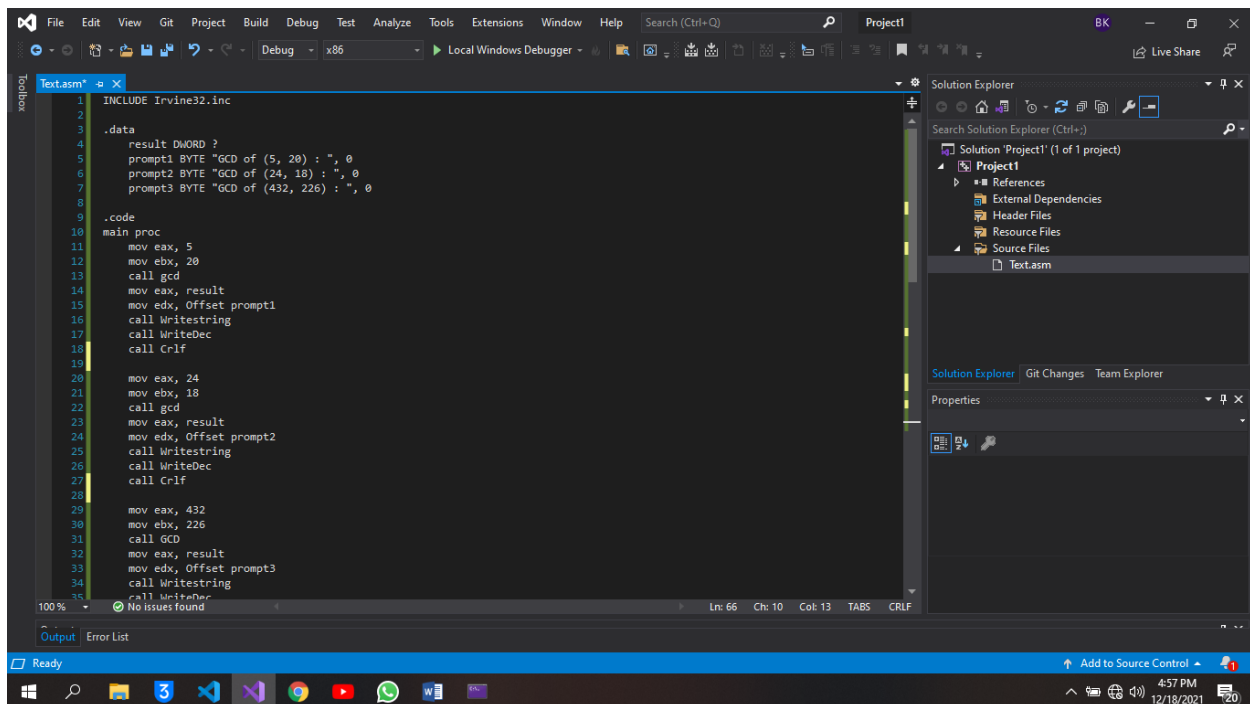
## • Question#07:

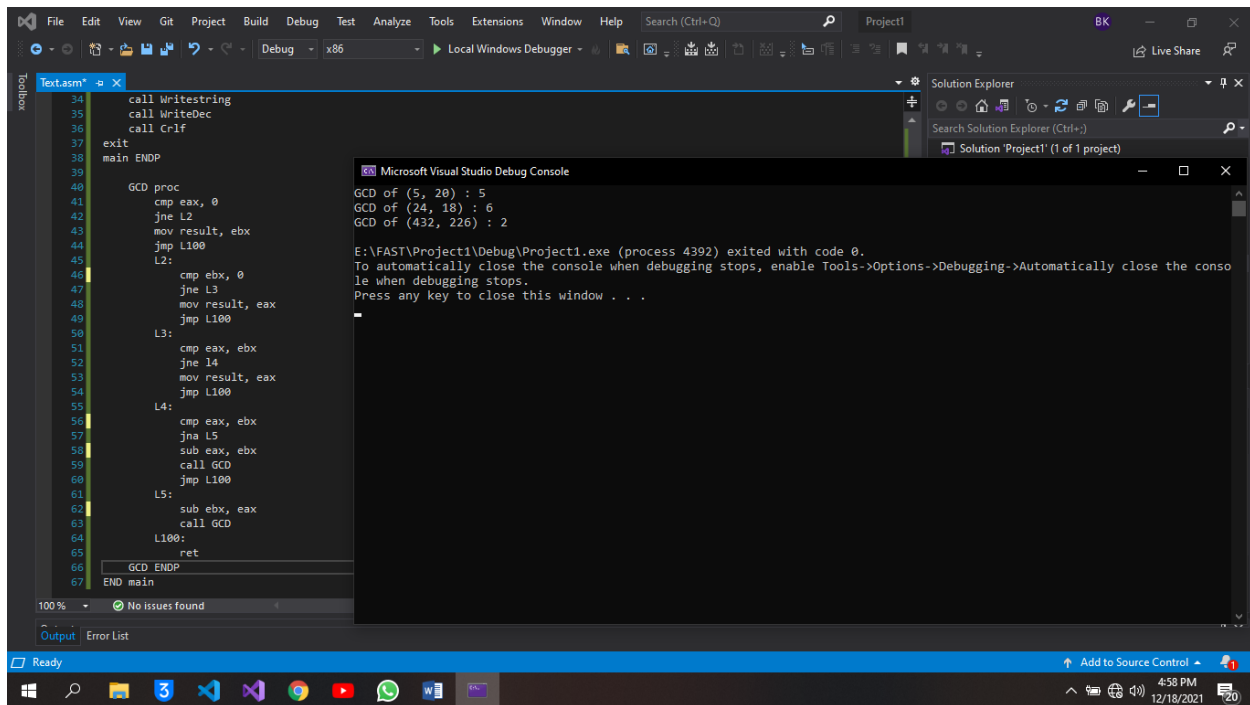


## • Question#08:



## • Question#09:





## • Question#10:

