

COAL

LAB08

23K2001

BCS-3J

Q1:

```
Lab08.asm  + X
34
35     mov eax, Num1
36     cmp eax, Num2
37     jne NotEqual
38     cmp eax, Num3
39     jne NotEqual
40     cmp eax, Num4
41     jne NotEqual
42
43     call Crlf
44     mov edx, OFFSET equalmsg
45     call WriteString
46     jmp done
47
48     NotEqual:
49         mov edx, OFFSET inequalmsg
50         call WriteString
51         call Crlf
52
53     done:
54     exit
55 main ENDP
56 END main
```

Microsoft Visual Studio Debug Console

Enter a number: 27
Enter a number: 27
Enter a number: 27
Enter a number: 27

All four numbers are equal.
E:\Visual Studio Projects\COAL Lab08\Debug\COAL Lab08.exe
Press any key to close this window

Microsoft Visual Studio Debug Console

Enter a number: 1
Enter a number: 2
Enter a number: 3
Enter a number: 4
These numbers are not equal.

E:\Visual Studio Projects\COAL Lab08\Debug\COAL Lab08.exe
Press any key to close this window . . .

Q2:

Lab08.asm

```
7      .code
8      main PROC
9          mov eax, 0
10         mov ebx, 0
11         mov ecx, 0
12         mov edx, 0
13
14         mov esi, OFFSET intArr
15         mov ecx, LENGTHOF intArr
16     find:
17         cmp WORD ptr[esi], 0
18         jne first
19         add esi, TYPE intArr
20
21         loop find
22         jmp Finish
23
24     first:
25         mov ax, WORD ptr[esi]
26         mov nonzero, ax
27
28         mov edx, OFFSET msg
29         call WriteString
30         movzx eax, WORD ptr[nonzero]
31         call WriteInt
32
33     Finish:
34     exit
```



Microsoft Visual Studio Debug Console



First non zero value in the given array is: +150
E:\Visual Studio Projects\COAL Lab08\Debug\COAL L
Press any key to close this window . . .|

Q3:

```
Lab08.asm  [icon] X
7      .code
8      main PROC
9      mov eax, 0
10     mov ebx, 0
11     mov ecx, 0
12     mov edx, 0
13     mov var, 5
14     mov edx, var+1
15     mov ecx, 10
16
17     cmp var, ecx
18     jae elsego
19     cmp ecx, edx
20     jb elsego
21     mov x, 0
22     jmp done
23
24     elsego:
25         mov x, 1
26
27     done:
28         mov edx, offset msg
29         call writestring
30         mov eax, x
31         call writedec
32         call DumpRegs
33     exit
```

Microsoft Visual Studio Debug Console [icon] X + v

```
x = 0
EAX=00000000  EBX=00000000  ECX=0000000A  EDX=003F6008
ESI=003F10AA  EDI=003F10AA  EBP=00D9FD68  ESP=00D9FD5C
EIP=003F36C4  EFL=00000202  CF=0  SF=0  ZF=0  OF=0  AF=0  PF=0

E:\Visual Studio Projects\COAL Lab08\Debug\COAL Lab08.exe (process)
Press any key to close this window . . .
```

Q4:

Lab08.asm

```
10      mov ebx, 0
11      mov ecx, 0
12      mov edx, 0
13      mov var, 0
14
15  whileLoop:
16      cmp var, 10
17      ja done
18
19      cmp var, 5
20      jae elsego
21      mov edx, OFFSET msg1
22      call WriteString
23      call Crlf
24      jmp iterate
25
26  elsego:
27      mov edx, OFFSET msg2
28      call WriteString
29      Call Crlf
30  iterate:
31      inc var
32      jmp whileLoop
33
34  done:
35
36  exit
```



Microsoft Visual Studio Debug Console



Hello
Hello
Hello
Hello
Hello
World
World
World
World
World
World

E:\Visual Studio Projects\COAL Lab08\Debug\Console1
Press any key to close this window

Q5:

```
Lab08.asm  + X
1  TITLE My Eight Lab Tasks (Lab08.asm)
2  INCLUDE Irvine32.inc
3  .data
4      arr WORD 10, 4, 7, 14, 299, 156, 3, 19, 29, 300, 20
5      n WORD ?
6      input BYTE "Enter a number to search: ", 0
7      present BYTE "Number is present in the array!", 0
8      absent BYTE "Number is not present in the array.", 0
9  .code
10     main PROC
11         mov eax, 0
12         mov ebx, 0
13         mov ecx, 0
14         mov edx, 0
15
16         mov edx, OFFSET input
17         call WriteString
18         call ReadInt
19         mov WORD Ptr[n], ax
20
```

Microsoft Visual Studio Debug Console

Enter a number to search: 27
Number is not present in the array.

E:\Visual Studio Projects\COAL Lab08\Debug\COAL Lab08.
Press any key to close this window . . .|

```
Lab08.asm  + X
1  TITLE My Eight Lab Tasks (Lab08.asm)
2  INCLUDE Irvine32.inc
3  .data
4      arr WORD 10, 4, 7, 14, 299, 156, 3, 19, 29, 300, 20
5      n WORD ?
6      input BYTE "Enter a number to search: ", 0
7      present BYTE "Number is present in the array!", 0
8      absent BYTE "Number is not present in the array.", 0
9  .code
10     main PROC
11         mov eax, 0
12         mov ebx, 0
13         mov ecx, 0
14         mov edx, 0
15
16         mov edx, OFFSET input
17         call WriteString
18         call ReadInt
19         mov WORD Ptr[n], ax
```

Microsoft Visual Studio Debug Console

Enter a number to search: 7
Number is present in the array!

E:\Visual Studio Projects\COAL Lab08\Debug\COAL Lab08.
Press any key to close this window . . .|

Q6:

```
Lab08.asm  + X
28  outer:
29      mov esi, OFFSET arr
30      mov edx, count
31      mov temp, edx
32
33      inner:
34          mov eax, [esi]
35          mov ebx, [esi+4]
36
37          cmp eax, ebx
38          jbe skip
39
40          mov [esi], ebx
41          mov [esi+4], eax
42
43          skip:
44              add esi, 4
45              dec temp
46              jnz inner
47      dec count
48      jnz outer
49
50      call Crlf
51      mov edx, OFFSET sorted
52      call WriteString
53      mov ecx, LENGTHOF arr
54      mov esi, OFFSET arr
```

Microsoft Visual Studio Debug Console

Original Array: 10 4 7 14 299 156 3 19 29 300 20
Sorted Array: 3 4 7 10 14 19 20 29 156 299 300
E:\Visual Studio Projects\COAL Lab08\Debug\COAL Lab08.
Press any key to close this window . . .|

Q7:

```
Lab08.asm  + X
30      search:
31          cmp ecx, 0
32          je print
33
34          next:
35              cmp BYTE PTR [esi], 0
36              je skip
37              inc esi
38              jmp next
39          skip:
40              inc esi
41              dec ecx
42              jmp search
43
44          print:
45              mov edx, OFFSET found
46              call WriteString
47              mov edx, esi
48              call WriteString
49              call Crlf
50              jmp done
51
52          Invalid:
53              mov edx, OFFSET error
54              call WriteString
55              call Crlf
```

Microsoft Visual Studio Debug Console

Enter a number (1-7): 5
Equivalent weekday: Friday

E:\Visual Studio Projects\COAL Lab08\
Press any key to close this window .

```
Lab08.asm  + X
30      search:
31          cmp ecx, 0
32          je print
33
34          next:
35              cmp BYTE PTR [esi], 0
36              je skip
37              inc esi
38              jmp next
39          skip:
40              inc esi
41              dec ecx
42              jmp search
43
44          print:
45              mov edx, OFFSET found
46              call WriteString
47              mov edx, esi
48              call WriteString
49              call Crlf
50              jmp done
51
52          Invalid:
53              mov edx, OFFSET error
54              call WriteString
55              call Crlf
```

Microsoft Visual Studio Debug Console

Enter a number (1-7): 9
Invalid!

E:\Visual Studio Projects\COAL Lab08\
Press any key to close this window .

Q8:

```
Lab08.asm  + X
24
25     LowerCase:
26         mov al, Character
27         cmp al, 'a'
28         jl  UpperCase
29         cmp al, 'z'
30         jle IsAlpha
31
32     UpperCase:
33         cmp al, 'A'
34         jl  NotAlpha
35         cmp al, 'Z'
36         jle IsAlpha
37
38     NotAlpha:
39         mov dl, Character
40         call WriteChar
41         mov edx, OFFSET no
42         call WriteString
43         call Crlf
44         jmp done
45
46     IsAlpha:
47         mov dl, Character
48         call WriteChar
49         mov edx, OFFSET yes
50         call WriteString
51         call Crlf
```

Microsoft Visual Studio Debug Console

Enter a Character: m
m : is an alphabet!

E:\Visual Studio Projects\COAL Lab08\
Press any key to close this window .

```
Lab08.asm  + X
24
25     LowerCase:
26         mov al, Character
27         cmp al, 'a'
28         jl  UpperCase
29         cmp al, 'z'
30         jle IsAlpha
31
32     UpperCase:
33         cmp al, 'A'
34         jl  NotAlpha
35         cmp al, 'Z'
36         jle IsAlpha
37
```

Microsoft Visual Studio Debug Console

Enter a Character: 2
2 : is not an alphabet.

E:\Visual Studio Projects\COAL Lab08\
Press any key to close this window .