

COAL

LAB06

23K2001

BCS-3J

Q1:

```
Lab06.asm  + X
1  TITLE My Sixth Lab Tasks (Lab06.asm)
2  INCLUDE Irvine32.inc
3  .data
4      first BYTE 0
5      second BYTE 1
6  .code
7  main PROC
8      mov eax, 0
9      mov ebx, 0
10     mov ecx, 0
11     mov edx, 0
12
13     movzx eax, first
14     call writedec
15     call crlf
16     movzx eax, second
17     call writedec
18     call crlf
19
20     mov ecx, 8
21     mov eax, 0
22     fib:
23         mov bl, first
24         add bl, second
25         movzx eax, bl
26         call writedec
27         call crlf
28         mov al, second
29         mov first, al
30         mov second, bl
31     loop fib
```

```
Microsoft Visual Studio Debug Console
0
1
1
2
3
5
8
13
21
34

EAX=00000015  EBX=00000022  ECX=00000000  EDX=00000000
ESI=007910AA  EDI=007910AA  EBP=00F3FB6C  ESP=00F3FB60
EIP=007936D0  EFL=00000202  CF=0  SF=0  ZF=0  OF=0  AF=0  PF=0

E:\Visual Studio Projects\COAL Lab06\Debug\COAL Lab06.exe (process)
To automatically close the console when debugging stops, enable T
le when debugging stops.
Press any key to close this window . . .|
```

Q2:

pt i.

```
Lab06.asm  X
1  TITLE My Sixth Lab Tasks (Lab06.asm)
2  INCLUDE Irvine32.inc
3  .data
4      sym BYTE 1
5      i DWORD ?
6      j DWORD 1
7  .code
8  main PROC
9      mov eax, 0
10     mov ebx, 0
11     mov ecx, 0
12     mov edx, 0
13
14     mov eax, 4
15     mov ecx, eax
16     outer:
17         mov i, ecx
18         mov ecx, j
19
20         inner:
21             movzx eax, sym
22             call writeDec
23             loop inner
24
25         inc j
26         mov ecx, i
27         call crlf
28     loop outer
29     call DumpRegs
30     exit
31 main ENDP
```

```
Microsoft Visual Studio Debug Console
1
11
111
1111

EAX=00000001 EBX=00000000 ECX=00000000 EDX=00000000
ESI=002C10AA EDI=002C10AA EBP=00AFFB68 ESP=00AFFB5C
EIP=002C36AD EFL=00000202 CF=0 SF=0 ZF=0 OF=0 AF=0 PF=0

E:\Visual Studio Projects\COAL Lab06\Debug\COAL Lab06.exe (process)
To automatically close the console when debugging stops, enable T
le when debugging stops.
Press any key to close this window . . .|
```

pt ii.

```
Lab06.asm  X
1  TITLE My Sixth Lab Tasks (Lab06.asm)
2  INCLUDE Irvine32.inc
3  .data
4      sym BYTE 1
5      i DWORD ?
6      j DWORD 4
7  .code
8  main PROC
9      mov eax, 0
10     mov ebx, 0
11     mov ecx, 0
12     mov edx, 0
13
14     mov eax, 4
15     mov ecx, eax
16     outer:
17         mov i, ecx
18         mov ecx, j
19
20         inner:
21             movzx eax, sym
22             call writeDec
23             loop inner
24
25         dec j
26         mov ecx, i
27         call crlf
28     loop outer
29     call DumpRegs
30     exit
31 main ENDP
```

```
Microsoft Visual Studio Debug Console
1111
111
11
1

EAX=00000001 EBX=00000000 ECX=00000000 EDX=00000000
ESI=007B10AA EDI=007B10AA EBP=0039FD00 ESP=0039FCF4
EIP=007B36AD EFL=00000202 CF=0 SF=0 ZF=0 OF=0 AF=0 PF=0

E:\Visual Studio Projects\COAL Lab06\Debug\COAL Lab06.exe (process)
To automatically close the console when debugging stops, enable T
le when debugging stops.
Press any key to close this window . . .|
```

pt iii.

```
Lab06.asm  X
1  TITLE My Sixth Lab Tasks (Lab06.asm)
2  INCLUDE Irvine32.inc
3  .data
4      i DWORD ?
5      j DWORD 4
6  .code
7  main PROC
8      mov eax, 0
9      mov ebx, 0
10     mov ecx, 0
11     mov edx, 0
12
13     mov eax, 4
14     mov ecx, eax
15     mov eax, 0
16
17     outer:
18         mov i, ecx
19         mov ecx, j
20         mov eax, 4
21
22         inner:
23             call writedec
24             dec eax
25             loop inner
26
27         call crlf
28         dec j
29         mov ecx, i
30     loop outer
31     call DumpRegs
```

4321
432
43
4

EAX=00000003 EBX=00000000 ECX=00000000 EDX=00000000
ESI=007410AA EDI=007410AA EBP=00CFFAF0 ESP=00CFFAE4
EIP=007436B1 EFL=00000246 CF=0 SF=0 ZF=1 OF=0 AF=0 PF=1

E:\Visual Studio Projects\COAL Lab06\Debug\COAL Lab06.exe (proces
To automatically close the console when debugging stops, enable T
le when debugging stops.
Press any key to close this window . . .|

pt iv.

```
Lab06.asm  X
1  TITLE My Sixth Lab Tasks (Lab06.asm)
2  INCLUDE Irvine32.inc
3  .data
4      i DWORD ?
5      j DWORD 4
6  .code
7  main PROC
8      mov eax, 0
9      mov ebx, 0
10     mov ecx, 0
11     mov edx, 0
12
13     mov eax, 4
14     mov ecx, eax
15     mov eax, 0
16
17     outer:
18         mov i, ecx
19         mov ecx, j
20         mov eax, 1
21
22         inner:
23             call writedec
24             inc eax
25             loop inner
26
27         call crlf
28         dec j
29         mov ecx, i
30     loop outer
31     call DumpRegs
```

1234
123
12
1

EAX=00000002 EBX=00000000 ECX=00000000 EDX=00000000
ESI=000210AA EDI=000210AA EBP=004FFB1C ESP=004FFB10
EIP=000236B1 EFL=00000246 CF=0 SF=0 ZF=1 OF=0 AF=0 PF=1

E:\Visual Studio Projects\COAL Lab06\Debug\COAL Lab06.exe (proces
To automatically close the console when debugging stops, enable T
le when debugging stops.
Press any key to close this window . . .|

Q3:

Lab06.asm

```
28
29     l1:
30         mov index, ecx
31         mov edx, OFFSET req1
32         call WriteString
33         call ReadInt
34         mov id[esi*4], eax
35
36         mov edx, OFFSET req2
37         call WriteString
38         mov edi, esi
39         mov eax, 30
40         mul edi
41         mov edx, OFFSET names
42         add edx, eax
43         mov ecx, 30
44         call ReadString
45
46         mov edx, OFFSET req3
47         call WriteString
48         call ReadInt
49         mov year[esi*4], eax
50
51         mov edx, OFFSET req4
52         call WriteString
53         call ReadInt
54         mov salary[esi*4], eax
55         call crlf
56
57         inc esi
58         mov ecx, index
```

Microsoft Visual Studio Debug

```
Enter ID: 2001
Enter Name: Muzammil Siddiqui
Enter Year of Birth: 2005
Enter Annual Salary: 70000
```

```
Enter ID: 2773
Enter Name: Nawaz Sharif
Enter Year of Birth: 1958
Enter Annual Salary: 100000
```

```
Enter ID: 2364
Enter Name: P Diddy
Enter Year of Birth: 1974
Enter Annual Salary: 420000
```

```
Enter ID: 3187
Enter Name: Kendrick Lamar
Enter Year of Birth: 1977
Enter Annual Salary: 230000
```

```
Enter ID: 1783
Enter Name: Ali Amin
Enter Year of Birth: 1968
Enter Annual Salary: 6000
```

Lab06.asm

67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97

l2:

mov index , ecx

mov edx, OFFSET wID
call WriteString
mov eax, id[esi*4]
call Writedec
call crlf
mov edx, OFFSET wName
call WriteString
mov edi, esi
mov eax, 30
mul edi
mov edx, OFFSET names
add edx, eax
call WriteString
call crlf
mov edx, OFFSET wYear
call WriteString
mov eax, year[esi*4]
call Writedec
call crlf
mov edx, OFFSET wAnnual
call WriteString
mov eax, salary[esi*4]
call Writedec
call crlf
call crlf
inc esi

100 %
No issues found
Ready

Microsoft Visual Studio Debug Console

Employees Data:

ID: 2001
Name: Muzammil Siddiqui
Year of Birth: 2005
Annual Salary: 70000

ID: 2773
Name: Nawaz Sharif
Year of Birth: 1958
Annual Salary: 100000

ID: 2364
Name: P Diddy
Year of Birth: 1974
Annual Salary: 420000

ID: 3187
Name: Kendrick Lamar
Year of Birth: 1977
Annual Salary: 230000

ID: 1783
Name: Ali Amin
Year of Birth: 1968
Annual Salary: 6000

101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120

l3:

mov edx, OFFSET wTotal
call WriteString
call crlf
mov ecx, 5
mov esi, 0
mov eax, 0

add eax, salary[esi*4]
inc esi
loop l3

call writedec
call crlf
exit
main ENDP
END main

ID: 2364
Name: P Diddy
Year of Birth: 1974
Annual Salary: 420000

ID: 3187
Name: Kendrick Lamar
Year of Birth: 1977
Annual Salary: 230000

ID: 1783
Name: Ali Amin
Year of Birth: 1968
Annual Salary: 6000

Total Salary:
826000

E:\Visual Studio Projects\COAL Lab06\Debug\COAL Lab06.exe

Q4:

Lab06.asm

```
1  TITLE My Sixth Lab Tasks (Lab06.asm)
2  INCLUDE Irvine32.inc
3  .data
4      source BYTE "0 1 2 3 4 5 6 7 8 9 ",0
5      target BYTE SIZEOF source DUP(?)
6      ws BYTE "Source:",0
7      wt BYTE "Target:",0
8  .code
9  main PROC
10     mov eax, 0
11     mov ebx, 0
12     mov ecx, 0
13     mov edx, 0
14
15     mov esi, OFFSET source
16     mov edi, OFFSET target
17     l1:
18         mov al, BYTE PTR [esi]
19         mov BYTE PTR [edi], al
20         inc esi
21         inc edi
22         cmp al, 0
23     jne l1
```



Microsoft Visual Studio Debug Console



```
Source:
0 1 2 3 4 5 6 7 8 9
Target:
0 1 2 3 4 5 6 7 8 9
```

```
E:\Visual Studio Projects\COAL Lab06\
To automatically close the console wh
le when debugging stops.
Press any key to close this window .
```

Q5:

```
Lab06.asm  ↗ ✕  
49  
50 reverse:  
51     mov eax, [edi]  
52     mov ebx, [esi]  
53     xchg eax, ebx  
54  
55     mov [edi], eax  
56     mov [esi], ebx  
57  
58     add edi, TYPE integers  
59     sub esi, TYPE integers  
60     loop reverse  
61  
62     mov edx, OFFSET wReversed  
63     call WriteString  
64     call crlf  
65     mov ebx, OFFSET integers  
66     mov ecx, LENGTHOF integers  
67     mov edx, OFFSET space  
68  
69     printReversed:  
70         mov eax, [ebx]  
71         call WriteDec  
72         call WriteString  
73         add ebx, TYPE integers  
74     loop printReversed  
75  
76     call crlf  
77     exit  
78     main ENDP  
79     END main
```

```
Microsoft Visual Studio Debug Console  ✕ + ▾  
Enter 10 integers:  
10  
9  
8  
7  
6  
5  
4  
3  
2  
1  
  
Original:  
10 9 8 7 6 5 4 3 2 1  
Reversed:  
1 2 3 4 5 6 7 8 9 10  
  
E:\Visual Studio Projects\COAL Lab06\Debug\COAL Lab06.exe  
Press any key to close this window . . .|
```


Q6:

```
outer:
    mov esi, OFFSET nums
    mov ebx, i
    mov j, ebx

    inner:
        mov eax, [esi]
        mov ebx, [esi+4]
        cmp eax, ebx
        jbe skip

        mov [esi], ebx
        mov [esi+4], eax

        skip:
        add esi, 4
        DEC j
        jnz inner
        DEC i
    jnz outer
```

Microsoft Visual Studio Debug

Before sorting:

8 5 6 1 2

After sorting:

1 2 5 6 8

E:\Visual Studio Projects\COAL Lab06\

To automatically close the console window when debugging stops.

Press any key to close this window .