

COAL Lab 07

Name: Sufiyaan Usmani

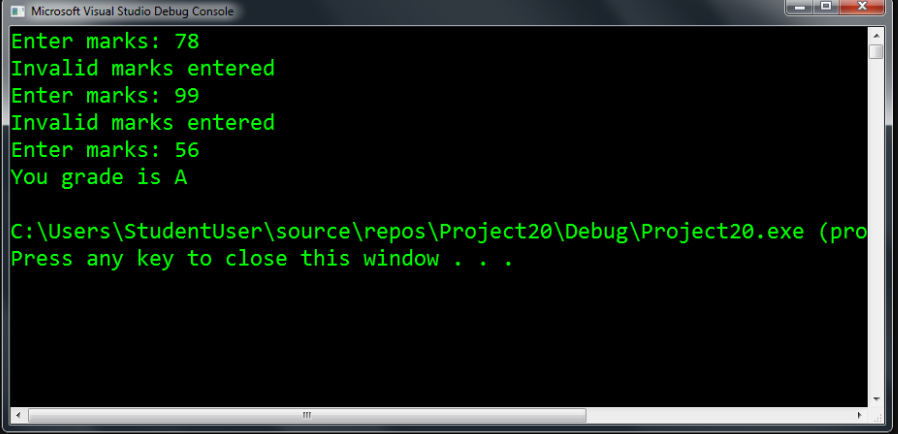
Roll No: 21K-3195

Section: BCS-3J

Instructor: Sir Kashan Hussain

Task 1:

```
1 ; Sufiyaan Usmani
2 ; 21K-3195
3 ; BCS-3J
4 ; Task 1
5
6 INCLUDE Irvine32.inc
7
8 .data
9 msg1 BYTE "Enter marks: ", 0
10 msg2 BYTE "You grade is ", 0
11 msg3 BYTE "Invalid marks entered", 0
12
13 .code
14 main PROC
15     start:
16     mov edx, OFFSET msg1
17     call WriteString
18     call ReadInt
19     cmp eax, 60
20     jg Invalid
21     cmp eax, 48
22     jge gradeA
23     cmp eax, 39
24     jge gradeB
25     cmp eax, 30
26     jge gradeC
27     cmp eax, 24
28     jge gradeD
29     jmp gradeE
30     gradeA:
31     mov al, 'A'
32     jmp gradeShow
33     gradeB:
34     mov al, 'B'
35     jmp gradeShow
36     gradeC:
37     mov al, 'C'
38     jmp gradeShow
39     gradeD:
40     mov al, 'D'
41     jmp gradeShow
42     gradeE:
43     mov al, 'E'
44     jmp gradeShow
45     gradeF:
46     mov al, 'F'
47     gradeShow:
48     mov edx, OFFSET msg2
49     call WriteString
50     call WriteChar
51     jmp quit
52     Invalid:
53     mov edx, OFFSET msg3
54     call WriteString
55     call CrLf
56     jmp start
57     quit:
58     call CrLf
59     exit
60 main ENDP
END main
```



Task 2:

```
1 ; Sufiyaan Usmani
2 ; 21K-3195
3 ; BCS-3J
4 ; Task 2
5
6 INCLUDE Irvine32.inc
7 .data
8     intArr SWORD 0, 0, 0, 0, 1, 20, 35, 12, 66, 4, 0
9     msg1 BYTE "The first non zero number found is: ", 0
10    msg2 BYTE "No non zero number exist in array", 0
11 .code
12     main PROC
13         mov esi, OFFSET intArr
14         mov eax, 0
15         mov ecx, LENGTHOF intArr
16     L1:
17         mov ax, [esi]
18         cmp ax, 0
19         jnz prompt
20         add esi, TYPE intArr
21     LOOP L1
22     mov edx, OFFSET msg2
23     call WriteString
24     exit
25     prompt:
26         mov edx, OFFSET msg1
27         call WriteString
28         call WriteDec
29         call Crlf
30         call DumpRegs
31     exit
32     main ENDP
33     END main
```

Microsoft Visual Studio Debug Console

The first non zero number found is: 1

EAX=00000001 EBX=7EFDE000 ECX=00000007 EDX=01286016
ESI=01286008 EDI=00000000 EBP=0014FB74 ESP=0014FB6C
EIP=012836A7 EFL=00000202 CF=0 SF=0 ZF=0 OF=0 AF=0 PF=0

C:\Users\StudentUser\source\repos\Project20\Debug\Project20.exe (pro
Press any key to close this window . . .

Task 3:

```
1 ; Sufiyaan Usmani
2 ; 21K-3195
3 ; BCS-3J
4 ; Task 3
5
6 INCLUDE Irvine32.inc
7 .data
8     msg1 BYTE "Enter a number (0 to exit): ", 0
9 .code
10     main PROC
11         mov edx, OFFSET msg1
12     start:
13         call WriteString
14         call ReadInt
15         cmp eax, 0
16         jz end1
17         jmp start
18     end1:
19         call DumpRegs
20         exit
21     main ENDP
22     END main
```

Microsoft Visual Studio Debug Console

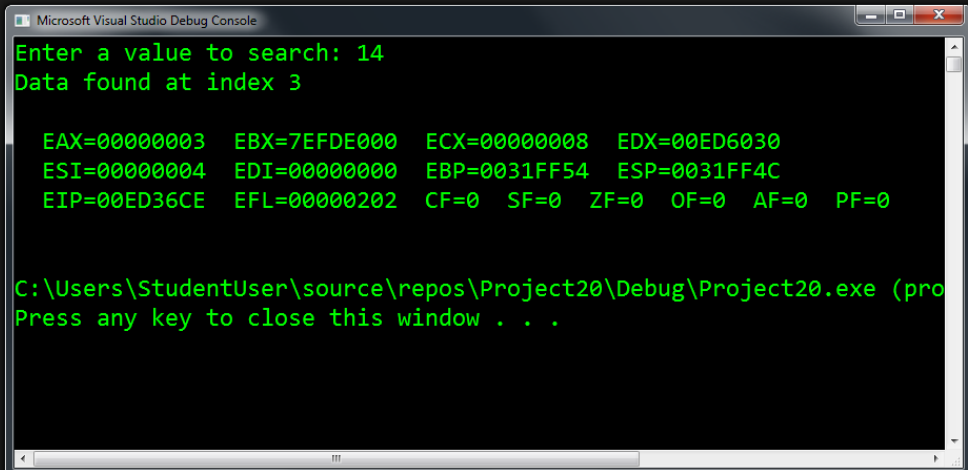
Enter a number (0 to exit): 2
Enter a number (0 to exit): 5
Enter a number (0 to exit): 12
Enter a number (0 to exit): 45
Enter a number (0 to exit): 32
Enter a number (0 to exit): 0

EAX=00000000 EBX=7EFDE000 ECX=00000000 EDX=01316000
ESI=00000000 EDI=00000000 EBP=0039F838 ESP=0039F830
EIP=0131367B EFL=00000246 CF=0 SF=0 ZF=1 OF=0 AF=0 PF=1

C:\Users\StudentUser\source\repos\Project20\Debug\Project20.exe (pro
Press any key to close this window . . .

Task 4:

```
1 ; Sufiyaan Usmani
2 ; 21K-3195
3 ; BCS-3J
4 ; Task 4
5
6 INCLUDE Irvine32.inc
7
8 .data
9     arr WORD 10, 4, 7, 14, 299, 156, 3, 19, 29, 300, 20
10    msg1 BYTE "Enter a value to search: ", 0
11    msg2 BYTE "Data found at index ", 0
12    msg3 BYTE "Data not found", 0
13    index DWORD ?
14    val WORD ?
15
16 .code
17 main PROC
18     mov edx, OFFSET msg1
19     call WriteString
20     call ReadDec
21     mov val, ax
22     mov ecx, LENGTHOF arr
23     mov esi, 0
24     L1:
25         mov ax, arr[esi * TYPE arr]
26         inc esi
27         cmp val, ax
28         je prompt
29     LOOP L1
30     mov edx, OFFSET msg3
31     call WriteString
32     exit
33 prompt:
34     mov index, esi
35     dec index
36     mov edx, OFFSET msg2
37     call WriteString
38     mov eax, index
39     call WriteDec
40     call Crlf
41     call DumpRegs
42     exit
43 main ENDP
44 END main
```



Microsoft Visual Studio Debug Console

```
Enter a value to search: 14
Data found at index 3

EAX=00000003  EBX=7EFDE000  ECX=00000008  EDX=00ED6030
ESI=00000004  EDI=00000000  EBP=0031FF54  ESP=0031FF4C
EIP=00ED36CE  EFL=00000202  CF=0   SF=0   ZF=0   OF=0   AF=0   PF=0

C:\Users\StudentUser\source\repos\Project20\Debug\Project20.exe (pro
Press any key to close this window . . .
```