

# COAL Lab 08

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## Task 1:

```
1 INCLUDE irvine32.inc
2 .data
3     array1 word 23,4,5,32,54,56,34,11,78,98
4     array2 word 10 DUP(0)
5     m1 byte "The array copied is : "
6
7 .code
8 main PROC
9     mov esi,0
10    mov ecx,lengthof array1
11    l1:
12    push array1[esi]
13    add esi,2
14    loop l1
15    mov esi,9*type array2
16    mov ecx,10
17    l2:
18    pop array2[esi]
19    sub esi,2
20    loop l2
21    mov ecx,10
22    mov esi,0
23    mov eax,0
24    mov edx,offset m1
25    call writestring
26    call crlf
27    l3:
28    mov ax,array2[esi]
29    call writedec
30    call crlf
31    add esi,2
32    loop l3
33    call DumpRegs
34    exit
35 main endp
36 end main
```

C:\WINDOWS\system32\cmd.exe

The array copied is :

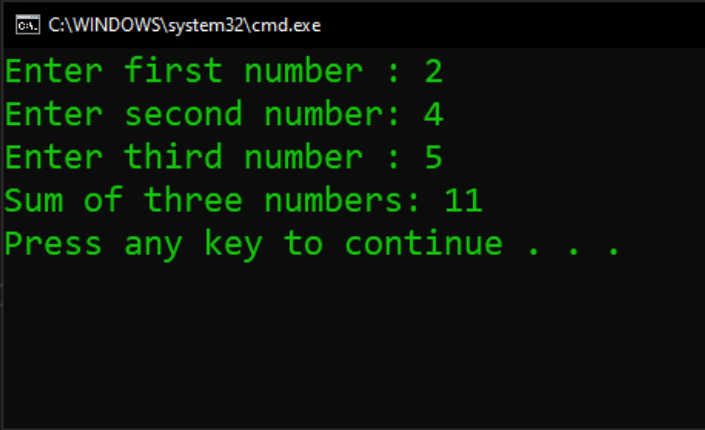
23  
4  
5  
32  
54  
56  
34  
11  
78  
98

EAX=00000062 EBX=00FAB000 ECX=00000000 EDX=00CC6028  
ESI=00000014 EDI=00CC10AA EBP=010FFA74 ESP=010FFA68  
EIP=00CC36C5 EFL=00000206 CF=0 SF=0 ZF=0 OF=0 AF=0 PF=1

Press any key to continue . . .

## Task 2:

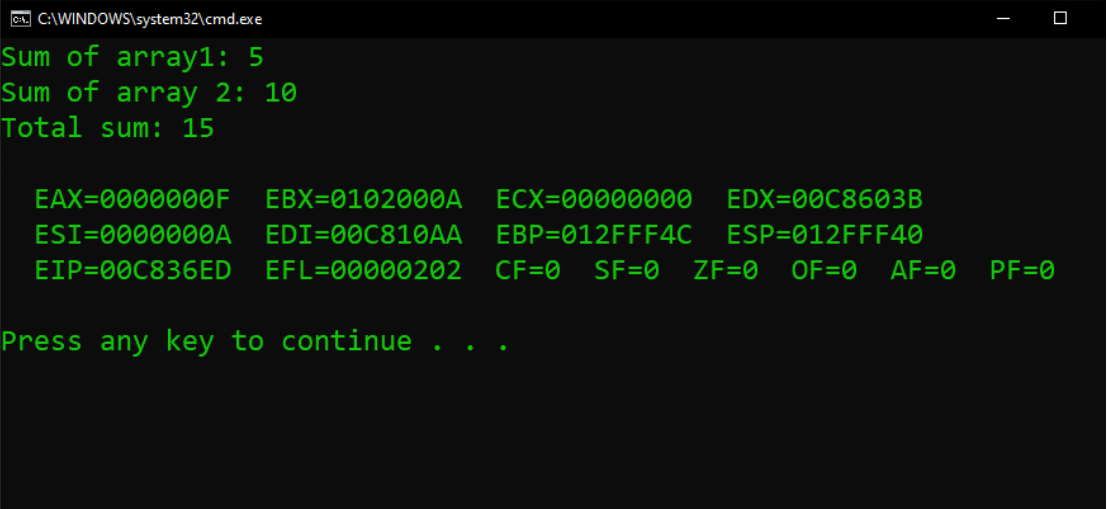
```
1 INCLUDE Irvine32.inc
2
3 .data
4 msg1 BYTE "Enter first number : ", 0
5 msg2 BYTE "Enter second number: ", 0
6 msg3 BYTE "Enter third number : ", 0
7 msg4 BYTE "Sum of three numbers: ", 0
8
9 .code
10 main PROC
11     mov edx, OFFSET msg1
12     call WriteString
13     call ReadDec
14     PUSH eax
15     mov edx, OFFSET msg2
16     call WriteString
17     call ReadDec
18     PUSH eax
19     mov edx, OFFSET msg3
20     call WriteString
21     call ReadDec
22     PUSH eax
23     call AddThreeNumbers
24     mov edx, OFFSET msg4
25     call WriteString
26     call WriteDec
27     call Crlf
28     exit
29 main ENDP
30
31 AddThreeNumbers PROC
32     PUSH ebp
33     mov ebp, esp
34     mov eax, [ebp + 8]
35     add eax, [ebp + 12]
36     add eax, [ebp + 16]
37     POP ebp
38     ret
39 AddThreeNumbers ENDP
40 END main
```



```
C:\WINDOWS\system32\cmd.exe
Enter first number : 2
Enter second number: 4
Enter third number : 5
Sum of three numbers: 11
Press any key to continue . . .
```

## Task 3:

```
1 INCLUDE Irvine32.inc
2
3 .data
4 array1 word 1,1,1,1,1
5 array2 word 2,2,2,2,2
6 sum1 word ?
7 sum2 word ?
8 sum3 word ?
9
10 a1 byte "Sum of array1: ", 0
11 a2 byte "Sum of array 2: ", 0
12 a3 byte "Total sum: ", 0
13
14 .code
15 main PROC
16     call sumofarr1
17     mov edx, offset a1
18     call writestring
19     mov eax, 0
20     mov ax, sum1
21     call writedec
22     call crlf
23     mov edx, offset a2
24     call writestring
25     mov ax, sum2
26     call writedec
27     call crlf
28     mov edx, offset a3
29     call writestring
30     mov ax, sum3
31     call writedec
32     call crlf
33     call DumpRegs
34     exit
35 main endp
36
37 sumofarr1 proc
38     mov ecx, 5
39     mov esi, 0
40     mov bx, 0
41     mov dx, 0
42     li:
43         mov ax, sum1
44         add ax, array1[esi]
45         mov sum1, ax
46         call sumofarr2
47         add esi, 2
48     loop li
49     call total
50     ret
51 sumofarr1 endp
52
53 sumofarr2 proc
54     mov bx, sum2
55     add bx, array2[esi]
56     mov sum2, bx
57     ret
58 sumofarr2 endp
59
60 total proc
61     mov dx, sum1
62     add dx, sum2
63     mov sum3, dx
64     ret
65 total endp
66 end main
```



```
C:\WINDOWS\system32\cmd.exe
Sum of array1: 5
Sum of array 2: 10
Total sum: 15

EAX=0000000F  EBX=0102000A  ECX=00000000  EDX=00C8603B
ESI=0000000A  EDI=00C810AA  EBP=012FFF4C  ESP=012FFF40
EIP=00C836ED  EFL=00000202  CF=0   SF=0   ZF=0   OF=0   AF=0   PF=0

Press any key to continue . . .
```

## Task 4:

```
1 INCLUDE irvine32.inc
2 .data
3     m1 byte "Enter number of rows: ",0
4     m2 byte "Sum of array 2: ",0
5     value word ?
6     v dword 0
7     v1 byte "*",0
8     s byte " ",0
9 .code
10 main PROC
11     mov edx,offset m1
12     call writestring
13     mov eax,0
14     call readdec
15     mov value,ax
16     call prints
17     call DumpRegs
18     exit
19 main endp
20 prints proc
21     mov ecx,0
22     mov cx,value
23     mov ebx,1
24     al:
25     push ecx
26     bl:
27     mov edx,offset s
28     call writestring
29     loop bl
30     mov ecx,ebx
31     cl:
32     mov edx,offset v1
33     call writestring
34     loop cl
35     inc ebx
36     pop ecx
37     call crlf
38     loop al
39     ret
40 prints endp
```

C:\WINDOWS\system32\cmd.exe

Enter number of rows: 5

\*\*\*\*\*

EAX=00000005 EBX=00000006 ECX=00000000 EDX=009E602E  
ESI=009E10AF EDI=009E10AF EBP=006FFE70 ESP=006FFE64  
EIP=009E3684 EFL=00000202 CF=0 SF=0 ZF=0 OF=0 AF=0 PF=0

Press any key to continue . . .

## Task 5:

```
1 INCLUDE irvine32.inc
2 .data
3     m1 byte "Enter number of rows: ",0
4     m2 byte "Sum of array 2: ",0
5     value word ?
6     v dword 0
7     v1 byte "A",0
8     s byte " ",0
9 .code
10 main PROC
11     mov edx,offset m1
12     call writestring
13     mov eax,0
14     call readdec
15     mov value,ax
16     call prints
17     call DumpRegs
18     exit
19 main endp
20 prints proc
21     mov ecx,0
22     mov cx,value
23     mov ebx,1
24     al:
25     push ecx
26     bl:
27     mov edx,offset s
28     call writestring
29     loop bl
30     mov ecx,ebx
31     cl:
32     mov edx,offset v1
33     call writestring
34     add v1,1
35     loop cl
36     inc ebx
37     pop ecx
38     call crlf
39     loop al
40     ret
41 prints endp
42 end main
```

C:\WINDOWS\system32\cmd.exe

Enter number of rows: 5

A  
BC  
DEF  
GHIJ  
KLMNO

EAX=00000005 EBX=00000006 ECX=00000000 EDX=0056602E  
ESI=005610AF EDI=005610AF EBP=0118F93C ESP=0118F930  
EIP=00563684 EFL=00000202 CF=0 SF=0 ZF=0 OF=0 AF=0 PF=0

Press any key to continue . . .

## Task 6:

```
1 INCLUDE irvine32.inc
2 .data
3     m1 byte "Enter number: ",0
4     m2 byte "Sum from 1 till that number: ",0
5     value word 0
6     total word 0
7 .code
8 main PROC
9     mov edx,offset m1
10    call writestring
11    mov eax,0
12    call readdec
13    mov value,ax
14    call addtosum
15    mov edx,offset m2
16    call writestring
17    call writedec
18    call DumpRegs
19    exit
20 main endp
21
22 addtosum proc
23     mov ecx,0
24     mov cx,value
25     mov ax,0
26     l1:
27     add ax,cx
28     loop l1
29     ret
30 addtosum endp
31 end main
```

C:\WINDOWS\system32\cmd.exe

Enter number: 5  
Sum from 1 till that number: 15  
EAX=0000000F EBX=01142000 ECX=00000000 EDX=00A0600F  
ESI=00A010AA EDI=00A010AA EBP=012FFA4C ESP=012FFA40  
EIP=00A03693 EFL=00000202 CF=0 SF=0 ZF=0 OF=0 AF=0 PF=0

Press any key to continue . . .

## Task 7:

```
1 INCLUDE Irvine32.inc
2
3 .data
4     msg1 BYTE "Enter a number: ", 0
5     msg2 BYTE "Factorial: ", 0
6
7 .code
8 main PROC
9     mov edx, OFFSET msg1
10    call WriteString
11    call ReadDec
12    call Factorial
13    mov edx, OFFSET msg2
14    call WriteString
15    call WriteDec
16    call Crlf
17    call DumpRegs
18    exit
19 main ENDP
20
21 Factorial PROC
22     mov ecx, eax
23     mov eax, 1
24     L1:
25     mul ecx
26     LOOP L1
27     ret
28 Factorial ENDP
29 END main
```

C:\WINDOWS\system32\cmd.exe

Enter a number: 5  
Factorial: 120  
EAX=00000078 EBX=0119C000 ECX=00000000 EDX=00766011  
ESI=007610AA EDI=007610AA EBP=012FFEF0 ESP=012FFEE4  
EIP=0076368D EFL=00000202 CF=0 SF=0 ZF=0 OF=0 AF=0 PF=0

Press any key to continue . . .