

# **LAB 05**

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**Examples**

## Example 1 code

```
Text.asm  X
1  INCLUDE Irvine32.inc
2  .data
3  mystring byte "Kashiiitech",0
4
5  .code
6  main PROC
7  labl:
8
9      mov edx, offset mystring
10     call writestring
11     jmp labl
12
13
14     exit
15     main ENDP
16     END main
```

C:\Users\student\source\repos\Project5\Debug\Project5.exe

[illegible]

## Example 1 output

## Example 2 code

```
1  INCLUDE Irvine32.inc
2  .data
3
4  .code
5  main PROC
6  mov eax, 1
7
8  start1:
9      add eax, 1
10     cmp eax, 9
11     call DumpRegs
12     je endd
13     jmp start1
14
15 endd:
16
17 exit
18 main ENDP
19 END main
```

%

✓ No issues found

EAX=00000002 EBX=00243000 ECX=0051100A EDX=0051100A  
ESI=0051100A EDI=0051100A EBP=001CF9D8 ESP=001CF9CC  
EIP=00513670 EFL=00000297 CF=1 SF=1 ZF=0 OF=0 AF=1 PF=1

EAX=00000003 EBX=00243000 ECX=0051100A EDX=0051100A  
ESI=0051100A EDI=0051100A EBP=001CF9D8 ESP=001CF9CC  
EIP=00513670 EFL=00000297 CF=1 SF=1 ZF=0 OF=0 AF=1 PF=1

EAX=00000004 EBX=00243000 ECX=0051100A EDX=0051100A  
ESI=0051100A EDI=0051100A EBP=001CF9D8 ESP=001CF9CC  
EIP=00513670 EFL=00000293 CF=1 SF=1 ZF=0 OF=0 AF=1 PF=0

EAX=00000005 EBX=00243000 ECX=0051100A EDX=0051100A  
ESI=0051100A EDI=0051100A EBP=001CF9D8 ESP=001CF9CC  
EIP=00513670 EFL=00000297 CF=1 SF=1 ZF=0 OF=0 AF=1 PF=1

EAX=00000006 EBX=00243000 ECX=0051100A EDX=0051100A  
ESI=0051100A EDI=0051100A EBP=001CF9D8 ESP=001CF9CC  
EIP=00513670 EFL=00000293 CF=1 SF=1 ZF=0 OF=0 AF=1 PF=0

EAX=00000007 EBX=00243000 ECX=0051100A EDX=0051100A  
ESI=0051100A EDI=0051100A EBP=001CF9D8 ESP=001CF9CC  
EIP=00513670 EFL=00000293 CF=1 SF=1 ZF=0 OF=0 AF=1 PF=0

EAX=00000008 EBX=00243000 ECX=0051100A EDX=0051100A  
ESI=0051100A EDI=0051100A EBP=001CF9D8 ESP=001CF9CC  
EIP=00513670 EFL=00000297 CF=1 SF=1 ZF=0 OF=0 AF=1 PF=1

EAX=00000009 EBX=00243000 ECX=0051100A EDX=0051100A  
ESI=0051100A EDI=0051100A EBP=001CF9D8 ESP=001CF9CC  
EIP=00513670 EFL=00000246 CF=0 SF=0 ZF=1 OF=0 AF=0 PF=1

Example 2 output

C:\Users\student\source\repos\Project5\Debug\Project5.exe (process 64160) exited with code 0.  
Press any key to close this window . . .

## Examples 4 code

```
Text.asm  X
1  INCLUDE Irvine32.inc
2  .data
3      Dash BYTE "-", 0
4  .code
5  main PROC
6      mov ecx, 255
7      mov eax, 1
8      mov edx, OFFSET Dash
9
10     L1:
11         call WriteDec ; EAX is a counter
12         call writeString ;EDX pointers to string
13         call WriteChar ; AL is the character
14         call Crlf
15         inc al          ; next character
16
17
18     Loop L1
19
20     exit
21     main ENDP
22     END main
```

1-⊖  
2-⊖  
3-♥  
4-♦  
5-♣  
6-♠  
7-  
8-  
9-  
10-  
11-♂  
12-♀  
13-  
14-♫  
15-⊙  
16-▶  
17-◀  
18-↕  
19-!!  
20-⌚  
21-§  
22-▬  
23-⌘  
24-↑  
25-↓  
26-→  
27-  
28-L  
29-⊕  
30-▲  
31-▼  
32-  
33-!  
34-"  
35-#  
36-\$  
37-%  
38-&  
39-'  
40-(  
41-)  
42-\*  
43-+

Example 4 output 1

48-0  
49-1  
50-2  
51-3  
52-4  
53-5  
54-6  
55-7  
56-8  
57-9  
58-:  
59-;  
60-<  
61-=  
62->  
63-?  
64-@  
65-A  
66-B  
67-C  
68-D  
69-E  
70-F  
71-G  
72-H  
73-I  
74-J  
75-K  
76-L  
77-M  
78-N  
79-O  
80-P  
81-Q  
82-R  
83-S  
84-T  
85-U  
86-V  
87-W  
88-X  
89-Y  
90-Z  
91-[

Example 4 output 2



216- $\frac{1}{2}$   
217- $\frac{1}{3}$   
218- $\frac{1}{4}$   
219- $\frac{1}{5}$   
220- $\frac{1}{6}$   
221- $\frac{1}{7}$   
222- $\frac{1}{8}$   
223- $\frac{1}{9}$   
224- $\alpha$   
225- $\beta$   
226- $\Gamma$   
227- $\pi$   
228- $\Sigma$   
229- $\sigma$   
230- $\mu$   
231- $\tau$   
232- $\emptyset$   
233- $\theta$   
234- $\Omega$   
235- $\delta$   
236- $\infty$   
237- $\phi$   
238- $\epsilon$   
239- $n$   
240- $\equiv$   
241- $\pm$   
242- $\geq$   
243- $\leq$   
244- $\int$   
245- $|$   
246- $\div$   
247- $\approx$   
248- $^{\circ}$   
249- $\cdot$   
250- $\cdot$   
251- $\sqrt{\phantom{x}}$   
252- $^n$   
253- $^2$   
254- $\blacksquare$   
255-

Example 4 output 3

C:\Users\student\source\repos\Project5\Debug\Project5.exe (process 56656) exited with code 0.  
Press any key to close this window . . .

```
1  INCLUDE Irvine32.inc
2  .data
3      COUNT = 4
4
5      arrayD SDWORD 12345678h, 1A4B2000h, 3434h, 7AB9h
6      prompt BYTE "Enter a 32-bit signed integer: ", 0
7  .code
8  main PROC
9      ; Display an array using DumpMem
10     mov esi, OFFSET arrayD      ; starting OFFSET
11
12     mov ebx, TYPE arrayD        ; doubleword = 4 bytes
13     mov ecx, LENGTHOF arrayD    ; number of units in arrayD
14     call DumpMem                ; display memory
15     call DumpRegs
16
17     ; Ask the user to input a sequence of signed integers
18     call Crlf                   ; newline
19     mov ecx, COUNT
20
21 L1:
22     mov edx, OFFSET prompt
23     call WriteString
24     call ReadInt
25     call Crlf ; newline        ; input integer into EAX
26
27     ; Display the integer in decimal, hexadecimal, and binary
28     call WriteInt               ; display in signed decimal
29     call Crlf
30     call WriteHex               ; display in hexadecimal
31     call Crlf
32
33     Loop L1
34
35     exit
36 main ENDP
37 END main
```

## Example 5 code

Dump of offset 00556000

-----  
12345678 1A4B2000 00003434 00007AB9

EAX=0044FEBC EBX=00000004 ECX=00000004 EDX=0055100A  
ESI=00556000 EDI=0055100A EBP=0044FE70 ESP=0044FE64  
EIP=00553679 EFL=00000202 CF=0 SF=0 ZF=0 OF=0 AF=0 PF=0

Enter a 32-bit signed integer: 900

+900  
00000384

Enter a 32-bit signed integer: 1000

+1000  
000003E8

Enter a 32-bit signed integer: 1100

+1100  
0000044C

Enter a 32-bit signed integer: 1500

+1500  
000005DC

C:\Users\student\source\repos\Project5\Debug\Project5.exe (process 21956) exited with code 0.

Press any key to close this window . . .

Example 5 output

## Example 6 code

```
1  INCLUDE Irvine32.inc
2  .data
3      str1 BYTE "Sample string in color", 0dh, 0ah, 0
4  .code
5  main PROC
6      mov eax, yellow + (red* 16)
7      call SetTextColor
8      mov edx, OFFSET str1
9      call WriteString
10     call DumpRegs
11  exit
12  main ENDP
13  END main
```

## Example 6 output 1

Microsoft Visual Studio Debug Console

Sample string in color

EAX=0000004E EBX=005AE000 ECX=000F100A EDX=000F6000  
ESI=000F100A EDI=000F100A EBP=0076F950 ESP=0076F944  
EIP=000F3679 EFL=00000202 CF=0 SF=0 ZF=0 OF=0 AF=0 PF=0

C:\Users\student\source\repos\Project5\Debug\Project5.exe (process 54132) exited with code 0.  
Press any key to close this window . . .

## Example 6 output 2

Microsoft Visual Studio Debug Console

Sample string in color

EAX=0000001E EBX=00BC2000 ECX=00C9100A EDX=00C96000  
ESI=00C9100A EDI=00C9100A EBP=00D9FE3C ESP=00D9FE30  
EIP=00C93679 EFL=00000202 CF=0 SF=0 ZF=0 OF=0 AF=0 PF=0

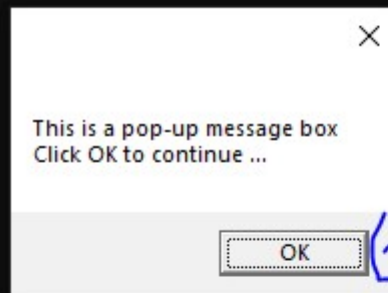
C:\Users\student\source\repos\Project5\Debug\Project5.exe (process 60292) exited with code 0.  
Press any key to close this window . . .

## Example 7 code

Text.asm

```
1  INCLUDE Irvine32.inc
2  .data
3      caption BYTE "Dialog Title", 0
4      HelloMsg BYTE "This is a pop-up message box", 0dh, 0ah
5      BYTE "Click OK to continue ... ",0
6
7  .code
8  main PROC
9      mov ebx, 0                ; no caption
10     mov edx, OFFSET HelloMsg   ; contents
11     call MsgBox
12
13     mov ebx, OFFSET caption
14     mov edx, OFFSET HelloMsg   ; caption
15     call MsgBox                ; contents
16
17     exit
18     main ENDP
19     END main
```

Example 7 output





## Example 8 code

Text.asm

```
1  INCLUDE Irvine32.inc
2  .data
3      caption BYTE "Survey Completed", 0
4      question BYTE "Thank you for completing the survey"
5      BYTE 0dh, 0ah
6      BYTE "Would you like to receive the results", 0
7
8  .code
9  main PROC
10     mov ebx, OFFSET caption
11     mov edx, OFFSET question
12     call MsgBoxAsk
13     ; check return value in EAX
14     exit
15     main ENDP
16     END main
```

C:\Users\student\source\repos\Project5\Debug\Project5.exe

Example 8 output 1

Survey Completed



Thank you for completing the survey  
Would you like to receive the results

Yes

No

```
C:\Users\student\source\repos\Project5\Debug\Project5.exe (process 39332) exited with code 0.  
Press any key to close this window . . .
```

Example 8 output 2

## Loop code

```
1  INCLUDE Irvine32.inc
2  .data
3
4  .code
5  main PROC
6  mov ax, 0
7  mov ecx, 5
8
9  L1:
10     Inc ax
11     call DumpRegs
12
13     Loop L1
14
15
16
17     exit
18 main ENDP
19 END main
```

```
EAX=003C0001 EBX=0041D000 ECX=00000005 EDX=00AD100A
ESI=00AD100A EDI=00AD100A EBP=003CF9C0 ESP=003CF9B4
EIP=00AD3670 EFL=00000202 CF=0 SF=0 ZF=0 OF=0 AF=0 PF=0
```

```
EAX=003C0002 EBX=0041D000 ECX=00000004 EDX=00AD100A
ESI=00AD100A EDI=00AD100A EBP=003CF9C0 ESP=003CF9B4
EIP=00AD3670 EFL=00000202 CF=0 SF=0 ZF=0 OF=0 AF=0 PF=0
```

```
EAX=003C0003 EBX=0041D000 ECX=00000003 EDX=00AD100A
ESI=00AD100A EDI=00AD100A EBP=003CF9C0 ESP=003CF9B4
EIP=00AD3670 EFL=00000206 CF=0 SF=0 ZF=0 OF=0 AF=0 PF=1
```

```
EAX=003C0004 EBX=0041D000 ECX=00000002 EDX=00AD100A
ESI=00AD100A EDI=00AD100A EBP=003CF9C0 ESP=003CF9B4
EIP=00AD3670 EFL=00000202 CF=0 SF=0 ZF=0 OF=0 AF=0 PF=0
```

```
EAX=003C0005 EBX=0041D000 ECX=00000001 EDX=00AD100A
ESI=00AD100A EDI=00AD100A EBP=003CF9C0 ESP=003CF9B4
EIP=00AD3670 EFL=00000206 CF=0 SF=0 ZF=0 OF=0 AF=0 PF=1
```

Loop code output

C:\Users\student\source\repos\Project5\Debug\Project5.exe (process 61560) exited with code 0.  
Press any key to close this window . . .

## Loop in an array

Text.asm

```
1  INCLUDE Irvine32.inc
2  .data
3
4  intArray WORD 100h, 200h, 300h, 400h, 500h
5
6  .code
7  main PROC
8      mov esi, 0
9      mov eax, 0
10     mov ecx, LENGTHOF intArray
11     call DumpRegs
12
13 L1:
14     mov ax, intArray[esi]
15     add esi, TYPE intArray
16     call DumpRegs
17
18     Loop L1
19
20     exit
21 main ENDP
22 END main
```

## Loop in an array output

Microsoft Visual Studio Debug Console

```
EAX=00000100  EBX=00A92000  ECX=00000005  EDX=0047100A  
ESI=00000002  EDI=0047100A  EBP=009FF970  ESP=009FF964  
EIP=00473683  EFL=00000202  CF=0   SF=0   ZF=0   OF=0   AF=0   PF=0
```

```
EAX=00000200  EBX=00A92000  ECX=00000004  EDX=0047100A  
ESI=00000004  EDI=0047100A  EBP=009FF970  ESP=009FF964  
EIP=00473683  EFL=00000202  CF=0   SF=0   ZF=0   OF=0   AF=0   PF=0
```

```
EAX=00000300  EBX=00A92000  ECX=00000003  EDX=0047100A  
ESI=00000006  EDI=0047100A  EBP=009FF970  ESP=009FF964  
EIP=00473683  EFL=00000206  CF=0   SF=0   ZF=0   OF=0   AF=0   PF=1
```

```
EAX=00000400  EBX=00A92000  ECX=00000002  EDX=0047100A  
ESI=00000008  EDI=0047100A  EBP=009FF970  ESP=009FF964  
EIP=00473683  EFL=00000202  CF=0   SF=0   ZF=0   OF=0   AF=0   PF=0
```

```
EAX=00000500  EBX=00A92000  ECX=00000001  EDX=0047100A  
ESI=0000000A  EDI=0047100A  EBP=009FF970  ESP=009FF964  
EIP=00473683  EFL=00000206  CF=0   SF=0   ZF=0   OF=0   AF=0   PF=1
```

```
C:\Users\student\source\repos\Project5\Debug\Project5.exe (process 64272) exited with code 0.  
Press any key to close this window . . .
```

## Nested loop code

```
1  INCLUDE Irvine32.inc
2
3  .code
4  main PROC
5      mov eax, 0
6      mov ebx, 0
7      mov ecx, 5
8
9      L1:
10         inc eax
11         mov edx, ecx
12         call DumpRegs
13         mov ecx, 10
14         L2:
15             inc ebx
16             call DumpRegs
17         Loop L2
18         mov ecx, edx
19
20     Loop L1
21
22     exit
23 main ENDP
24 END main
```



# 50 Times Loop Execut

EAX=00000005 EBX=0000002B ECX=00000008 EDX=00000001  
ESI=004F100A EDI=004F100A EBP=004DF9E8 ESP=004DF9DC  
EIP=004F3682 EFL=00000206 CF=0 SF=0 ZF=0 OF=0 AF=0 PF=1

EAX=00000005 EBX=0000002C ECX=00000007 EDX=00000001  
ESI=004F100A EDI=004F100A EBP=004DF9E8 ESP=004DF9DC  
EIP=004F3682 EFL=00000202 CF=0 SF=0 ZF=0 OF=0 AF=0 PF=0

EAX=00000005 EBX=0000002D ECX=00000006 EDX=00000001  
ESI=004F100A EDI=004F100A EBP=004DF9E8 ESP=004DF9DC  
EIP=004F3682 EFL=00000206 CF=0 SF=0 ZF=0 OF=0 AF=0 PF=1

EAX=00000005 EBX=0000002E ECX=00000005 EDX=00000001  
ESI=004F100A EDI=004F100A EBP=004DF9E8 ESP=004DF9DC  
EIP=004F3682 EFL=00000206 CF=0 SF=0 ZF=0 OF=0 AF=0 PF=1

EAX=00000005 EBX=0000002F ECX=00000004 EDX=00000001  
ESI=004F100A EDI=004F100A EBP=004DF9E8 ESP=004DF9DC  
EIP=004F3682 EFL=00000202 CF=0 SF=0 ZF=0 OF=0 AF=0 PF=0

EAX=00000005 EBX=00000030 ECX=00000003 EDX=00000001  
ESI=004F100A EDI=004F100A EBP=004DF9E8 ESP=004DF9DC  
EIP=004F3682 EFL=00000216 CF=0 SF=0 ZF=0 OF=0 AF=1 PF=1

EAX=00000005 EBX=00000031 ECX=00000002 EDX=00000001  
ESI=004F100A EDI=004F100A EBP=004DF9E8 ESP=004DF9DC  
EIP=004F3682 EFL=00000202 CF=0 SF=0 ZF=0 OF=0 AF=0 PF=0

EAX=00000005 EBX=00000032 ECX=00000001 EDX=00000001  
ESI=004F100A EDI=004F100A EBP=004DF9E8 ESP=004DF9DC  
EIP=004F3682 EFL=00000202 CF=0 SF=0 ZF=0 OF=0 AF=0 PF=0

Nested loop output

**The End**  
**Thank You**

**...**