

組合語言實習課作業

第 36 組

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The screenshot shows a debugger window with the title bar "C:\Users\m0966\Downloads\windbg\windbg\helloworld.asm". The main pane displays assembly code for a program named "main PROC". The code includes instructions for moving registers, comparing values, and jumping between labels L1, L2, L3, L4, and L5. The "exit" instruction is highlighted in yellow. To the right, a "Memory(&myID,&myID2,&result)" window shows a hex dump of memory addresses from 0x00403000 to 0x00403120. The first few lines of the memory dump show non-zero values, while the rest are zeros.

```
.code
main PROC
    mov esi,0
    mov ecx,size_ID
L1:
    mov al,myID[esi]
    cmp al,myID2[esi]
    ja L2
    jb L3
    jz L4
L2:
    mov result[esi],42h
    inc esi
    Loop L1
    jmp L5
L3:
    mov result[esi],43h
    inc esi
    Loop L1
    jmp L5
L4:
    mov result[esi],41h
    inc esi
    Loop L1
    jmp L5
L5:
    exit
main ENDP
END main
```

Memory(&myID,&myID2,&result)

0x00403000	31 30 39 35 30 32 35 31 37 31 30 39 35 30 32 35	1095025171095025
0x00403010	35 35 09 00 00 00 41 41 41 41 41 41 43 42 00 55	....AAAAAACB.
0x00403020	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
0x00403030	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
0x00403040	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
0x00403050	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
0x00403060	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
0x00403070	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
0x00403080	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
0x00403090	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
0x004030A0	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
0x004030B0	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
0x004030C0	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
0x004030D0	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
0x004030E0	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
0x004030F0	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
0x00403100	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
0x00403110	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....
0x00403120	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	.....

L1

在一開始我們先輸入學組長跟組員的學號，並設定長度

將 myID[esi]輸入進 al 後，接著比較 al 跟 myID2[esi]

如果 myID 比較大的話，進入到 L2

如果 myID 比較小的話，進入到 L3

如果 myID 跟 myID2 一樣的話，進入到 L4

L2：

輸入 B 到 result[esi]裡。

Esi+1(移至下一個位置)

回到 L1

L3：

輸入 C 到 result[esi]裡。

Esi+1(移至下一個位置)

回到 L1

L4：

輸入 A 到 result[esi]裡。

Esi+1(移至下一個位置)

回到 L1

在 L2~L4 後方，我們有加說如果迴圈已經跑完的話，就讓程式往下跑到 L5，讓程式結束，以免讓程式執行到 L2~L4 中的程式，讓陣列爆掉。

因此程式執行的時候，因為我們的學號前 7 碼都是 1095025，故都是 A
又因為我們的第 8 碼， $1 < 5$ ，故輸出 C，第 9 碼 $7 > 5$ ，故 1 輸出 B。

心得：

在一開始打程式碼必須要先有想好要怎麼寫。

而根據題目，我們打出相對應的 3 個 label。

而我們有注意到因為程式會一直往下跑，故沒有設一個 label 讓程式結束的話，
迴圈明明結束但是還會執行到不該執行的部分。

因此我們才會多設一個 label5。

感謝助教的 hint 提醒。