

報告標題: lab3, 組別: 48, 姓名學號: 曾千芸109504501賈子悅110502514

- 程式執行流程、記憶體 (暫存器) 狀態、截圖說明、程式碼說明

```
1 include Irvine32.inc
2 .data
3     Result byte 9 DUP(?)
4 .code
5 main PROC
6     mov ecx, 9                ;將ecx定義為9 (ecx is automatically used as a counter and is decremented each time the loop repeats)
7     mov esi, OFFSET Result    ;傳回變數從所在區段開始的偏移距離
8     mov al, 0                 ;將al定義為0
9
10    L1:
11        add al, 9              ;將al加上9
12        mov [esi], al          ;The contents of the al register are copied to the memory location addressed by esi
13        inc esi               ;將esi加上1
14    LOOP L1                   ;repeat L1 (9 times)
15    exit
16 main ENDP
17 END main
```

L6: 將ecx定義為9 (ecx is automatically used as a counter and is decremented each time the loop repeats)

ecx	0x00000009
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L7: 傳回變數從所在區段開始的偏移距離

esi	0x00d64000
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L8: 將al定義為0

al	0x00 '\0'
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L10: 將al加上9

al	0x09 '\t'
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L11: The contents of the al register are copied to the memory location addressed by esi

Memory 1	0x00D64000	09 00
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L12: 將esi加上1

esi	0x00d64001
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L13: repeat L1 (ecx = ecx - 1 because ecx is automatically used as a counter and is decremented each time the loop repeats)

ecx	0x00000008
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L10: 將al加上9

al	0x12 '\x12'
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L11: The contents of the al register are copied to the memory location addressed by esi

Memory 1	0x00D64000	09 12 00
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L12: 將esi加上1

esi	0x00d64002
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L13: repeat L1 (ecx = ecx - 1 because ecx is automatically used as a counter and is decremented each time the loop repeats)

 ecx 0x00000007


L10: 將al加上9

 al 0x1b '\x1b'

L11: The contents of the al register are copied to the memory location addressed by esi

Memory 1  
Address: 0x00D64000  
0x00D64000 09 12 1b 00 00 00 00 00 00 00 00 00 00 00 00 00


L12: 將esi加上1

 esi 0x00d64003

L13: repeat L1 (ecx = ecx - 1 because ecx is automatically used as a counter and is decremented each time the loop repeats)

 ecx 0x00000006

L10: 將al加上9

 al 0x24 '\$'

L11: The contents of the al register are copied to the memory location addressed by esi

Memory 1  
Address: 0x00D64000  
0x00D64000 09 12 1b 24 00 00 00 00 00 00 00 00 00 00 00 00


L12: 將esi加上1

 esi 0x00d64004

L13: repeat L1 (ecx = ecx - 1 because ecx is automatically used as a counter and is decremented each time the loop repeats)

 ecx 0x00000005


L10: 將al加上9

 al 0x2d '-'

L11: The contents of the al register are copied to the memory location addressed by esi

Memory 1  
Address: 0x00D64000  
0x00D64000 09 12 1b 24 2d 00 00 00 00 00 00 00 00 00 00 00


L12: 將esi加上1

 esi 0x00d64005

L13: repeat L1 (ecx = ecx - 1 because ecx is automatically used as a counter and is decremented each time the loop repeats)

 ecx 0x00000004


L10: 將al加上9

 al 0x36 '6'

L11: The contents of the al register are copied to the memory location addressed by esi

Memory 1  
Address: 0x00D64000  
0x00D64000 09 12 1b 24 2d 36 00 00 00 00 00 00 00 00 00 00


L12: 將esi加上1

 esi 0x00d64006

L13: repeat L1 (ecx = ecx - 1 because ecx is automatically used as a counter and is decremented each time the loop repeats)

 ecx 0x00000003


L10: 將al加上9

 al 0x3f '?'

L11: The contents of the al register are copied to the memory location addressed by esi

Memory 1  
Address: 0x00D64000  
0x00D64000 09 12 1b 24 2d 36 3f 00 00 00 00 00 00 00 00


L12: 將esi加上1

 esi 0x00d64007

L13: repeat L1 (ecx = ecx - 1 because ecx is automatically used as a counter and is decremented each time the loop repeats)

 ecx 0x00000002


L10: 將al加上9

 al 0x48 'H'

L11: The contents of the al register are copied to the memory location addressed by esi

Memory 1  
Address: 0x00D64000  
0x00D64000 09 12 1b 24 2d 36 3f 48 00 00 00 00 00 00 00 00


L12: 將esi加上1

 esi 0x00d64008

L13: repeat L1 (ecx = ecx - 1 because ecx is automatically used as a counter and is decremented each time the loop repeats)

 ecx 0x00000001


L10: 將al加上9

 al	0x51 'Q'
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L11: The contents of the al register are copied to the memory location addressed by esi

Memory 1
Address: 0x00D64000
0x00D64000 09 12 1b 24 2d 36 3f 48 51 00 00 00 00 00 00 00 00

L12: 將esi加上1

 esi	0x00d64009
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L13: did not continue to repeat L1 because ecx = 0 (ecx = ecx - 1 because ecx is automatically used as a counter and is decremented each time the loop repeats)

 ecx	0x00000000
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L14: exit

- 心得

這次的實習課學到了迴圈的應用，和其他程式語言略有不同，但是經由老師上課的學習單，並且與同學們討論過後，理解的很快，馬上在這次作業運用出，得到9的各個倍數在16進位上的顯示。此外，也學習使用ecx來計算已經跑過迴圈多少次，當ecx等於零時就會結束迴圈，我認為ecx是一個非常好用的計數變數。有遇到一點小插曲是用自己電腦程式跑不出來，但是在助教幫助下完成設置，感謝助教在實驗課的指導，讓我們能如期完成實驗課的作業。