第04次組語實習課

學生：林培瑋

2023 Advanced Mixed-Operation System (AMOS) Lab.

Tamkang University
Department of Electrical and Computer Engineering
No.151, Yingzhuan Rd., Tamsui Dist., New Taipei City 25137, Taiwan (R.O.C.)

目錄

第1次隨堂考

2023 Advanced Mixed-Operation System (AMOS) Lab.

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評分標準

0	沒繳交、交白券
20	基本分(有繳交計算過程、只交程式碼、沒進入Debugger介面)
40	有進入Debugger介面，程式碼是錯的
60	程式碼有小錯誤，導致輸出結果數值不正確
80	沒寫計算過程、計算過程不完整
100	全對

➢下次隨堂考開始，將不會有部分給分。

第一次作業

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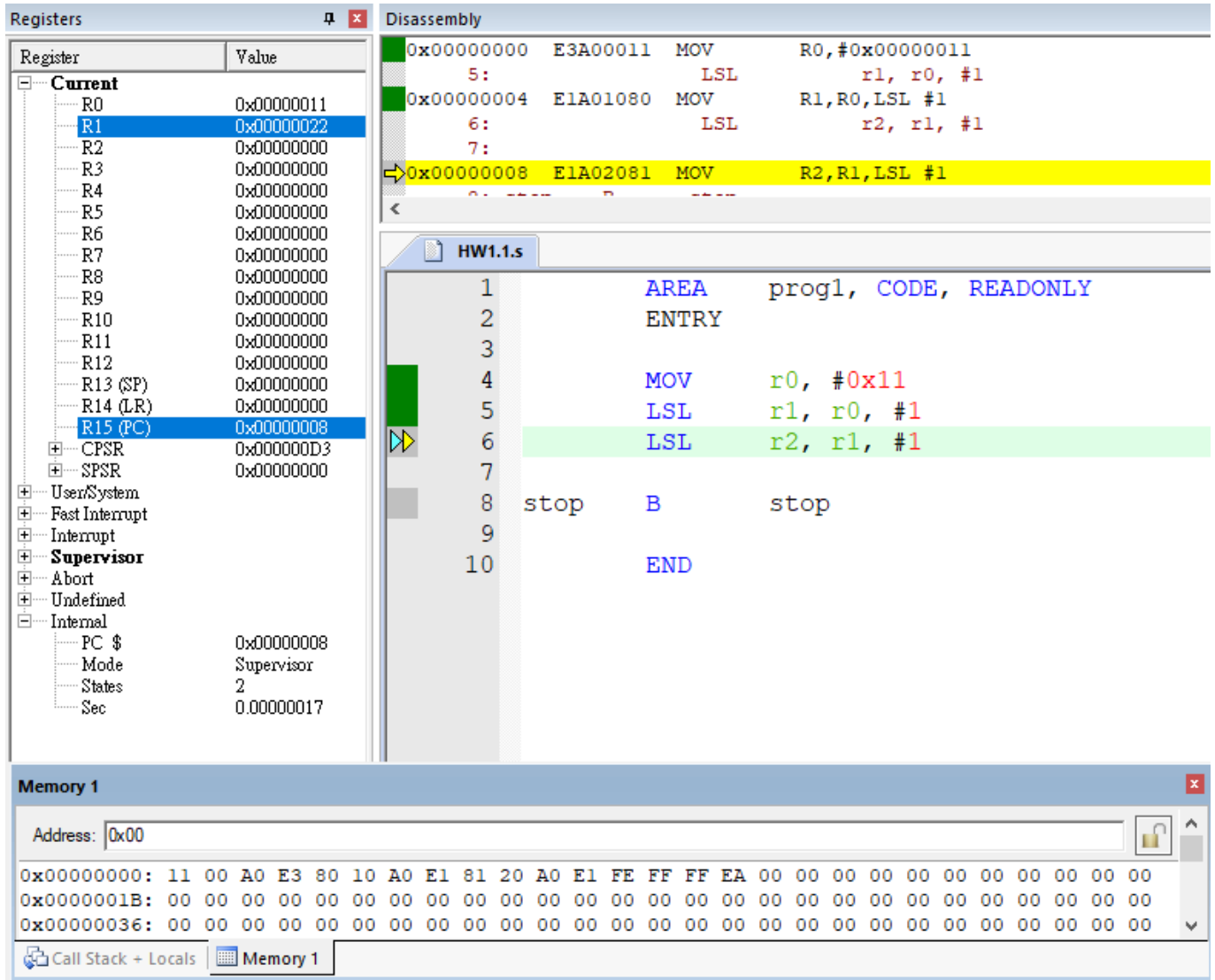
評分標準

- 第一部分(30%) 至少2張截圖(一張15%) (**執行一次LSL**一張截圖)。
- 第二部分(30%)至少2張截圖(一張15%) (**執行第一次迴圈結束時**一張截圖，程式**執行結束**一張截圖)。
- 第三部分(30%)至少3張截圖(一張10%) (**執行一次EOR**一張截圖)。
- 心得(10%)

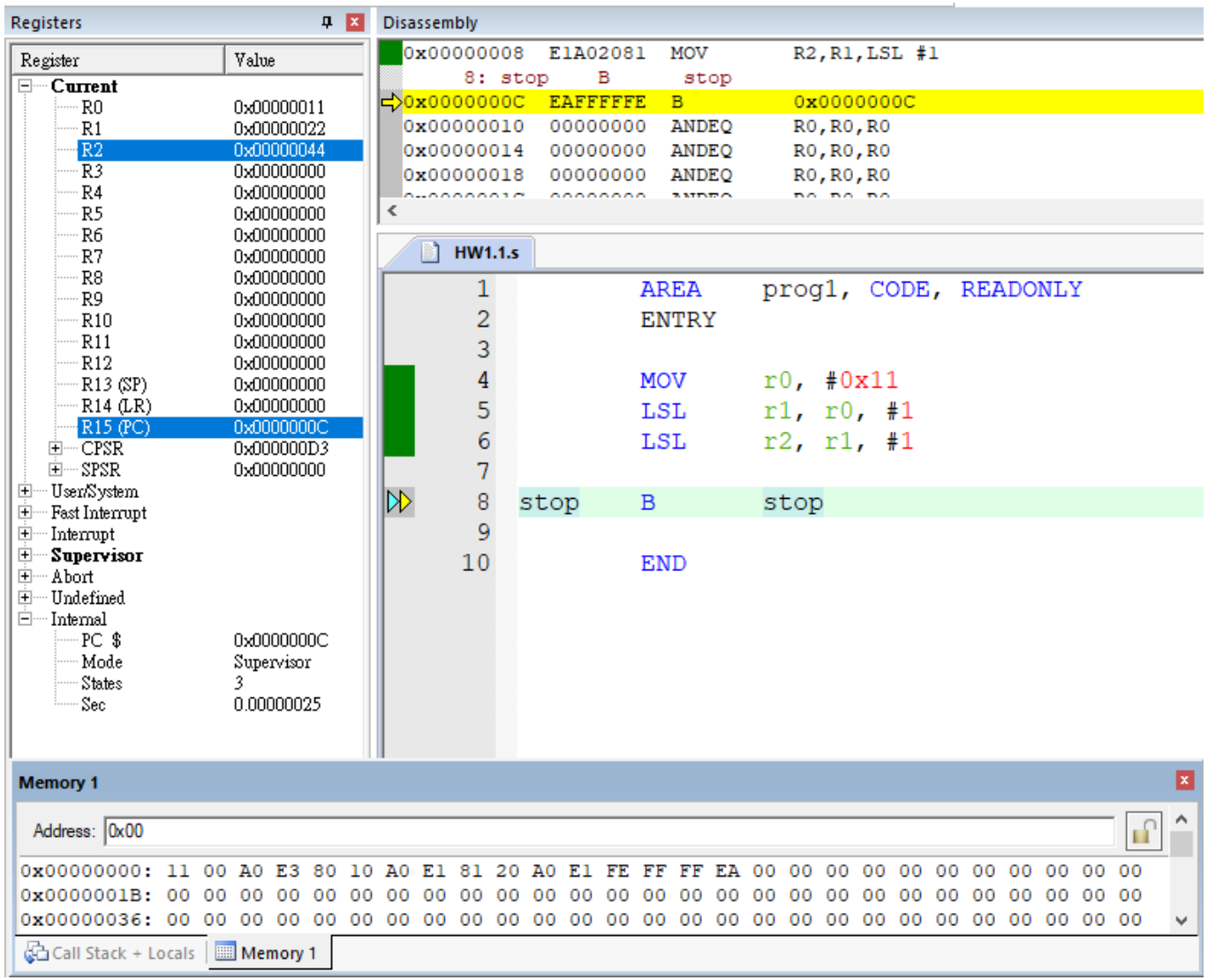
不計分	一半分數
程式碼沒有學號、姓名	沒截到記憶體視窗
暫存器模糊不清楚	更改範例程式的程式碼
暫存器視窗沒拉開	暫存器視窗拉太寬
暫存器數值不正確	螞蟻圖(下次作業開始)

- **以最後繳交的版本為準**
- **遲交者成績 = 原始成績*0.5**

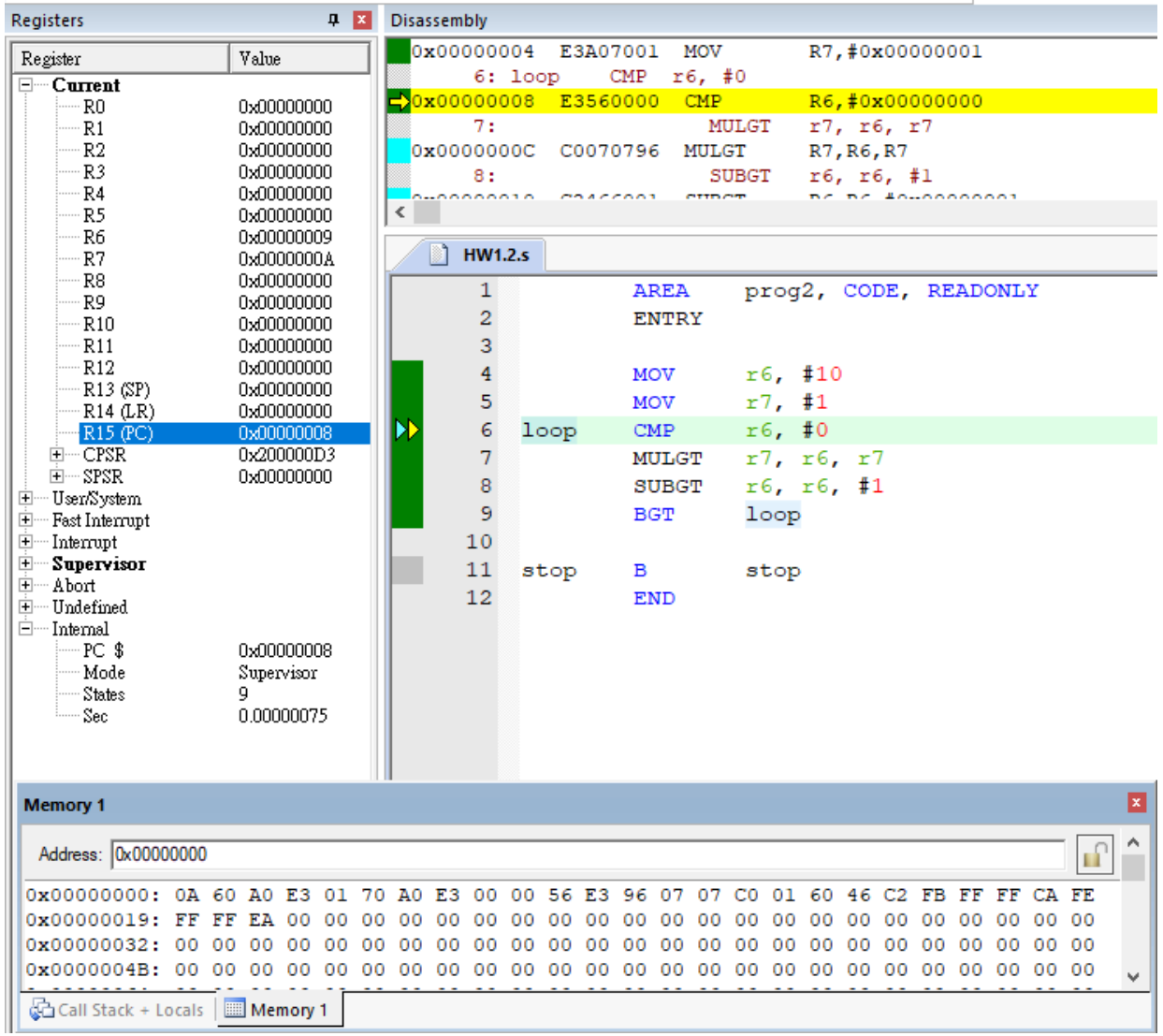
第一部份(執行一次LSL)



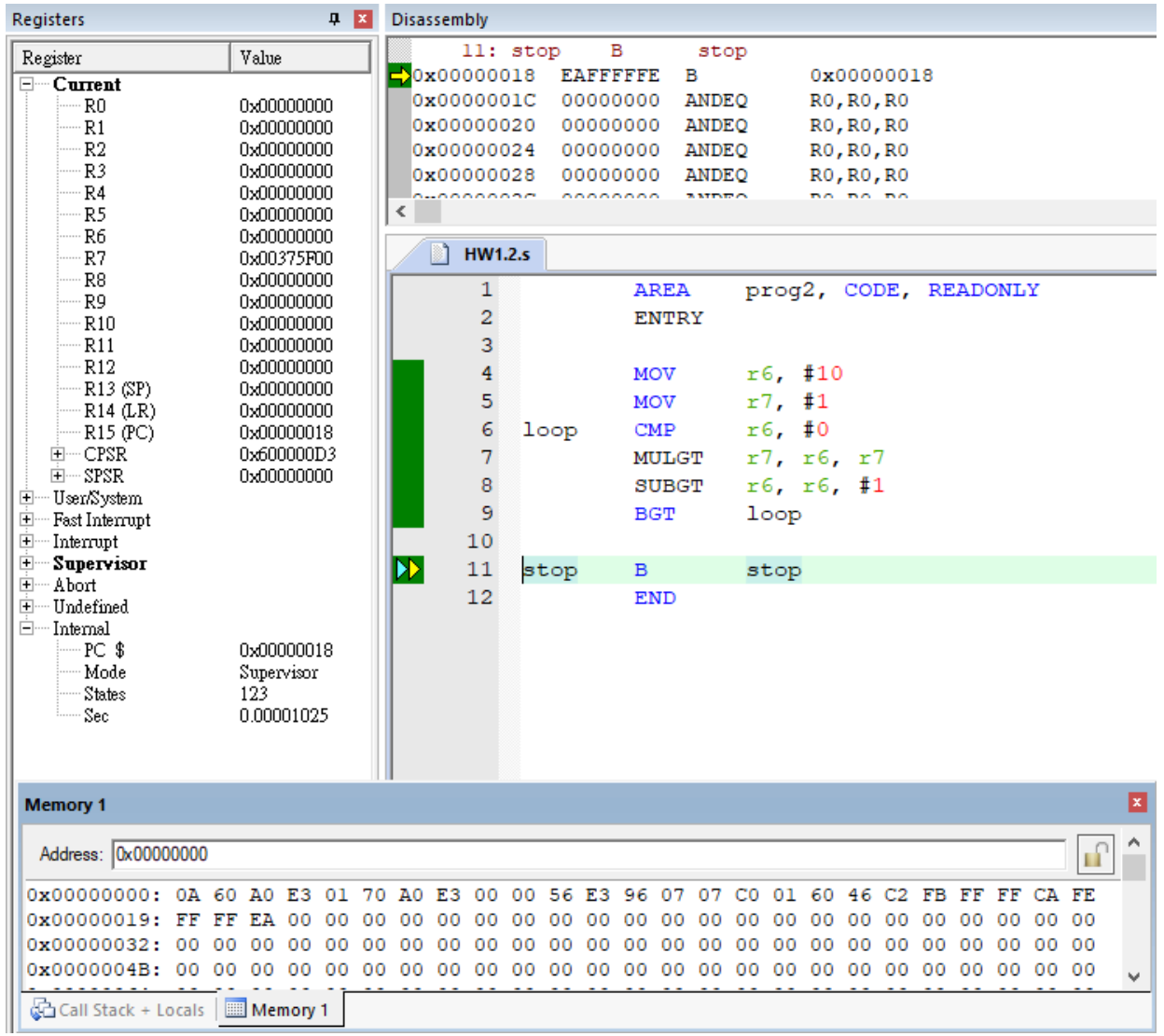
第一部份(執行一次LSL)



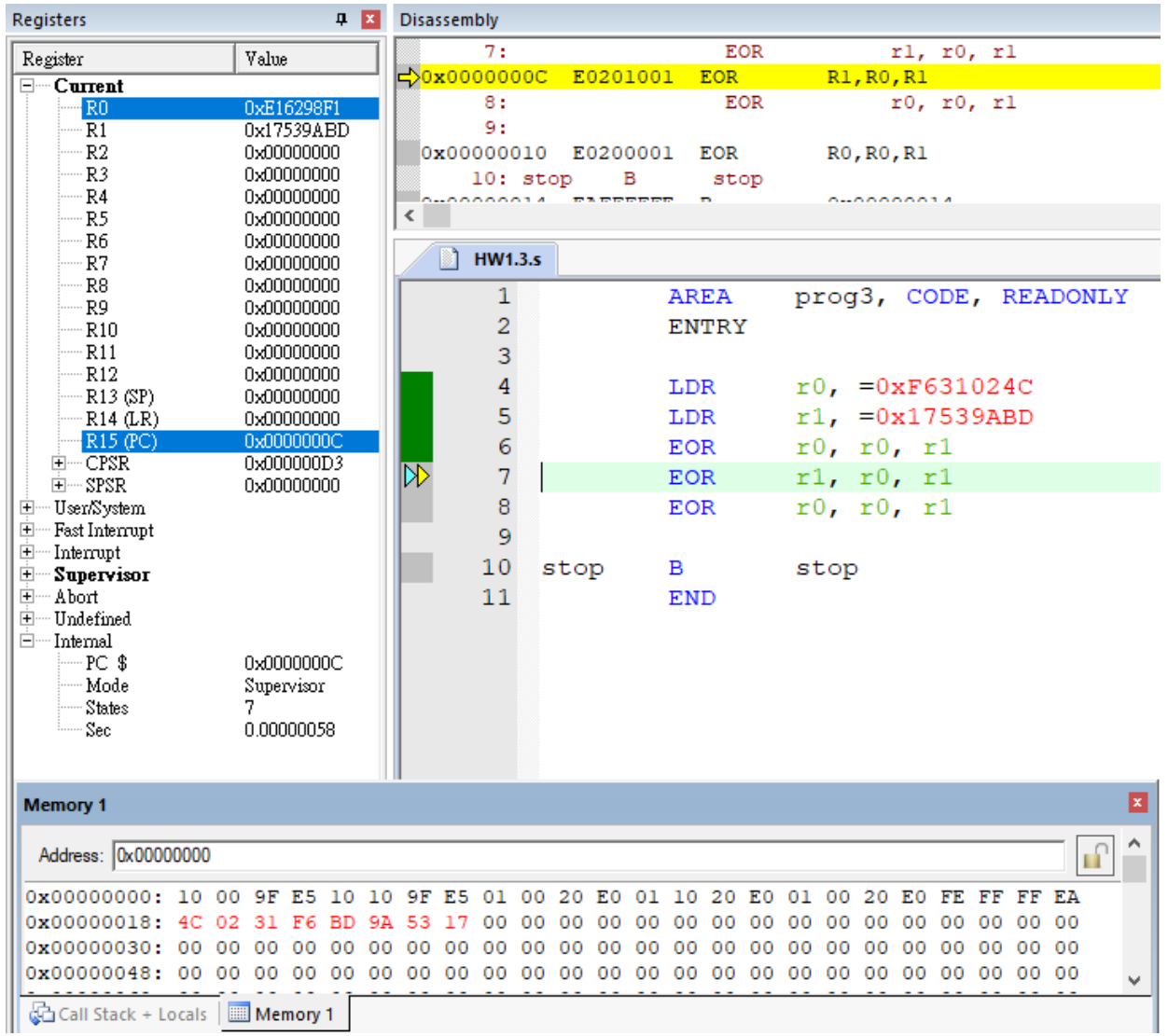
第二部份(執行第一次迴圈結束時)



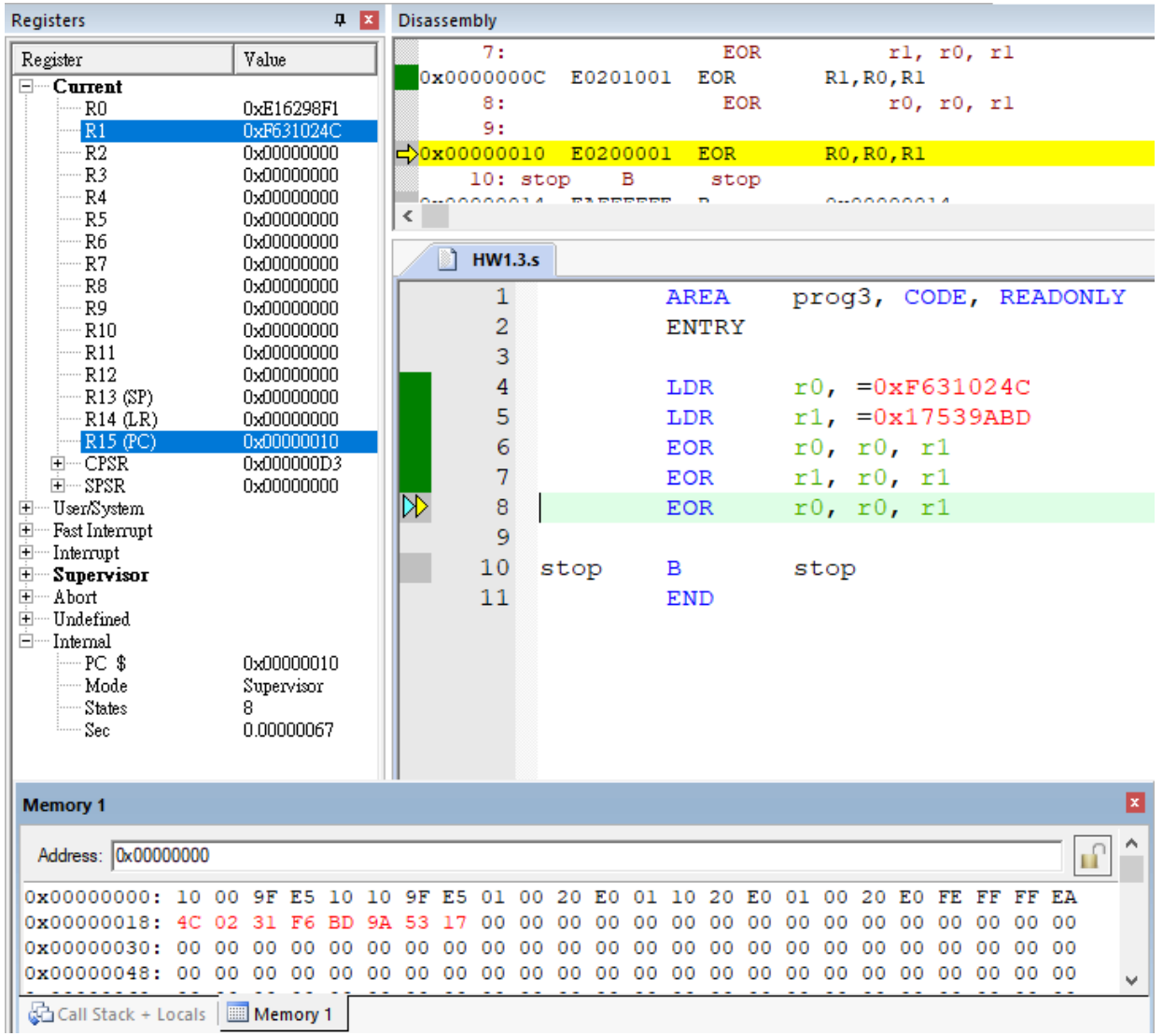
第二部份(執行結束)


Registers
Register
Value
Current
R0 0x00000000
R1 0x00000000
R2 0x00000000
R3 0x00000000
R4 0x00000000
R5 0x00000000
R6 0x00000000
R7 0x00375F00
R8 0x00000000
R9 0x00000000
R10 0x00000000
R11 0x00000000
R12 0x00000000
R13 (SP) 0x00000000
R14 (LR) 0x00000000
R15 (PC) 0x00000018
CPSR 0x600000D3
SPSR 0x00000000
User/System
Fast Interrupt
Interrupt
Supervisor
Abort
Undefined
Internal
PC $ 0x00000018
Mode Supervisor
States 123
Sec 0.00001025
Disassembly
11: stop B stop
0x00000018 EAFFFFFE B 0x00000018
0x0000001C 00000000 ANDEQ R0,R0,R0
0x00000020 00000000 ANDEQ R0,R0,R0
0x00000024 00000000 ANDEQ R0,R0,R0
0x00000028 00000000 ANDEQ R0,R0,R0
HW1.2.s
1 AREA prog2, CODE, READONLY
2 ENTRY
3
4 MOV r6, #10
5 MOV r7, #1
6 loop CMP r6, #0
7 MULGT r7, r6, r7
8 SUBGT r6, r6, #1
9 BGT loop
10
11 stop B stop
12 END
Memory 1
Address: 0x00000000
0x00000000: 0A 60 A0 E3 01 70 A0 E3 00 00 56 E3 96 07 07 C0 01 60 46 C2 FB FF FF CA FE
0x00000019: FF FF EA 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x00000032: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0x0000004B: 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
Call Stack + Locals
Memory 1

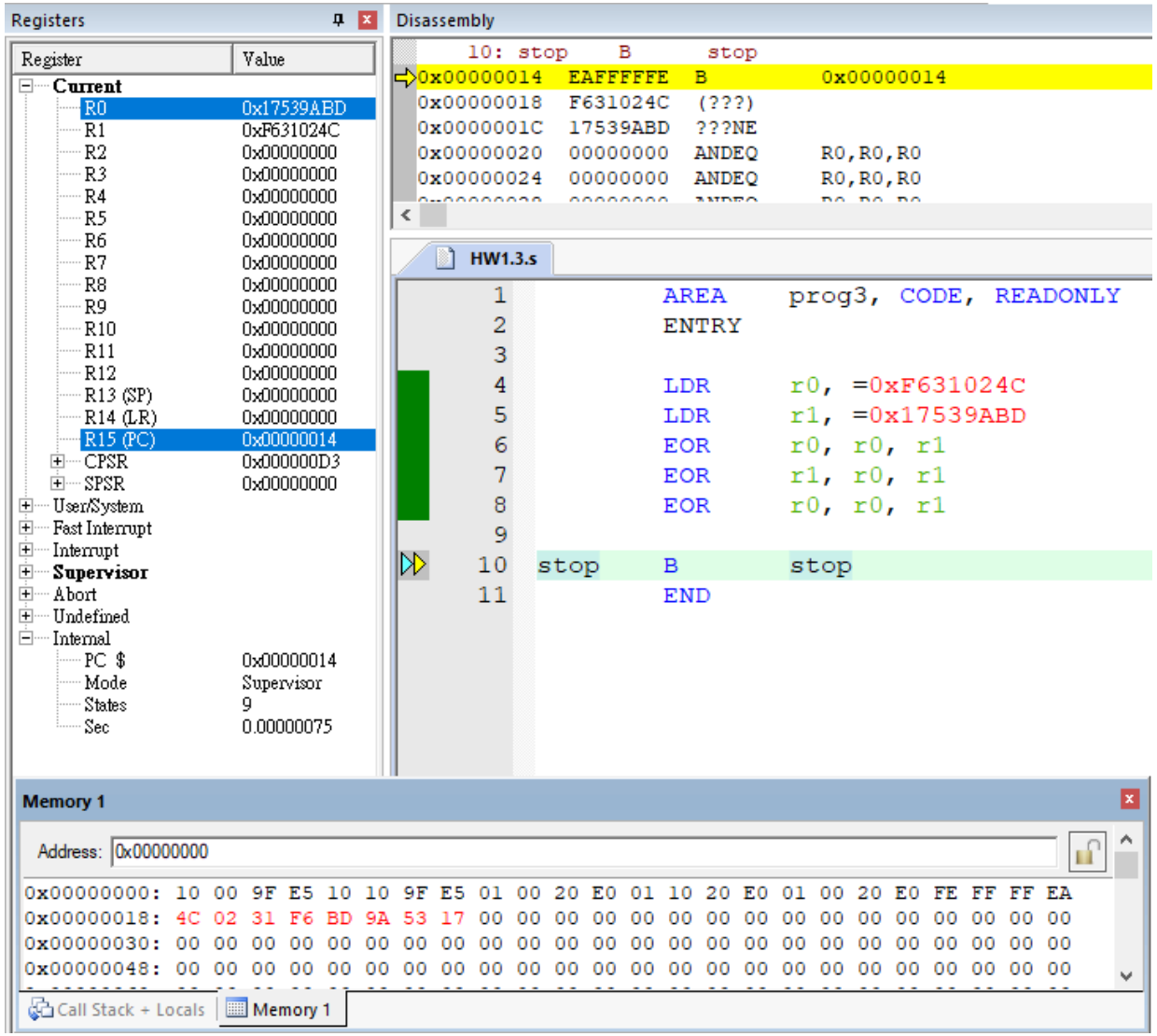
第三部份(執行一次EOR)



第三部份(執行一次EOR)



第三部份(執行一次EOR)



第二次作業

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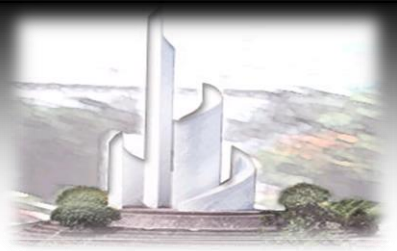


組合語言_HW2

繳交期限: 11/2 23:59

(用word檔上傳至iclass)

請提前上傳，以免iclass塞車

第一部分

1. 照著課本P.57第6題的要求，寫出一個程式

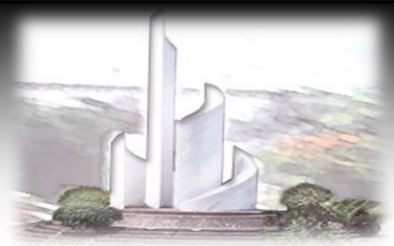
- 求出$6x^2-9x+2$的結果值
- R3=x
- R2=答案
- R3的x請設成 731 (0x2DB)
- 最後程式跑出來，R2的值要跟自己設的數代進去方程式算出來一樣。

第一部分

2. 課本p.58第8題

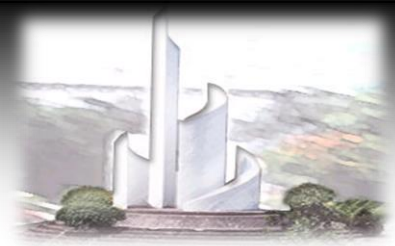
- 利用two’s complement用手算-149和-4321兩個值轉成16進位，如同program 3用LDR放進暫存器R0和R1
- 把兩個值加起來存到暫存器R7
- 將R7暫存器的16進位數值，用手算逆推回十進制，驗證程式計算結果是否正確

第一部分



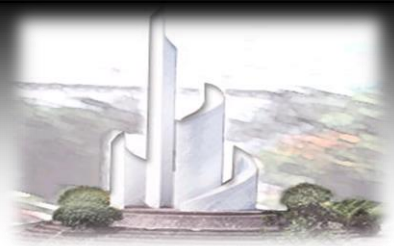
- 將前面兩大題相關程式如上課時所示範的一樣，各打入一個program，並單步執行（F11），且截圖展示出題目所要求的結果，手算驗證部分用註解呈現在program中

第二部分



```
data1   DCW 0x8ECC, 0xFE37, -149
data2   DCD 0xFE37, 1, 5, 20
data3   DCB 0xCF, 23, 39, 0x54, 250
data4   DCWU 0x1234
data5   DCB 255
data6   DCDU 0x12345678, -4321
data7   DCB 0xA3
        ALIGN 4,3
data8   DCWU 0xFC25
        ALIGN
data9  DCB “MVP_N. Jokic”, 0
data10  DCW 0xEF12
```

第二部分



- 如上課時所示範的一樣，將前一頁之宣稱寫入程式
- 在記憶體視窗中紅色標出每一個值儲存之位置並註明data1~data10每一變數的位址

第三部分

1. (1) Assume r3 ＝ 0x40000000 and r4＝ 0x60. What would r3 contain
   after executing each of the following instructions?
   (a) STR r6, [r3, #8]
   (b) STRB r7, [r3], #12
   (c) LDRH r5, [r3], #12
   (d) LDR r12, [r3, #4]!
   (e) LDR r6, [r3, r4, ROR #28]!
   (f) LDR r0, [r3, r4, LSL #2]
   (2) What would register r4 contain after executing the following
   instructions? Register r6 holds the value 0xDEADBEEF
   and register r3 holds 0x40000000.
   STR r6, [r3]
   LDRB r4, [r3]

第三部分

2. If r2 = 0x12345678, r3 = 0x87654321, and r4 = 0x00000012 before execution, give the contents of r2 after each of the following instructions is executed.

(1) BIC r2, r2, #0xFF000000

(2) LSL r2, r3, #4

(3) LSL r2, r2, r4

(4) ROR r2, r2, #12 ;

(5) AND r2, r2, r3

(6) ORR r2, r2, r4

(7) EOR r2, r2, r4

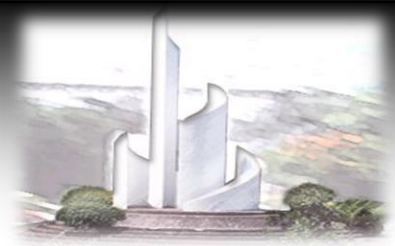
(8) BIC r2, r2, r4

(9) EOR r2, r2, r3, ROR #7

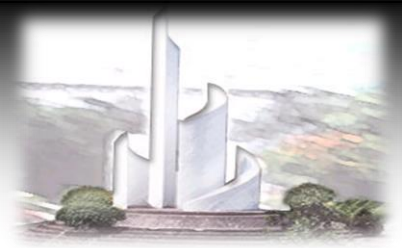
第三部分

- 3. Assume r6 = 0xABCD8765. Write a sequence of instructions to
- (1) calculate the 2's complement of r6 and put the result in r7.
- (2) set bits 1, 5, and 13 in register r6 and leave the remaining bits unchanged.
- (3) clear bits 0, 4, and 12 in register r6 and leave the remaining bits unchanged.
- (4) change bits 4, 8, and 11 of r6.
- (5) insert the value 0x5555 into the lower half of register r0 so that the final value is 0xBEEF5555, assuming register r0 contains the value 0xBEEFABCD.

第三部分



- 將前面三大題相關程式如上課時所示範的一樣，各打入一個program，並單步執行（F11），且截圖展示出題目所要求的變化



- 繳交內容：按照結報格式寫完整，把結報word上傳iclass對應作業位置。
- 程式**需在Keil Tool程式視窗內展示**且展示程式與執行結果的**每一截圖需看的到學號姓名**否則不計分。
- 繳交期限：**11/2 23:59**
- Word檔名：**組合語言_學號_姓名_HW2**

Q&A

Thanks for your attention !!