Microprocessor and Computer Architecture Laboratory

UE19CS256

4th Semester, Academic Year 2020-21

Date:05—03—2021

Name: SUHAN B REVANKAR	SRN: PES2UG19CS412	Section G

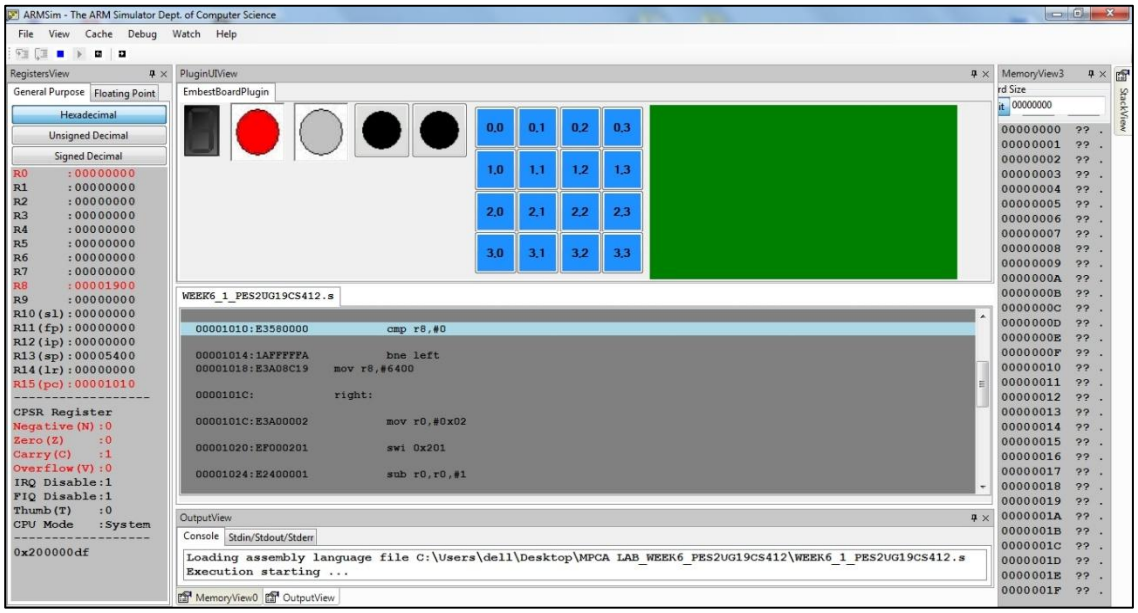
Week#____6_____ Program Number:____1

1. Write an ALP to blink LEDs. First, the right LED is switched on and the left LED is switched off. After 1 second, the right LED is switched off and the left LED is switched on and the program continue to blink both the LEDs.

I. ARM Assembly Code (1).

```
.text
mov r8,#6400
left:
        mov r0,#0x01
        swi 0x201
        sub r0,r0,#1
        cmp r8,#0
        bne leftmov r8,#6400
right:
        mov r0,#0x02
        swi 0x201
        sub r0,r0,#1
        cmp r8,#0
        bne right
mov r8,#6400
both:
        mov r0,#0x03
        swi 0x201
        sub r0,r0,#1
        cmp r8,#0
        bne both
swi 0x011
.end
```

II. Output Screen Shot



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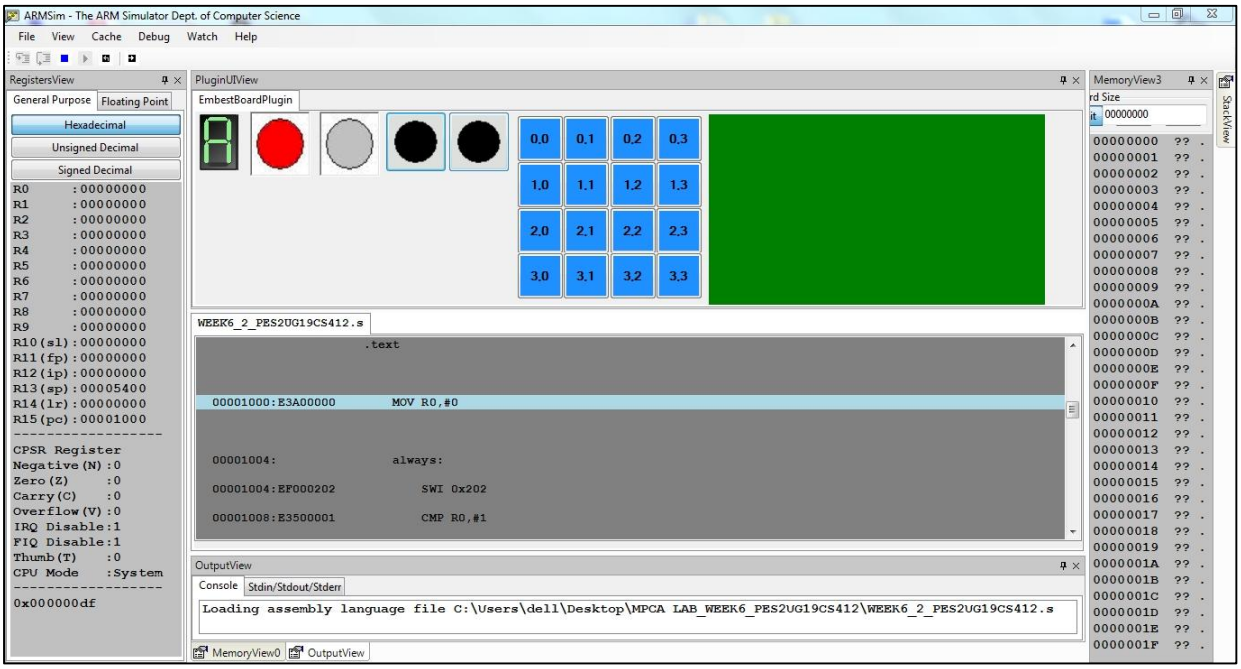
Week#____6_____ Program Number:_____2

Write an ALP to display 0-9, A-F (up and down count) on an 8 segment display

I. ARM Assembly Code (1).

```
.data
    zero: .byte 0b11101101
    one: .byte 0b01100000
    two: .byte 0b11001110
    three: .byte 0b11101010
    four: .byte 0b01100011
    five: .byte 0b10101011
    six: .byte 0b10101111
    seven: .byte 0b11100000
    eight: .byte 0b11101111
    nine: .byte 0b11101011
    A: .byte 0b11100111
    B: .byte  0b11101111
    C: .byte 0b10001101
    D: .byte 0b11101101
    E: .byte 0b10001111
    F: .byte 0b10000111
.text

    MOV R0,#0

    always:
        SWI 0x202
        CMP R0,#1
        BEQ forward
        CMP R0,#2
        BEQ backward
        B always

forward:
        MOV R3,#16
        MOV R2,#1
        LDR R1,=zero
        loop1:
            LDRB R0,[R1]
            SWI 0x200
            BL delay
            ADD R1,R1,R2
            SUB R3,R3,#1
            CMP R3,#0
            BNE loop1
        B always

backward:
        MOV R3,#16
        MOV R2,#-1
        LDR R1,=F
        loop2:
            LDRB R0,[R1]
            SWI 0x200
            BL delay
            ADD R1,R1,R2
            SUB R3,R3,#1
            CMP R3,#0
            BNE loop2
        B always

delay:
        MOV R4,#64000
        delaycount:
        SUB R4,R4,#1
        CMP r4,#0
        BGE delaycount
        MOV PC,LR
```

II. Output Screen Shot



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Week#____6_____ Program Number:____3

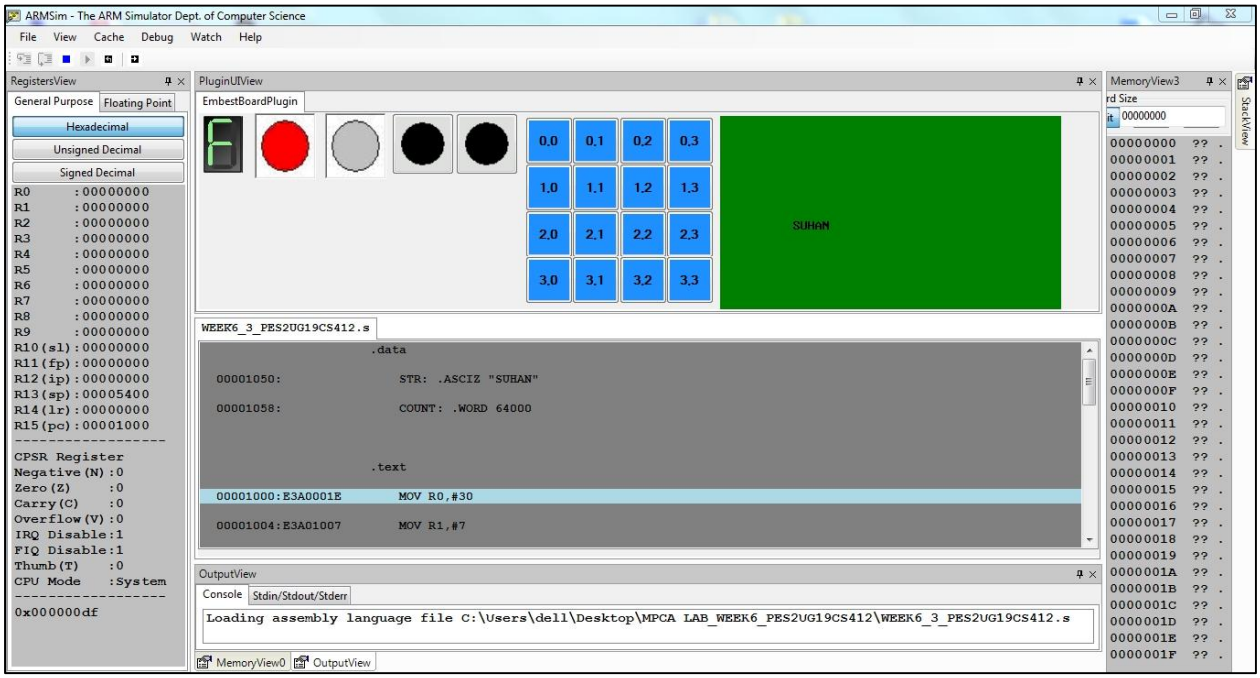
Write an ALP to move a string from Right to Left on LCD (40 columns by 15 rows).

I. ARM Assembly Code

```
.data
    STR: .ASCIZ "SUHAN"
    COUNT: .WORD 64000

.text
    MOV R0,#30
    MOV R1,#7
    MOV R7,#0
    LDR R8,=COUNT
    LDR R8,[R8]
    LDR R2,=STR
    loop:
        SWI 0x204
        BL delay
        CMP R0,#0
        SUBNE R0,R0,#1
        SWIEQ 0x011
        B loop
    delay:
        CMP R7,R8
        ADDNE R7,R7,#1
        BNE delay
        SWI 0x206
        MOV R7,#0
        MOV PC,LR
```

II. Output Screen Shot



Disclaimer:

- The programs and output submitted is duly written, verified and executed by me.
- I have not copied from any of my peers nor from the external resource such as internet.
- If found plagiarized, I will abide with the disciplinary action of the University.

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