Department of Computer Science & Engineering

Microprocessor & Computer Architecture–UE20CS252

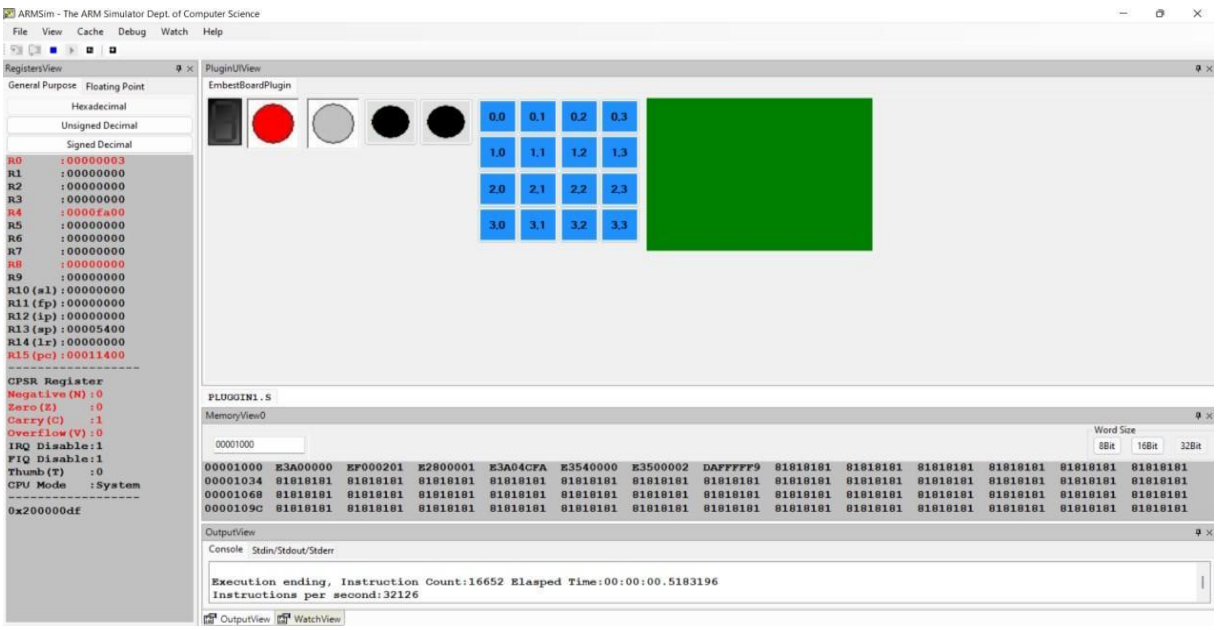
Name: Adithya M SRN: PES1UG20CS621 SECTION: K

Sl. No.	Programs
Week No. 7	1. Demonstration of programs using plug–ins using ARMSIM.

a. Set the LED to be light up.

```
.TEXT
    MOV R0,#0
    LOOP:SWI 0X201
    ;TO LIGHT UP LED, R0=1 MEANS RIGHT LED IS ON,
    ;R0=2 MEANS LEFT IS ON, R0=3 MEANS BOTH LEDS ARE ON

ADD R0,R0,#1
MOV R4,#64000
;DELAY:SUB R4,R4,#1
    CMP R4,#0
    ;BNE DELAY
    CMP R0,#3
    BLE LOOP
    .END
```

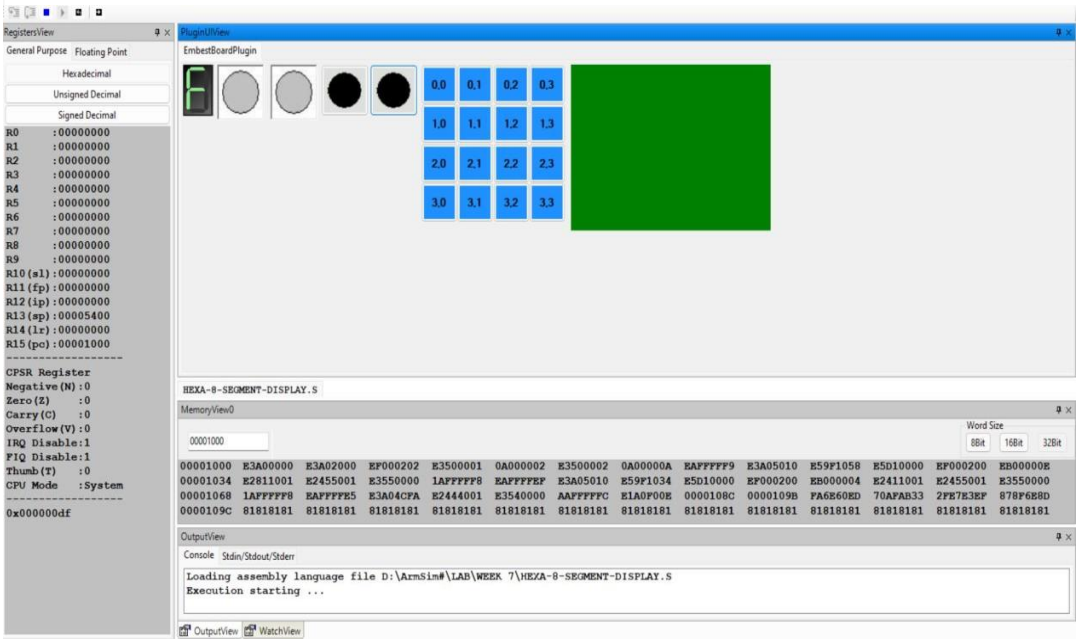


b. Display hexadecimal digits [0–9, A–F] on the 8 segment display.

```
.text
.global _start

begin:       mov r0, #0
             mov r2,#0
again:      swi 0x202 ; check whether
                                    ; black button pressed or not
             cmp r0, #1
              beq loop1
            cmp r0, #2
             beq loop2
              b again
 loop1:      mov r5,#16
              ldr r1,=zero
 back1:     ldrb r0, [r1]
            swi 0x200   ; Set 8 segment display to light up
        bl delay
        add r1,r1,#1
        sub r5, r5,#1
        cmp r5, #0
        bne back1
        b again
loop2:        mov r5,#16
                ldr r1,=F
back2:       ldrb r0, [r1]
         swi 0x200   ; Set 8 segment
                                        ; display to light up

       bl delay
        sub r1, r1, #1
        sub r5, r5,#1
        cmp r5, #0
        bne back2
        b again
delay:       mov r4, #64000
loop3:       sub r4, r4, #1
         cmp r4, #0
         bge loop3
         mov pc, lr
         .data
          zero: .byte  0b11101101
          one:  .byte  0b01100000
          two:  .byte  0b01101110
          three:  .byte  0b11111010
          four:  .byte  0b00110011
          five:  .byte  0b10101011
          six:  .byte  0b10101111
          seven:  .byte  0b01110000
          eight:  .byte  0b11101111
          nine:  .byte  0b11100011
          A:  .byte  0b11100111
          B:  .byte  0b00101111
          C:  .byte  0b10001101
          D:  .byte  0b01101110
          E:  .byte  0b10001111
          F:  .byte  0b10000111
```

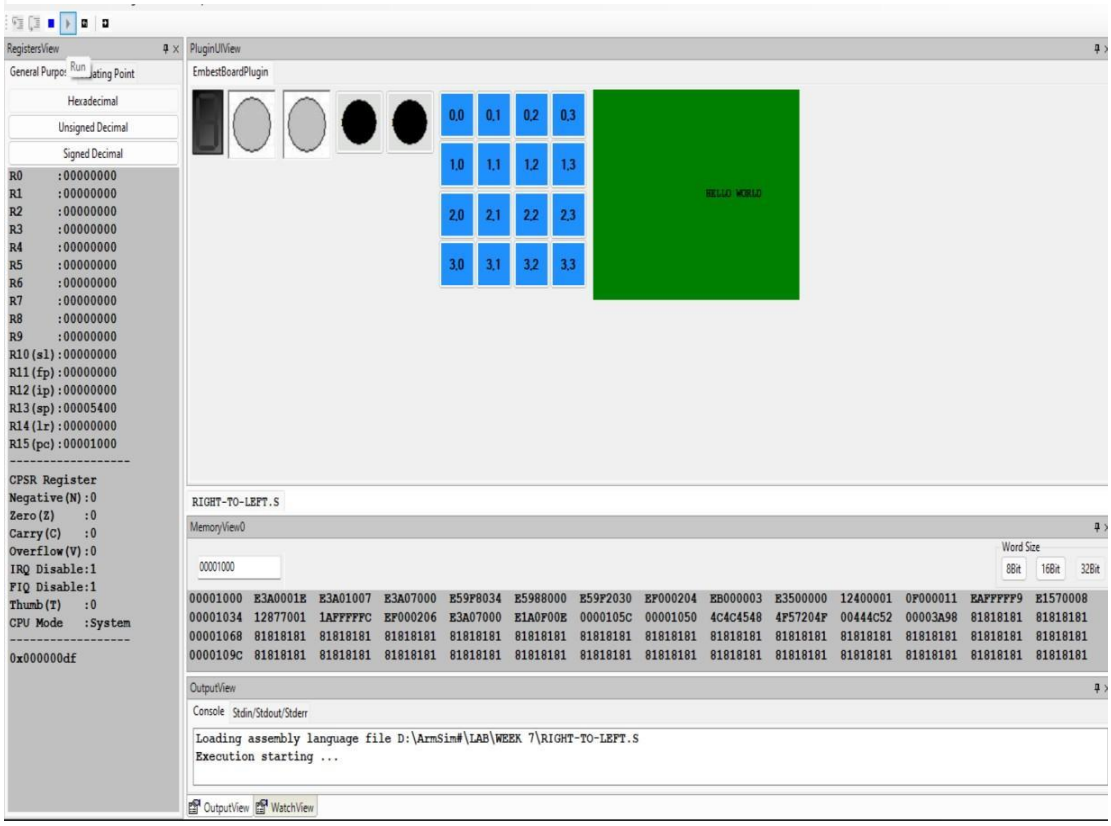


c. Move a string from RIGHT to LEFT on the LCD display panel.

```
.TEXT
    MOV R0,#30  ; RO= X
    MOV R1,#7  ; R1=Y
    MOV R7,#0
    LDR R8,=NUM
    LDR R8,[R8]
    LDR R2,=STR
    LOOP:  SWI 0X204  ; DISPLAY A STRING ON THE STRING

    BL SUM
        CMP R0,#0
        SUBNE R0,R0,#1
        SWIEQ 0X011
        B LOOP
     SUM:
            CMP R7,R8
            ADDNE R7,R7,#1
            BNE SUM
            SWI 0X206   ;CLEAR ONE LINE IN THE DISPLAY ON THE LCD SCREEN
            MOV R7,#0
            MOV PC,LR

.DATA
STR: .ASCIZ "HELLO WORLD"
NUM: .WORD 15000
```



Student Exercises:

2. Execute the following programs on ARMSIM – plug–ins.
   a. Move a string from LEFT to RIGHT on the LCD display panel.

```
.TEXT
    MOV R0,#3   ; RO= X
    MOV R1,#7   ; R1=Y
    MOV R7,#0
    LDR R8,=NUM
    LDR R8,[R8]
    LDR R2,=STR
    LOOP:  SWI 0X204   ; DISPLAY A STRING ON THE STRING

    BL SUM
        CMP R0,#0
        ADDNE R0,R0,#1
        SWIEQ 0X011
        B LOOP
     SUM:
            CMP R7,R8
            ADDNE R7,R7,#1
            BNE SUM
            SWI 0X206    ;CLEAR ONE LINE IN THE DISPLAY ON THE LCD SCREEN
            MOV R7,#0
            MOV PC,LR

.DATA
STR: .ASCIZ "HELLO WORLD"
NUM: .WORD 15000
```