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**Department of Computer Science & Engineering**

**Microprocessor & Computer Architecture - UE20CS252**

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| **Sl. No** | **Programs** |
| **Week No.7** | 1. Demonstration of programs using plug-ins using ARMSIM.  a. Set the LED to be light up.  ***; Set LED to light up***  ***.Text***  ***mov r0, #1***  ***loop:***  ***swi 0x201***  ***Ldr r4,=A***  ***Ldr r4,[r4]***  ***delay:***  ***sub r4, r4,#1***  ***cmp r4, #0***  ***bne delay***  ***add r0, r0, #1***  ***cmp r0, #3***  ***ble loop***  ***swi 0x011***    ***.Data***  ***A:.word 84000***  b. Display hexadecimal digits [0-9,A-F] on the 8 segment display.  ***.text***  ***begin:***  ***mov r0, #0***  ***mov r2,#0***  ***again:***  ***swi 0x202 ; check whether black button pressed or not***  ***cmp r0, #1 ; right button-upcounter***  ***beq loop1***  ***cmp r0, #2 ; left button- downcounter***  ***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 LEFT to RIGHT on the LCD display panel.    ***; Streaming left to right***  ***.Text***  ***mov r0 , #5 ; r0 = 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 screen (R2: address)***  ***bl sum***  ***cmp r0 , #60***  ***addne r0 , r0 , #1***  ***swieq 0x11***  ***b loop***  ***sum: cmp r7 , r8***  ***addne r7 , r7 , #1***  ***bne sum***  ***swi 0x206***  ***mov r7 , #0***  ***mov pc , lr***  ***.Data***  ***str: .asciz "PESU"***  ***num: .word 15000***  **Student Exercises:**  1. Execute the following programs on ARMSIM – PLUG-INS.  a. Display hexadecimal digits [0-9,A-F] on the 8 segment display.  ***.text***  ***begin:***  ***mov r0, #0***  ***mov r2,#0***  ***again:***  ***swi 0x202 ; check whether black button pressed or not***  ***cmp r0, #1 ; right button-upcounter***  ***beq loop1***  ***cmp r0, #2 ; left button- downcounter***  ***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***    b. Move a string from RIGHT to LEFT on the LCD display panel.    ***; Streaming right to left***  ***.Text***  ***mov r0 , #30 ; r0 = 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 screen (R2: address)***  ***bl sum***  ***cmp r0 , #0***  ***subne r0 , r0 , #1***  ***swieq 0x11***  ***b loop***  ***sum: cmp r7 , r8***  ***addne r7 , r7 , #1***  ***bne sum***  ***swi 0x206***  ***mov r7 , #0***  ***mov pc , lr***  ***.Data***  ***str: .asciz "PESU"***  ***num: .word 15000*** |

**MPCA-Laboratory/Assignment/Hands-on/Project**