Microprocessor and Computer Architecture Laboratory

UE20CS256

Name: Naman Choudhary	SRN: PES2UG20CS209	Section: D

Week 7

Program Number	1
Program Qn	Display all HEX codes from 0-9 | A-F
ARM Assembly Code	

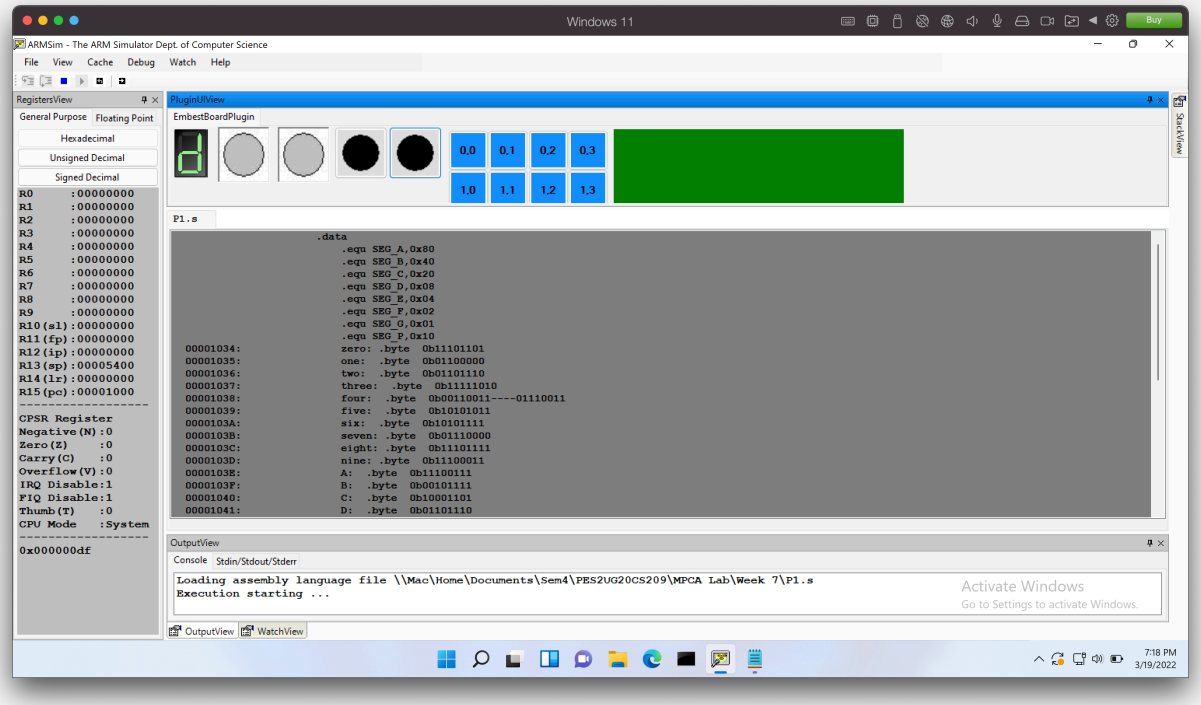
```
.data
    .equ SEG_A,0x80
    .equ SEG_B,0x40
    .equ SEG_C,0x20
    .equ SEG_D,0x08
    .equ SEG_E,0x04
    .equ SEG_F,0x02
    .equ SEG_G,0x01
    .equ SEG_P,0x10
    zero: .byte  0b11101101
    one:  .byte  0b01100000
    two:  .byte  0b01101110
    three:  .byte  0b11111010
    four:  .byte  0b00110011----01110011
    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

.text
    MOV r6,#16
    LDR r5,=zero

loop:
    CMP r6,#0
    BEQ end
    SWI 0x202
    CMP r0,#0x02
    BLEQ print_next
    B loop

print_next:
    LDRB r0,[r5],#1
    SWI 0x200
    SUB r6,r6,#1
    MOV pc,lr
end: .end
```

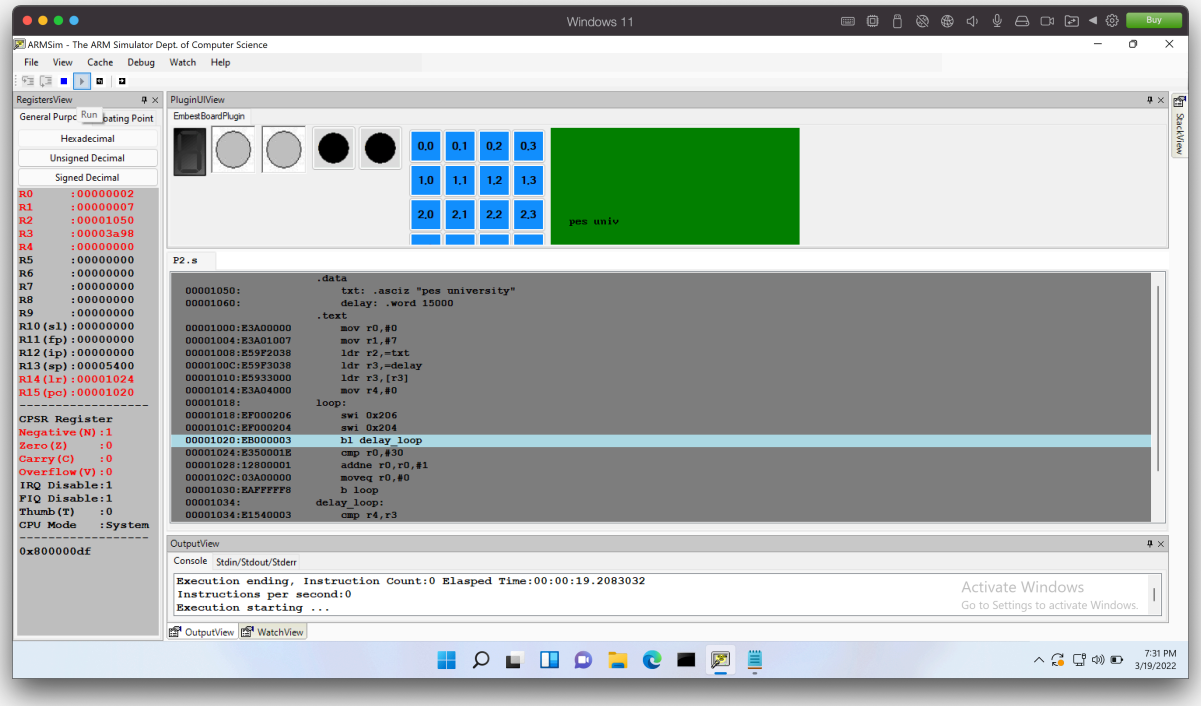
Output Screenshot

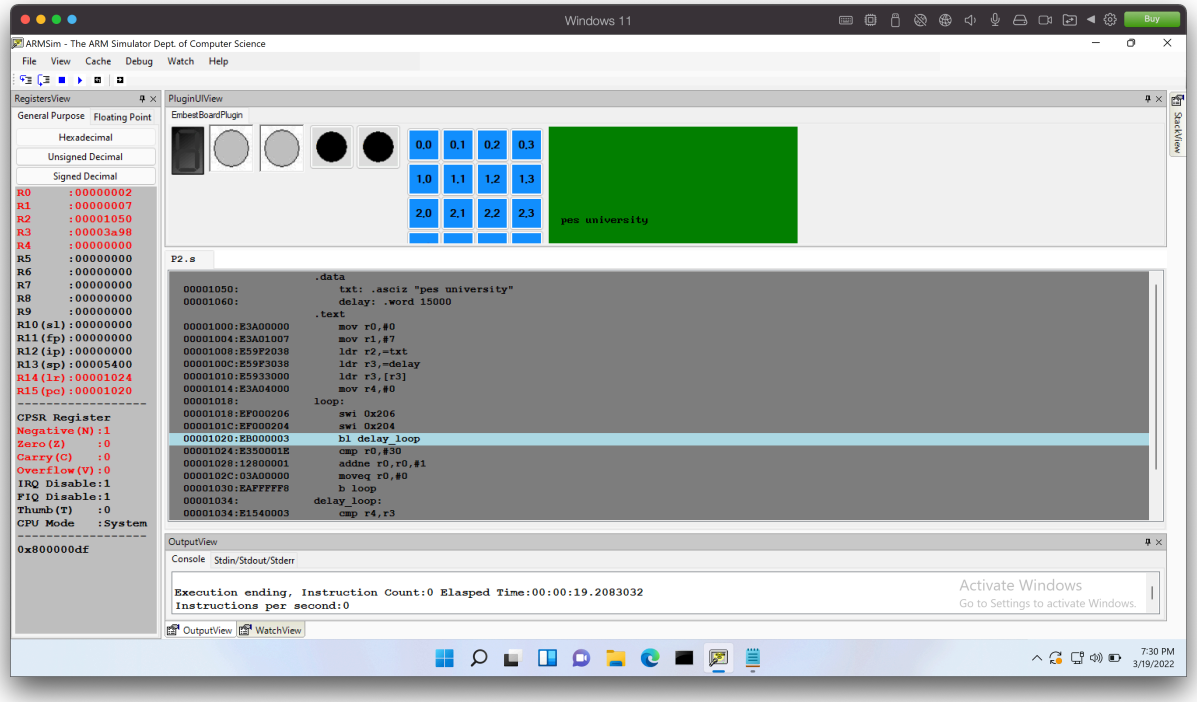


Program Number	2
Program Qn	Display a text in LCD moving from right to left
ARM Assembly Code	

```
.data
    txt: .asciz "pes university"
    delay: .word 15000
.text
    mov r0,#0
    mov r1,#7
    ldr r2,=txt
    ldr r3,=delay
    ldr r3,[r3]
    mov r4,#0
loop:
    swi 0x206
    swi 0x204
    bl delay_loop
    cmp r0,#30
    addne r0,r0,#1
    moveq r0,#0
    b loop
delay_loop:
    cmp r4,r3
    addne r4,r4,#1
    bne delay_loop
    mov r4,#0
    mov pc,lr
```

Output Screenshot


Windows 11
ARMSim - The ARM Simulator Dept. of Computer Science
File View Cache Debug Watch Help
RegistersView
General Purpc Run bating Point
Hexadecimal
Unsigned Decimal
Signed Decimal
R0 :00000002
R1 :00000007
R2 :00001050
R3 :00003a98
R4 :00000000
R5 :00000000
R6 :00000000
R7 :00000000
R8 :00000000
R9 :00000000
R10(sl):00000000
R11(fp):00000000
R12(ip):00000000
R13(sp):00005400
R14(lr):00001024
R15(pc):00001020
CPSR Register
Negative(N):1
Zero(Z) :0
Carry(C) :0
Overflow(V):0
IRQ Disable:1
FIQ Disable:1
Thumb(T) :0
CPU Mode :System
0x800000df
PluginUIView
EmbestBoardPlugin
0,0 0,1 0,2 0,3
1,0 1,1 1,2 1,3
2,0 2,1 2,2 2,3
pes univ
P2.s
.data
00001050: txt: .asciz "pes university"
00001060: delay: .word 15000
.text
00001000:E3A00000 mov r0,#0
00001004:E3A01007 mov r1,#7
00001008:E59F2038 ldr r2,=txt
0000100C:E59F3038 ldr r3,=delay
00001010:E5933000 ldr r3,[r3]
00001014:E3A04000 mov r4,#0
00001018: loop:
00001018:EF000206 swi 0x206
0000101C:EF000204 swi 0x204
00001020:EB000003 bl delay_loop
00001024:E350001E cmp r0,#30
00001028:12800001 addne r0,r0,#1
0000102C:03A00000 moveq r0,#0
00001030:EAFFFFF8 b loop
00001034: delay_loop:
00001034:E1540003 cmp r4,r3
OutputView
Console Stdin/Stdout/Stderr
Execution ending, Instruction Count:0 Elasped Time:00:00:19.2083032
Instructions per second:0
Execution starting ...
Activate Windows
Go to Settings to activate Windows.
OutputView WatchView
7:31 PM
3/19/2022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R5 :00000000
R6 :00000000
R7 :00000000
R8 :00000000
R9 :00000000
R10(sl):00000000
R11(fp):00000000
R12(ip):00000000
R13(sp):00005400
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Instructions per second:0
Activate Windows
Go to Settings to activate Windows.
OutputView WatchView
7:30 PM
3/19/2022

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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Date:19/03/2022