

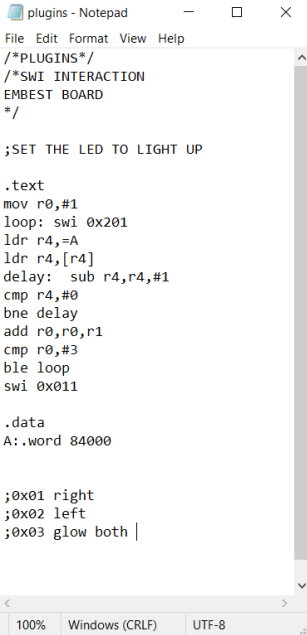


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PES1UG20CS150

SEC C

WEEK 7

| Sl. No | Programs |
|-----------|---|
| Week No.7 | <div data-bbox="126 604 1057 646">1. Demonstration of programs using plug-ins using ARMSIM.</div> <div data-bbox="212 697 657 739">a. Set the LED to be light up.</div> <div data-bbox="115 785 420 1415"><pre>plugins - Notepad File Edit Format View Help /*PLUGINS*/ /*SWI INTERACTION EMBEST BOARD */ ;SET THE 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,r1 cmp r0,#3 ble loop swi 0x011 .data A:.word 84000 ;0x01 right ;0x02 left ;0x03 glow both </pre></div> |

File View Cache Debug Watch Help

RegistersView

General Purpose F

Hexadecimal

Unsigned Decimal

Signed Decimal

R0 :000000
R1 :000000
R2 :000000
R3 :000000
R4 :000148
R5 :000000
R6 :000000
R7 :000000
R8 :000000
R9 :000000
R10 (s1) :000000
R11 (fp) :000000
R12 (ip) :000000
R13 (sp) :000054
R14 (lr) :000000
R15 (pc) :000010

CPSR Register

Negative (N) :0
Zero (Z) :0
Carry (C) :1
Overflow (V) :0
IRQ Disable:1
FIQ Disable:1
Thumb (T) :0
CPU Mode :Sy

0x200000df

PluginUIView

EmbestBoardPlugin

plugins.s

```

/*PLUGINS*/
/*SWI INTERACTION
EMBEST BOARD
*/

;SET THE LED TO LIGHT UP

.text
00001000:E3A00001 mov r0,#1
00001004:EF000201 loop: swi 0x201
00001008:E59F401C ldr r4,=A
0000100C:E5944000 ldr r4,[r4]
00001010:E2444001 delay: sub r4,r4,#1
00001014:E3540000 cmp r4,#0
00001018:1AFFFFFC bne delay
0000101C:E0800001 add r0,r0,r1
00001020:E3500003 cmp r0,#3
00001024:DAFFFFF6 ble loop
00001028:EF000011 swi 0x011
    
```

OutputView

Console Stdin/Stdout/Stderr

Execution ending, Instruction Count:22453409 Elapsed Time:00:00:13.4822293
Instructions per second:1665407

OutputView WatchView

Student Exercises:

1. Execute the following programs on ARMSIM – PLUG-INS.

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

8segment - Notepad

File Edit Format View Help

;program to display 0 to F and f to 0 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 set 8 segment display to light up
bl delay
add r1,r1,#1
sub r5,r5,#1
cmp r5,#0
bne back2
b again
```

delay:

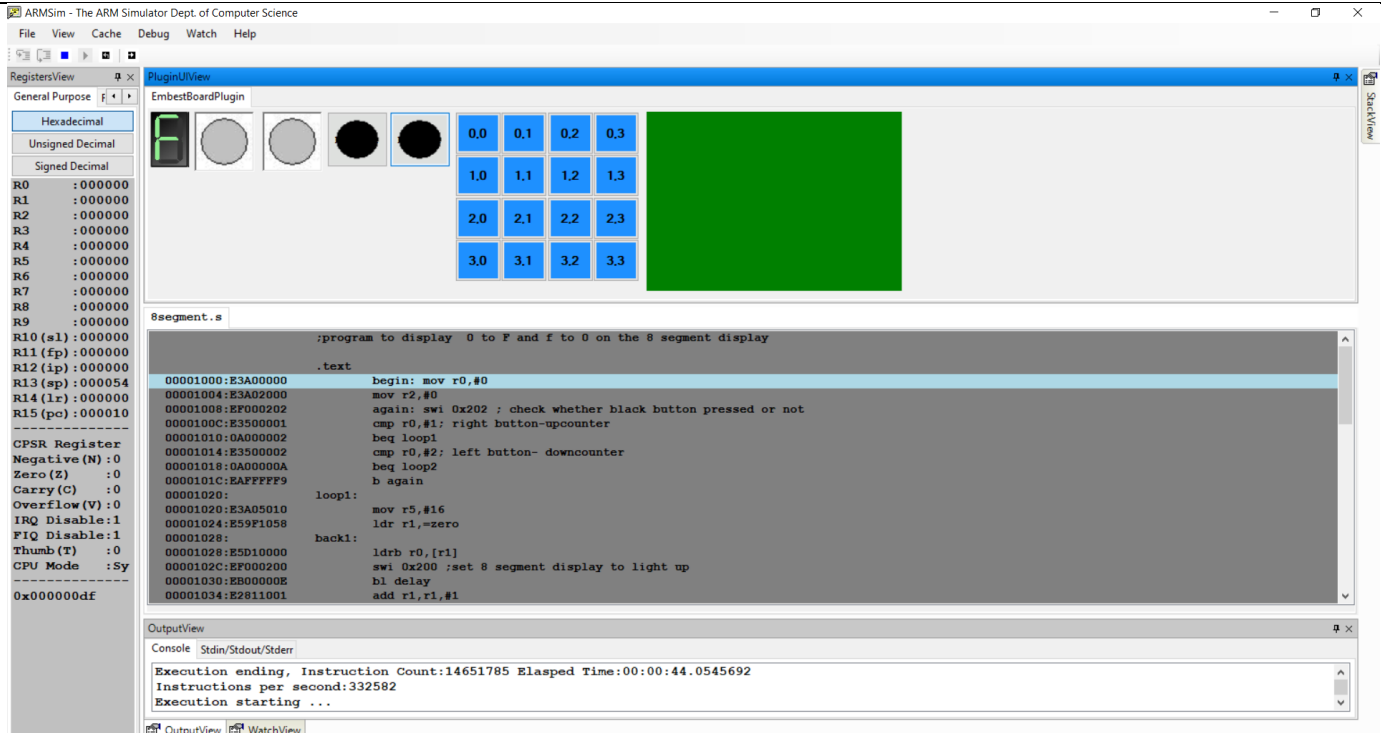
```
mov r4, #64000
```

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 - Notepad

File Edit Format View Help

| ;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

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

ARMSim - The ARM Simulator Dept. of Computer Science

File View Cache Debug Watch Help

RegistersView

General Purpose

Hexadecimal

Unsigned Decimal

Signed Decimal

R0 : 00000000
R1 : 00000000
R2 : 00000000
R3 : 00000000
R4 : 00000000
R5 : 00000000
R6 : 00000000
R7 : 00000000
R8 : 00000000
R9 : 00000000
R10 (sl): 00000000
R11 (fp): 00000000
R12 (ip): 00000000
R13 (sp): 0000054
R14 (lr): 00000000
R15 (pc): 0000010

CPSR Register

Negative (N): 0
Zero (Z): 0
Carry (C): 0
Overflow (V): 0
IRQ Disable: 1
FIQ Disable: 1
Thumb (T): 0
CPU Mode: Sy

0x000000df

PluginUI View

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
3.0 3.1 3.2 3.3

streaming.s

```
.text
:streaming right to left
00001000:E3A0001E  mov r0,#30 : r0=x
00001004:E3A01007  mov r1,#7 : r1=y
00001008:E3A07000  mov r7,#0
0000100C:E59F0034  ldr r8,=num
00001010:E5980000  ldr r8,[r0]
00001014:E59F2030  ldr r2,=str
00001018:          loop:
00001018:EF000204      swi 0x204
0000101C:EB000003      bl sum
00001020:E3500000      cmp r0,#0
00001024:12400001      subne r0,r0,#1
00001028:0F000011      swi eq 0x11
0000102C:EAF0FFF9      b loop
00001030:E1570008      sum: cmp r7,r8
```

OutputView

Console Stdin/Stdout/Stderr

Execution ending, Instruction Count:13467407 Elapsed Time:00:00:08.5808501
Instructions per second:1569472
Execution starting ...