

Microprocessor and Computer Architecture Laboratory

UE19CS256

4th Semester, Academic Year 2020-21

Date:

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Week#6

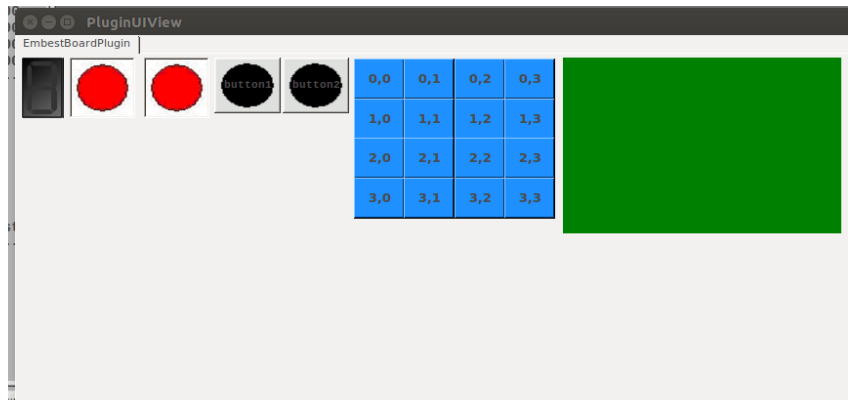
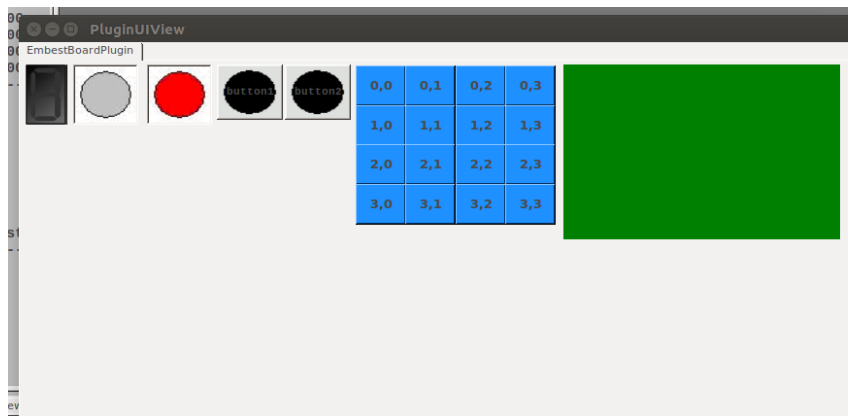
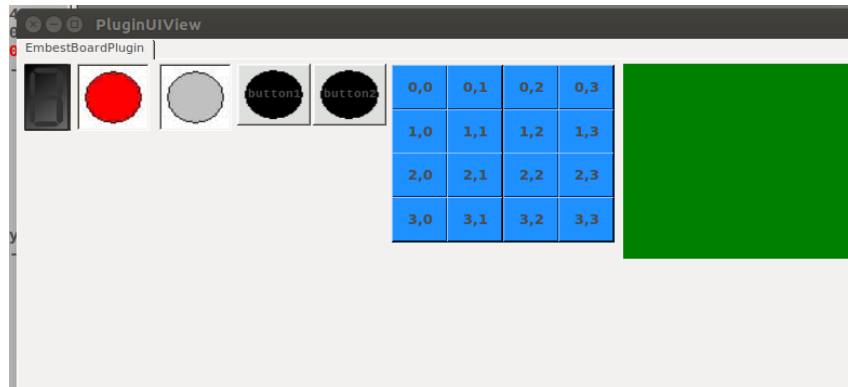
Program Number: 1

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.

```
.data
num: .WORD 80000
.text
MOV R0,#0
L1:ADD R0,R0,#1
SWI 0X201
LDR R3,=num
LDR R4,[R3]
DELAY: CMP R4,#0
SUBNE R4,R4,#1
BNE DELAY
CMP R0,#3
BNE L1
SWI 0X11
.end
```

II. Output Screen Shot



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

```

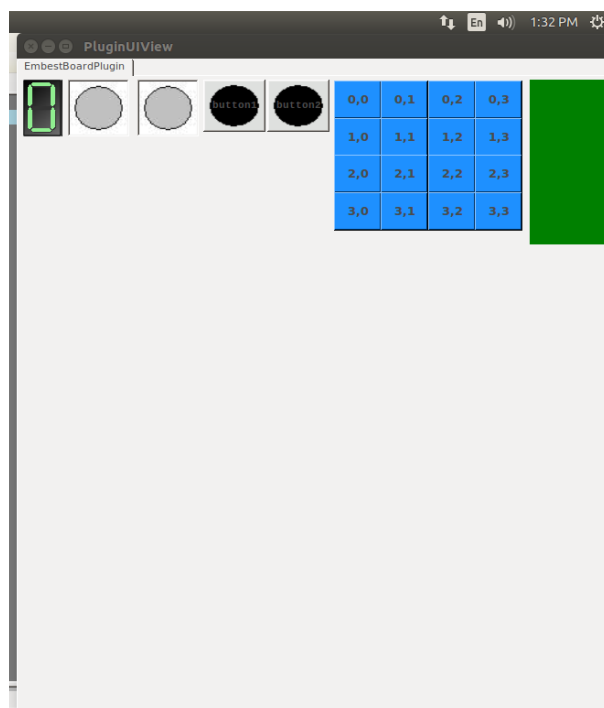
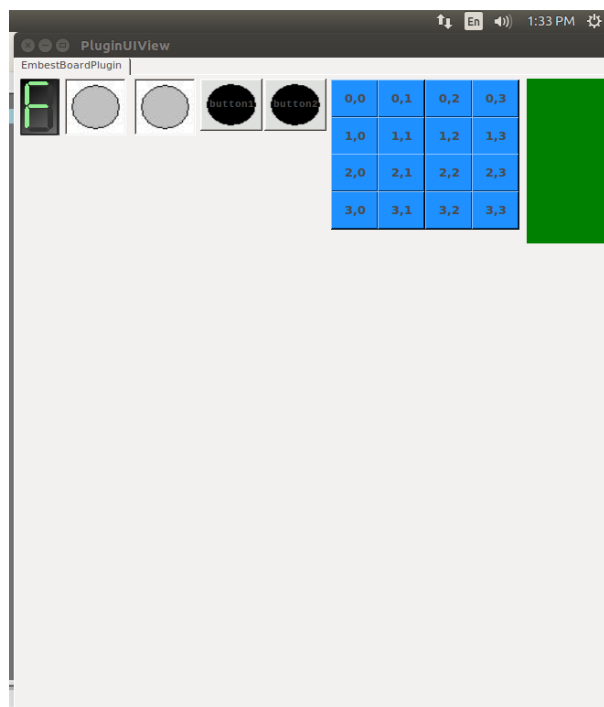
.text
MOV R0,#0
MOV R2,#0
LOOP:
    SWI 0X202
    CMP R0,#1
    LDREQ R1,=ZERO
    MOV R5,#16
    BEQ ASCENDING
    LDRNE R1,=F
    MOV R5,#16
    BNE DESCENDING
    B END
ASCENDING:
    CMP R5,#0
    BEQ END
    LDR R0,[R1]
    SWI 0X200
    MOV R7,#64000
    ADD R1,R1,#4
    SUB R5,R5,#1
    BL DELAY
    B ASCENDING
DESCENDING:
    CMP R5,#0
    BEQ END
    LDR R0,[R1]
    SWI 0X200
    MOV R7,#64000
    SUB R1,R1,#4
    SUB R5,R5,#1
    BL DELAY
    B DESCENDING
DELAY:

```

```
DELAY:
    SUBS R7,R7,#1
    MOVEQ PC,LR
    B DELAY
END:SWI 0X11
```

```
.data
ZERO: .WORD 0xED
ONE:  .WORD 0x60
TWO:  .WORD 0xCE
THREE: .WORD 0xFA
FOUR:  .WORD 0x63
FIVE:  .WORD 0xAB
SIX:   .WORD 0xAF
SEVEN: .WORD 0xE0
EIGHT: .WORD 0xEF
NINE:  .WORD 0xE3
A:     .WORD 0xE7
B:     .WORD 0x2F
C:     .WORD 0x8D
D:     .WORD 0x6E
E:     .WORD 0x8F
F:     .WORD 0x87
.end
```

II. Output Screen Shot



Week# 6

Program Number: 3

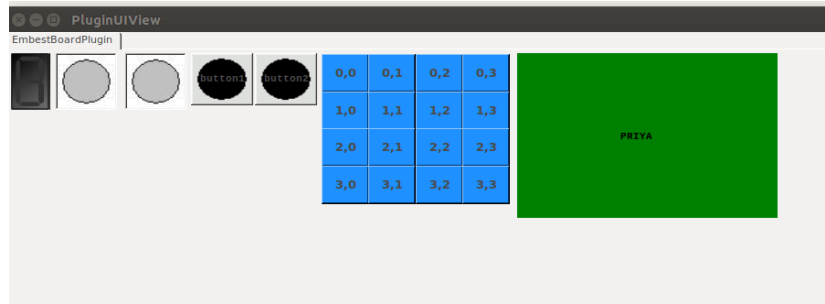
Write an ALP to move a string from Right to Left on LCD (40 columns by 15 rows).

I. ARM Assembly Code

```
p3.s
.data
    STR: .ASCIZ "PRIYA"
    COUNT: .WORD 15000
.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 @or BEQ exit
    B loop
delay:
    CMP R7,R8
    ADDNE R7,R7,#1
    BNE delay
    SWI 0x206
    MOV R7,#0
    MOV PC,LR
.end
```

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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