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19CSE303 Embedded Systems
Lab Worksheet - 5
String Manipulation

Exercise Problems

1. Write a ARM assembly language program to find the length of the string terminated by NULL character. The string is stored in memory location "string". Store the result in memory location "length".

```
 AREA data, DATA, READONLY
string dcb "Amrita\0"

 AREA data1, DATA, READWRITE
length dcd 0

 AREA exp1, CODE, READONLY
 ldr r0, =string
 ldr r1, =length
 mov r3, #0              ; Intializing length register
loop ldrb r2, [r0], #1
 cmp r2, #"\0"
 addne r3, r3, #1
 bne loop
 str r3, [r1]
e b e
 end
```

2. Write a ARM assembly language program to copy a string stored in memory location "source" to memory location "destination".

```
 AREA data, DATA, READONLY
source dcb "Amrita\0"

 AREA data1, DATA, READWRITE
destination dcd 0

 AREA exp1, CODE, READONLY
 ldr r0, =source
 ldr r1, =destination
loop ldrb r2, [r0], #1
 strb r2, [r1], #1
 cmp r2, #"\0"
 bne loop
e b e
 end
```

3. Write a ARM assembly language program to find the first blank space in a string stored in memory location "string". Store the position of the black space in memory location "destination".

```
 AREA data, DATA, READONLY
string dcb "Amrita school\0"
 AREA data1, DATA, READWRITE
destination dcd 0

 AREA exp1, CODE, READONLY
 ldr r0, =string
 ldr r1, =destination
 mov r3, #0                ; Intializing position counter
loop ldrb r2, [r0], #1
 add r3, r3, #1
 cmp r2, #" "
 beq exit
 cmp r2, #"\0"
 moveq r3, #-1
 bne loop
exit str r3, [r1]
e b e
 end
```

Assignment Problem

1. Write ARM assembly language program to find two strings are equal or not. The two strings are stored in locations "string1" and "string2". If it equal move 0xFF to location "result" else move 0x00.

2. Write a ARM assembly language program to find a given string in memory location "string" is palindrome. If it is a palindrome move 0xFF to location "result" else move 0x00.