

MPCA LAB 5

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SECTION:F

PROGRAM 1

Write an ALP to find the length of a given string.

Code :

```
.data
A: .ASCIZ "DEVILLIERS"
.text
LDR R0,=A
MOV R1,#0 ;to calculate string length
loop:
LDRB R2,[R0],#1
CMP R2,#0
BEQ exit
ADD R1,R1,#1
B loop
exit:
SWI 0x011
.end
```

OUTPUT

Hexadecimal	length.s
Signed Decimal	
R0 : 4143	.data
R1 : 10	A: .ASCIZ "DEVILLIERS"
R2 : 0	.text
R3 : 0	00001000:E59F0018 LDR R0,=A
R4 : 0	00001004:E3A01000 MOV R1,#0 ;to calculate string length
R5 : 0	00001008: loop:
R6 : 0	00001008:E4D02001 LDRB R2,[R0],#1
R7 : 0	0000100C:E3520000 CMP R2,#0
R8 : 0	00001010:0A000001 BEQ exit
R9 : 0	00001014:E2811001 ADD R1,R1,#1
R10 (s1) : 0	00001018:EAF0FFFA B loop
R11 (fp) : 0	0000101C: exit:
R12 (ip) : 0	0000101C:EF000011 SWI 0x011
R13 (sp) : 21504	00001020:00001024 .end
R14 (lr) : 0	
R15 (pc) : 4124	

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

0x600000df	

OutputView
Console Stdin/Stdout/Stderr
Execution starting ...
Execution ending, Instruction Count:56 Elapsed Time:00:00:00.004848
Instructions per second:11550

PROGRAM 2

Write an ALP to copy string from one location to another

```
.data
src:.asciz "VIRAT"
dest:.asciz "ABD GAYLE"

.text
start:
LDR R1,=src
LDR R0,=dest
strcpy:
LDRB R2,[R1],#1
STRB R2,[R0],#1
CMP R2,#0
BNE strcpy
LDR R0,=src
SWI 0x02
LDR R0,=dest
SWI 0x02
SWI 0x011
.end
```

OUTPUT

Hexadecimal
Unsigned Decimal
Signed Decimal

R0 : 4162
R1 : 4162
R2 : 0
R3 : 0
R4 : 0
R5 : 0
R6 : 0
R7 : 0
R8 : 0
R9 : 0
R10 (s1) : 0
R11 (fp) : 0
R12 (ip) : 0
R13 (sp) : 21504
R14 (lr) : 0
R15 (pc) : 4136

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

0x600000df

strcpy.s

```
.data
0000103C:      src:.asciz "VIRAT"
00001042:      dest:.asciz "ABD GAYLE"

.text
00001000:      start:
00001000:E59F1024  LDR R1,=src
00001004:E59F0024  LDR R0,=dest
00001008:      strcpy:
00001008:E4D12001  LDRB R2,[R1],#1
0000100C:E4C02001  STRB R2,[R0],#1
00001010:E3520000  CMP R2,#0
00001014:1AFFFFFFB      BNE strcpy
00001018:E59F000C  LDR R0,=src
0000101C:EF000002  SWI 0x02
00001020:E59F0008  LDR R0,=dest
00001024:EF000002  SWI 0x02
00001028:EF000011  SWI 0x011
      .end
```

OutputView

Console Stdin/Stdout/Stderr

VIRATVIRAT

PROGRAM 3

Write an ALP to find if a character is present in another string

```
.data
str:.ASCIZ "DORAEMON"
char:.ASCIZ "R"

.text
LDR R0,=str
LDR R1,=char
MOV R5,#0
LDRB R3,[R1]
LOOP:
LDRB R2,[R0],#1
CMP R2,#0
BEQ EXIT
CMP R2,R3
BNE LOOP
ADD R5,R5,#1
B LOOP
EXIT:
SWI 0x011
.end
```

OUTPUT

Unsigned Decimal		
Signed Decimal		
R0	: 4161	
R1	: 4161	
R2	: 0	
R3	: 82	
R4	: 0	
R5	: 1	
R6	: 0	
R7	: 0	
R8	: 0	
R9	: 0	
R10 (s1)	: 0	
R11 (fp)	: 0	
R12 (ip)	: 0	
R13 (sp)	: 21504	
R14 (lr)	: 0	
R15 (pc)	: 4140	

CPSR Register		
Negative (N)	: 0	
Zero (Z)	: 1	
Carry (C)	: 1	
Overflow (V)	: 0	
IRQ Disable	: 1	
FIQ Disable	: 1	

00001038:	.data
00001041:	str:.ASCIZ "DORAEMON"
	char:.ASCIZ "R"
	.text
00001000:E59F0028	LDR R0,=str
00001004:E59F1028	LDR R1,=char
00001008:E3A05000	MOV R5,#0
0000100C:E5D13000	LDRB R3,[R1]
00001010:	LOOP:
00001010:E4D02001	LDRB R2,[R0],#1
00001014:E3520000	CMP R2,#0
00001018:0A000003	BEQ EXIT
0000101C:E1520003	CMP R2,R3
00001020:1AFFFFFFFA	BNE LOOP
00001024:E2855001	ADD R5,R5,#1
00001028:EAF0FFF8	B LOOP
0000102C:	EXIT:
0000102C:EF000011	SWI 0x011
00001030:00001038	.end
00001034:00001041	

OutputView
Console Stdin/Stdout/Stderr

PROGRAM 4

Write an ALP to find the frequency of a character in a string

```

.data
str:.ASCIZ "SHINCHAN"
char:.ASCIZ "N"
.equ SWI_WriteC,0x02
.equ SWI_Exit,0x11

.text
LDR R0,=str
LDR R1,=char
MOV R5,#0
LDRB R3,[R1]
LOOP:
LDRB R2,[R0],#1
CMP R2,#0
BEQ EXIT
CMP R2,R3
BNE LOOP
ADD R5,R5,#1
B LOOP
LDR R0,=str
swi SWI_WriteC
EXIT: swi SWI_Exit
.end

```

OUTPUT

Unsigned Decimal	Signed Decimal
R0	: 4173
R1	: 4173
R2	: 0
R3	: 78
R4	: 0
R5	: 2
R6	: 0
R7	: 0
R8	: 0
R9	: 0
R10 (s1)	: 0
R11 (fp)	: 0
R12 (ip)	: 0
R13 (sp)	: 21504
R14 (lr)	: 0
R15 (pc)	: 4148

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

```

00001044:      .data
0000104D:      str:.ASCIZ "SHINCHAN"
                                char:.ASCIZ "N"
                                .equ SWI_WriteC,0x02
                                .equ SWI_Exit,0x11

                                .text
00001000:E59F0030      LDR R0,=str
00001004:E59F1030      LDR R1,=char
00001008:E3A05000      MOV R5,#0
0000100C:E5D13000      LDRB R3,[R1]
00001010:      LOOP:
00001010:E4D02001      LDRB R2,[R0],#1
00001014:E3520000      CMP R2,#0
00001018:0A000005      BEQ EXIT
0000101C:E1520003      CMP R2,R3
00001020:1AFFFFFA      BNE LOOP
00001024:E2855001      ADD R5,R5,#1
00001028:EAF0FFFA      B LOOP
0000102C:E59F0004      LDR R0,=str
00001030:EF000002      swi SWI_WriteC
00001034:EF000011      EXIT: swi SWI_Exit
                                .end

```

OutputView
 Console Stdin/Stdout/Stderr
 Execution starting ...
 Execution ending, Instruction Count:52 Elapsed Time:00:00:00.0106672
 Instructions per second:4874

