MPCA LAB 5

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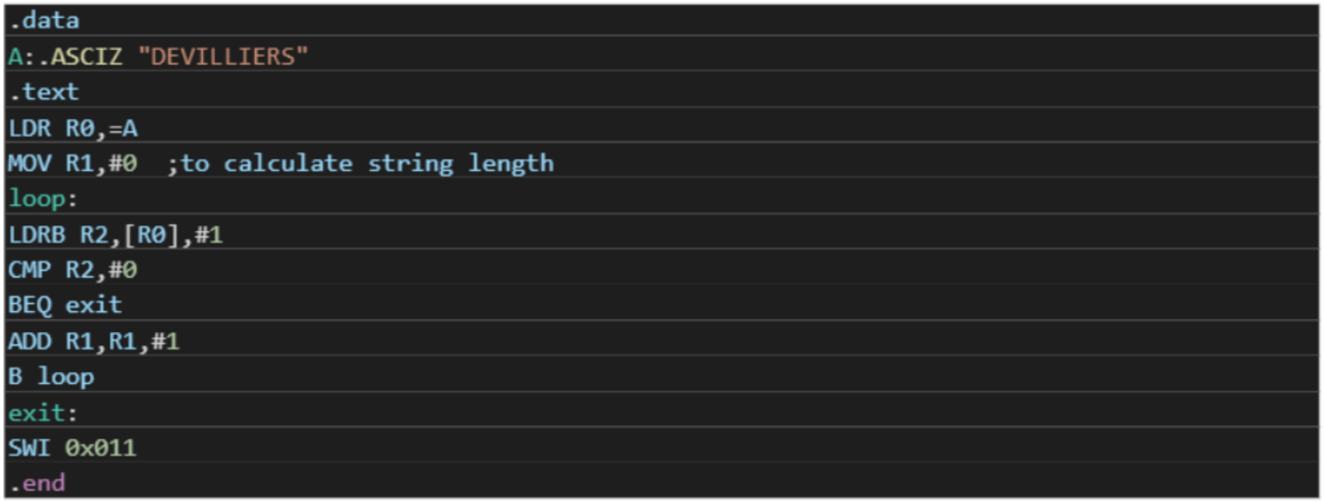
SECTION:F

PROGRAM 1

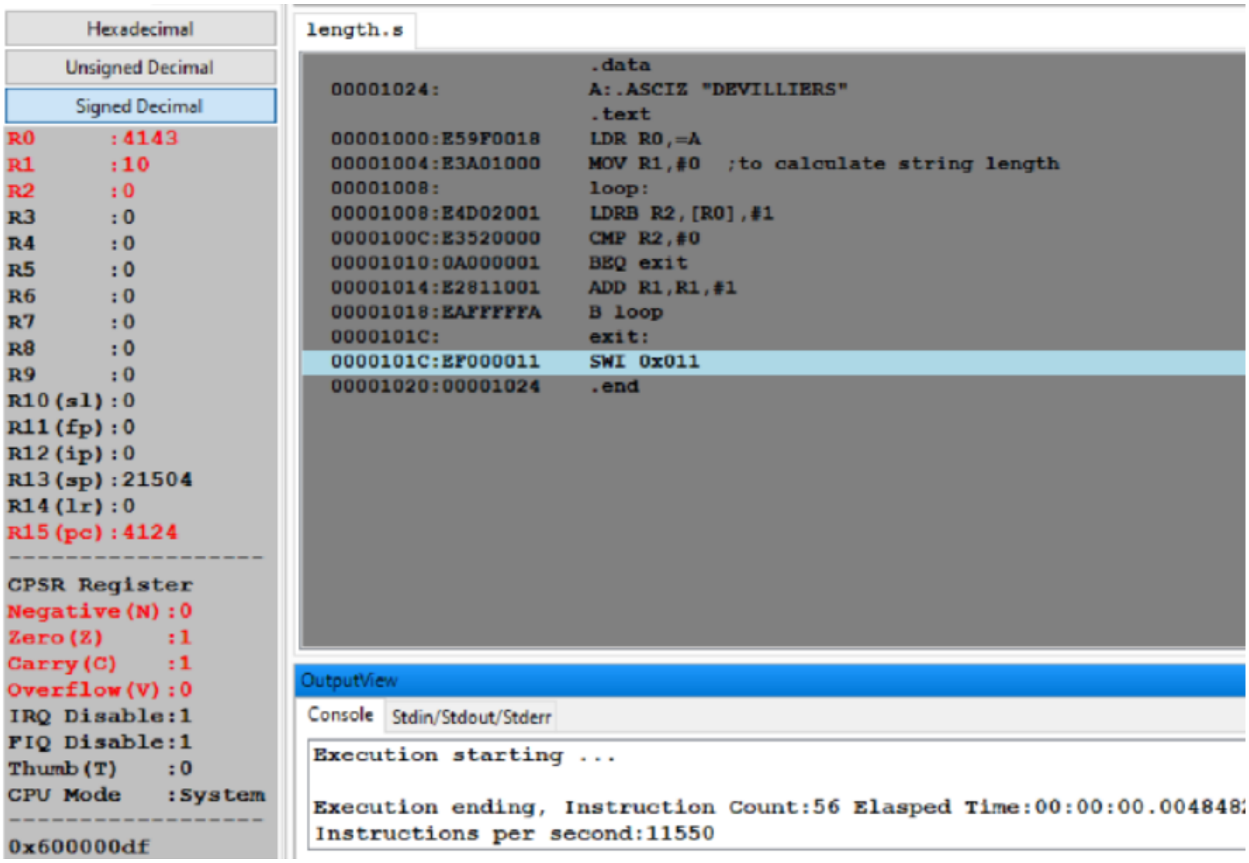
Write an ALP to find the length of a given string.

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



```
R0       :4143
R1       :10
R2       :0
R3       :0
R4       :0
R5       :0
R6       :0
R7       :0
R8       :0
R9       :0
R10(sl):0
R11(fp):0
R12(ip):0
R13(sp):21504
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
```

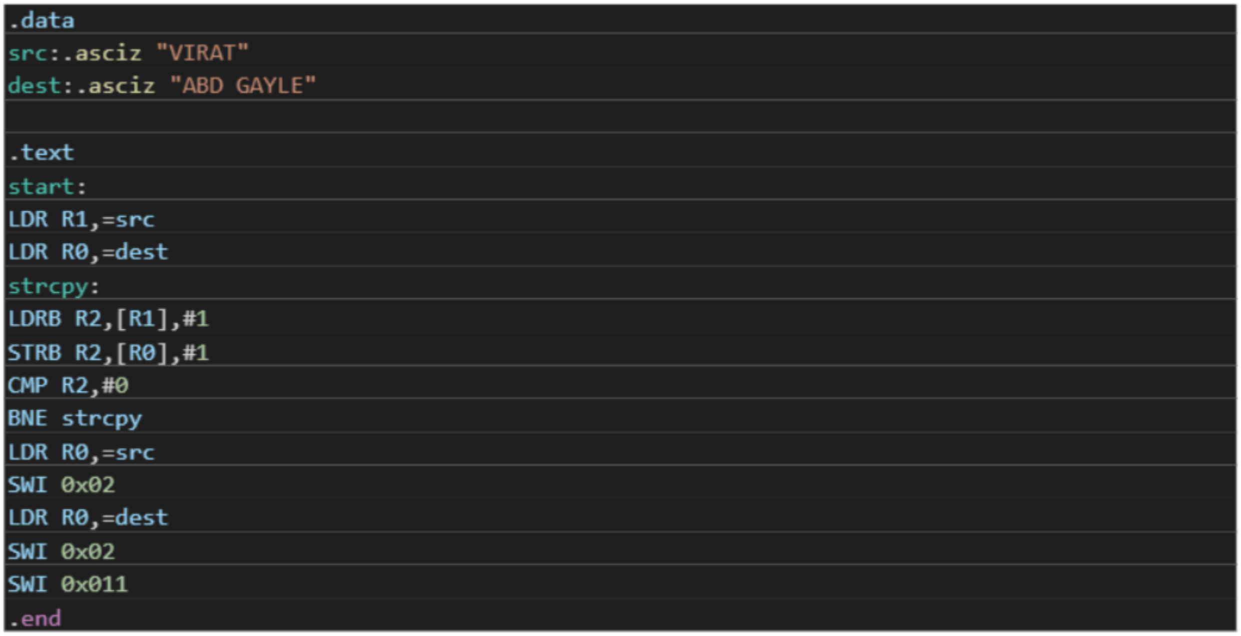
```
                        .data
00001024:               A:.ASCIZ "DEVILLIERS"
                        .text
00001000:E59F0018       LDR R0,=A
00001004:E3A01000       MOV R1,#0  ;to calculate string length
00001008:               loop:
00001008:E4D02001       LDRB R2,[R0],#1
0000100C:E3520000       CMP R2,#0
00001010:0A000001       BEQ exit
00001014:E2811001       ADD R1,R1,#1
00001018:EAFFFFFA       B loop
0000101C:               exit:
0000101C:EF000011       SWI 0x011
00001020:00001024       .end
```

```
Execution starting ...

Execution ending, Instruction Count:56 Elasped Time:00:00:00.004848
Instructions per second:11550
```

PROGRAM 2

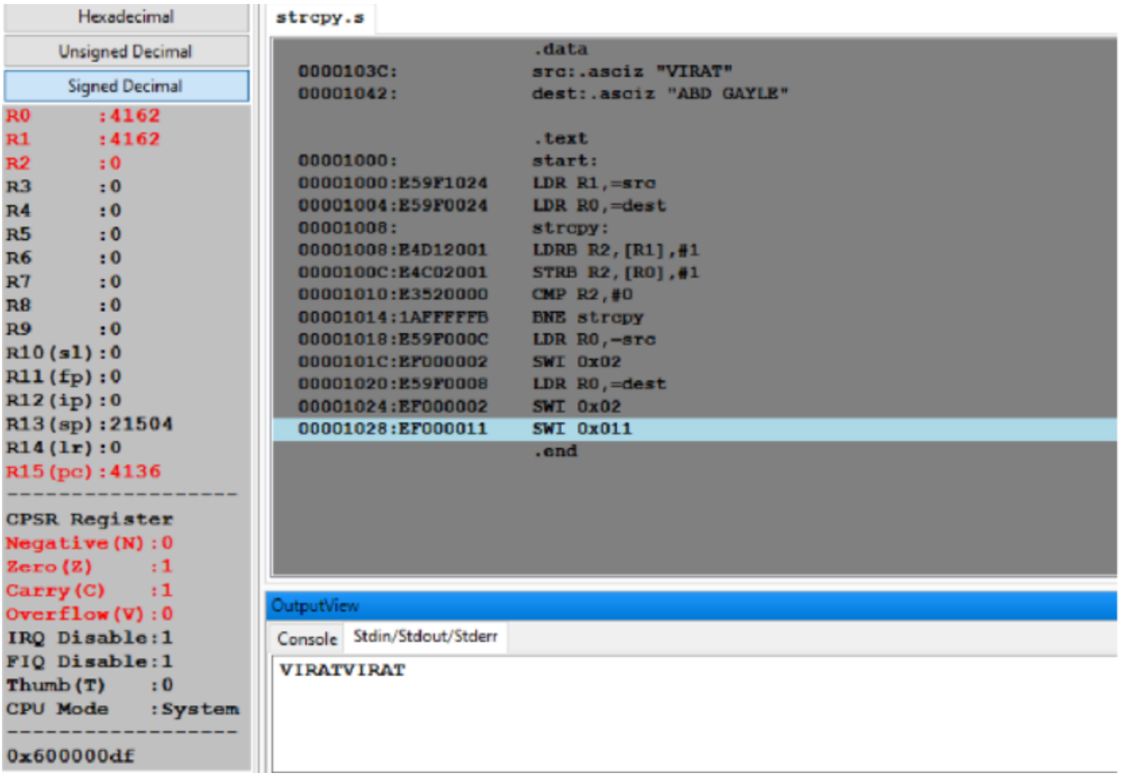
Write an ALP to copy string from one location to another



```
.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



```
R0        :4162
R1        :4162
R2        :0
R3        :0
R4        :0
R5        :0
R6        :0
R7        :0
R8        :0
R9        :0
R10(sl):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
```

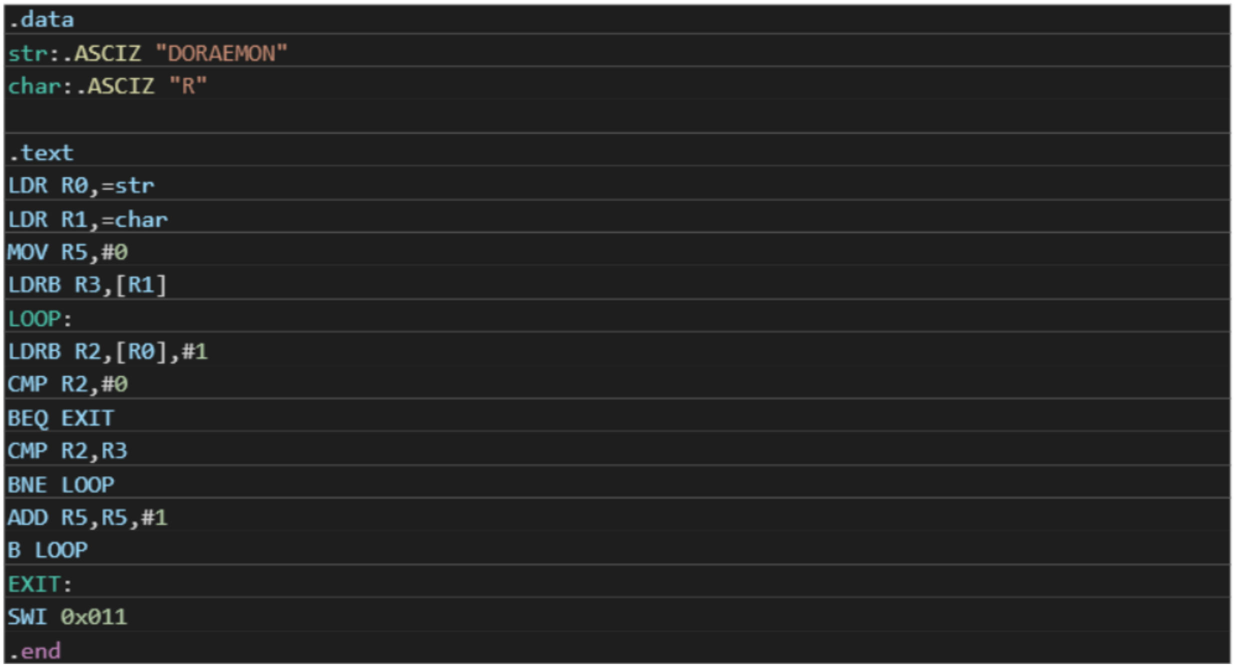
```
                              .data
0000103C:                     src:.asciz "VIRAT"
00001042:                     dest:.asciz "ABD GAYLE"

                              .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
00001014:1AFFFFFB             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
```

```
VIRATVIRAT
```

PROGRAM 3

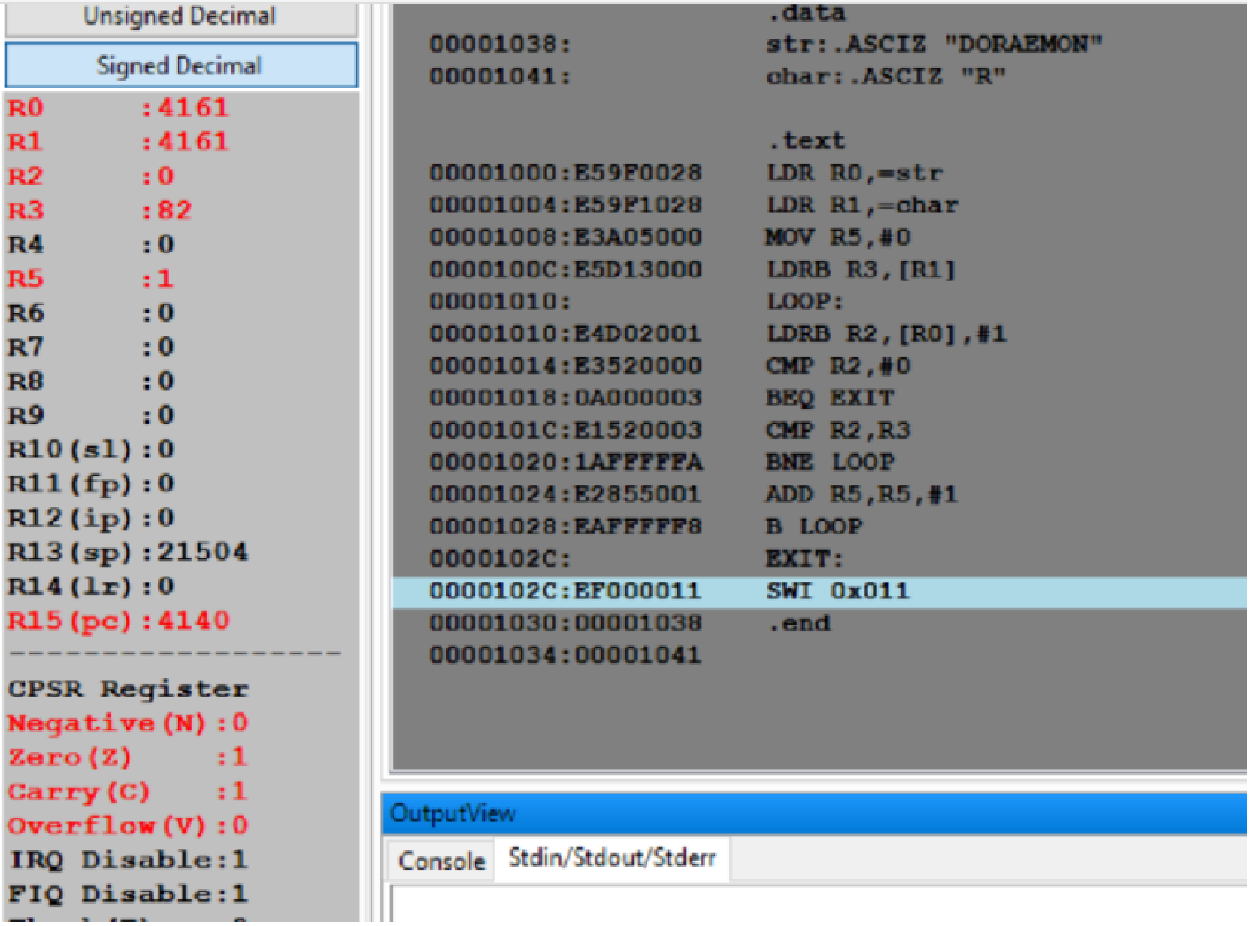
Write an ALP to find if a character is present in another string



```
.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



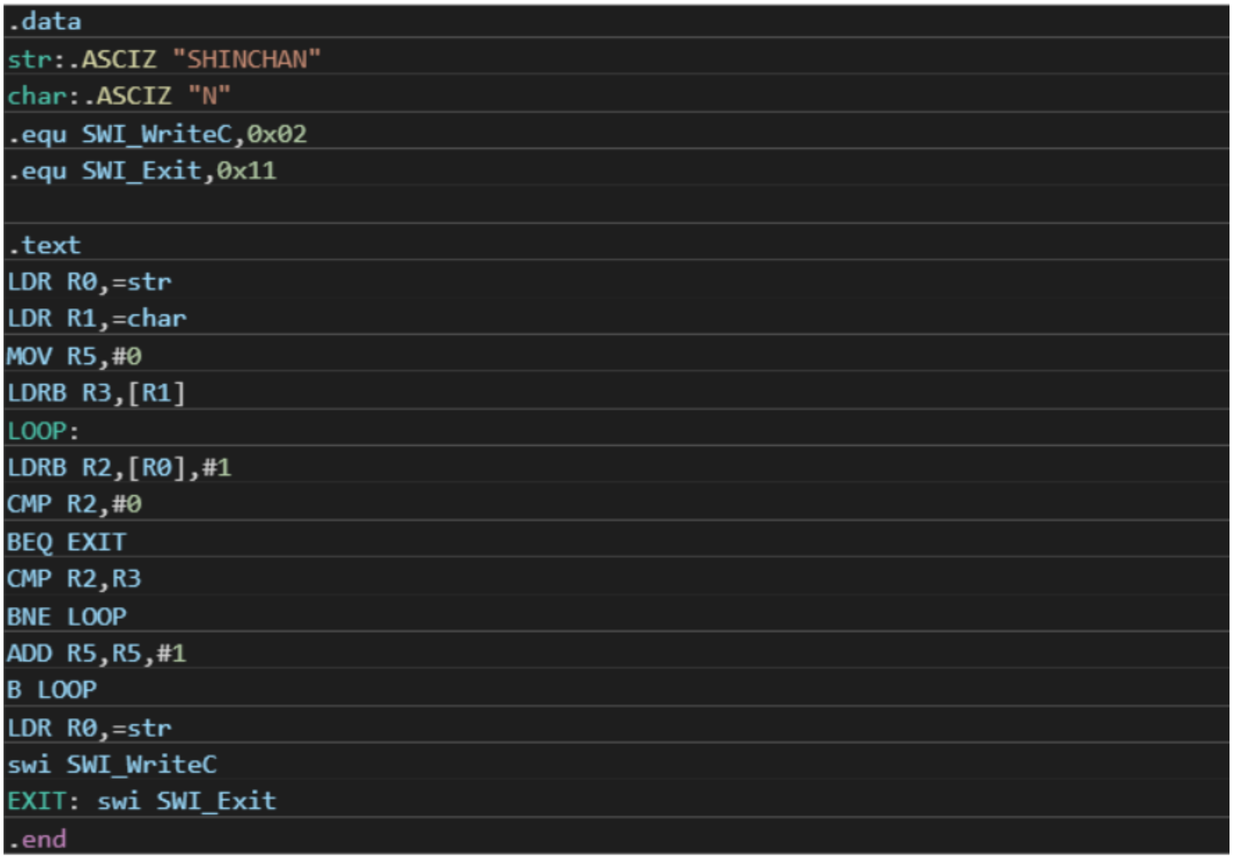
```
R0       :4161
R1       :4161
R2       :0
R3       :82
R4       :0
R5       :1
R6       :0
R7       :0
R8       :0
R9       :0
R10(sl):0
R11(fp):0
R12(ip):0
R13(sp):21504
R14(lr):0
R15(pc):4140
-------------------
CPSR Register
Negative(N):0
Zero(Z)     :1
Carry(C)    :1
Overflow(V):0
IRQ Disable:1
FIQ Disable:1
```

```
                        .data
00001038:               str:.ASCIZ "DORAEMON"
00001041:               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
00001020:1AFFFFFA       BNE LOOP
00001024:E2855001       ADD R5,R5,#1
00001028:EAFFFFF8       B LOOP
0000102C:               EXIT:
0000102C:EF000011       SWI 0x011
00001030:00001038       .end
00001034:00001041
```

PROGRAM 4

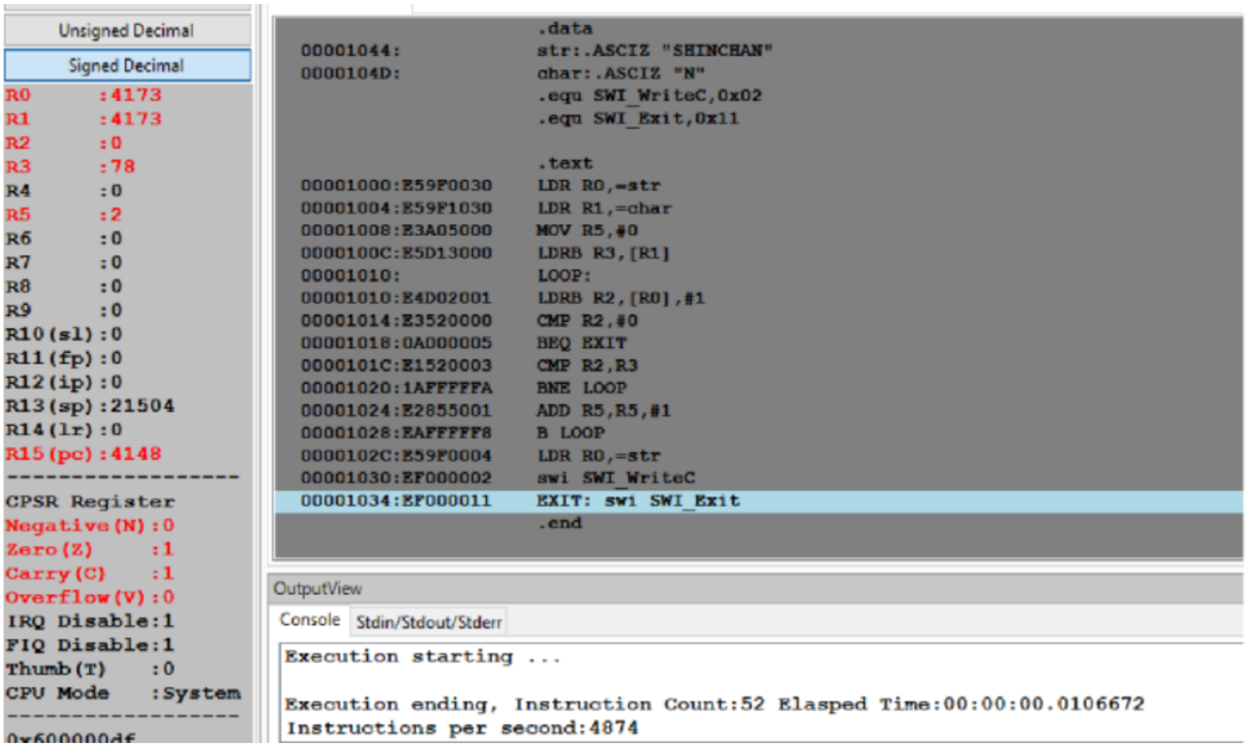
Write an ALP to find the frequency of a character in a string



```
.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



```
R0       :4173
R1       :4173
R2       :0
R3       :78
R4       :0
R5       :2
R6       :0
R7       :0
R8       :0
R9       :0
R10(sl) :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
------------------
0x600000df
```

```
                            .data
00001044:                   str:.ASCIZ "SHINCHAN"
0000104D:                   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:EAFFFFF8           B LOOP
0000102C:E59F0004           LDR R0,=str
00001030:EF000002           swi SWI_WriteC
00001034:EF000011           EXIT: swi SWI_Exit
                            .end
```

```
Execution starting ...

Execution ending, Instruction Count:52 Elasped Time:00:00:00.0106672
Instructions per second:4874
```