

Experiment 12

Aim:

To write an ARM Assembly Language to find the number of times a character is repeated in a string.

Tool Used:

Keil uVision4

Theory:

The value of string is loaded using DCB and DCD values and compared until the value is 0.

Code:

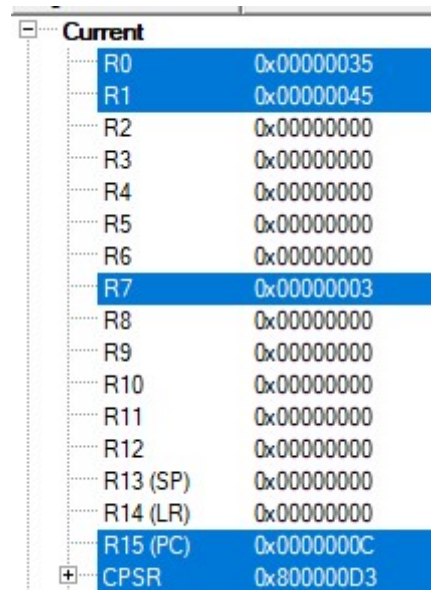
```
        AREA PROGRAM, CODE, READONLY
        ENTRY
MAIN
        LDR R0, VALUE1
        MOV R1, #'E'
LOOP2   LDRB R3,[R0],#1
        CMP R3,R1
        BNE LOOP2
        ADDS R3,R3,#0
        BEQ LOOP1
        ADD R7,R7,#1
        B LOOP2
LOOP1   SWI &11
        AREA PROGRAM, DATA, READONLY
VALUE1 DCD STRING ; DCD = Define Constant Double word
STRING DCB "EMBEDDED" ; DCB = Define Constant Byte
        END
```

Output:

```
Running with Code Size Limit: 32K
Load "C:\\Users\\User\\Documents\\Code-sync\\Keil\\ARM\\Experiment 12\\exp 12.axf"

*** Restricted Version with 32768 Byte Code Size Limit
*** Currently used: 52 Bytes (0%)
```

The word Embedded has 3 E in it which is displayed in R7.



A screenshot of a debugger's 'Current' register window. The window displays a list of registers and their current values. The registers are R0 through R15, plus CPSR. R0 has a value of 0x00000035, R1 has 0x00000045, and R7 has 0x00000003. All other registers (R2-R6, R8-R12, R13 (SP), R14 (LR), R15 (PC), and CPSR) have a value of 0x00000000. The R7 register is highlighted with a blue background.

Register	Value
R0	0x00000035
R1	0x00000045
R2	0x00000000
R3	0x00000000
R4	0x00000000
R5	0x00000000
R6	0x00000000
R7	0x00000003
R8	0x00000000
R9	0x00000000
R10	0x00000000
R11	0x00000000
R12	0x00000000
R13 (SP)	0x00000000
R14 (LR)	0x00000000
R15 (PC)	0x0000000C
CPSR	0x800000D3

Result:

The experiments to find the number of times a character is repeated in a string has been performed and verified to be correct.