

Experiment 11

Aim:

To write an ARM Assembly Language to find the length of 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
LOOP2          LDRB R3,[R0],#1
                ADDS R3,R3,#0
                BEQ LOOP1
                ADD R7,R7,#1
                B LOOP2
LOOP1          ADD R0,R0,#0

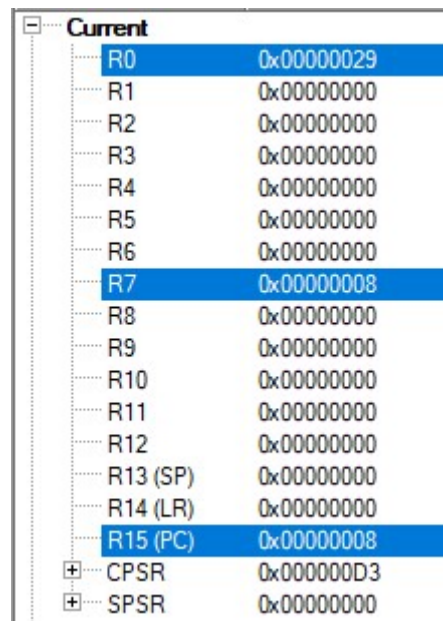
                AREA PROGRAM, DATA, READONLY
VALUE1 DCD STRING ; DCD = Define Constant Double word
STRING DCB "EMBEDDED" ; DCB = Define Constant Byte
END
```

Output:

```
Load "C:\\Users\\User\\Documents\\Code-sync\\Keil\\ARM\\Experiment 11\\expl1.axf"

*** Restricted Version with 32768 Byte Code Size Limit
*** Currently used: 40 Bytes (0%)
```

The word Embedded is 8 characters 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 and SPSR. R0 has a value of 0x00000029. R1 through R12 all have a value of 0x00000000. R13 (SP) has a value of 0x00000000. R14 (LR) has a value of 0x00000000. R15 (PC) has a value of 0x00000008. CPSR has a value of 0x000000D3. SPSR has a value of 0x00000000. The registers R0, R7, and R15 (PC) are highlighted in blue.

Register	Value
R0	0x00000029
R1	0x00000000
R2	0x00000000
R3	0x00000000
R4	0x00000000
R5	0x00000000
R6	0x00000000
R7	0x00000008
R8	0x00000000
R9	0x00000000
R10	0x00000000
R11	0x00000000
R12	0x00000000
R13 (SP)	0x00000000
R14 (LR)	0x00000000
R15 (PC)	0x00000008
CPSR	0x000000D3
SPSR	0x00000000

Result:

The experiments to find the length of a string has been performed and verified to be correct.