

Experiment 8

Aim:

To write an ARM Assembly Language to divide two numbers using repeated subtraction.

Tool Used:

Keil uVision4

Theory:

One number can be used as counter and the other number can be decremented every loop. On every loop the 1st number is subtracted by the divider.

Code:

```
AREA PROGRAM, CODE, READONLY
ENTRY
MAIN
    LDR R0,=0X00001000 ;start of input address
    LDR R1, [R0], #4 ; load dividend
    LDR R2, [R0], #4 ; load divisor
LOOP0  CMP R1,R2 ; compare if dividend is greater
        BMI LOOP2 ;if not end loop
        ADD R4,R4,#1 ; add quotient
        SUB R1,R1,R2 ; repetitive subtraction
        BNE LOOP0 ; repeat loop until zero
LOOP2  STR R4, [R0], #4 ; store quotient
        STR R1, [R0] ; store reminder
LOOP1  B LOOP1
END
```

Output:

```
Running with Code Size Limit: 32K
Load "C:\\Users\\User\\Documents\\Code-sync\\Keil\\ARM\\Experiment 8\\eXP8.axf"

*** Restricted Version with 32768 Byte Code Size Limit
*** Currently used: 44 Bytes (0%)
```

Register Contents

Current	
R0	0x0000100C
R1	0x00000001
R2	0x00000004
R3	0x00000000
R4	0x00000005
R5	0x00000000
R6	0x00000000
R7	0x00000000
R8	0x00000000
R9	0x00000000
R10	0x00000000
R11	0x00000000
R12	0x00000000
R13 (SP)	0x00000000
R14 (LR)	0x00000000
R15 (PC)	0x00000028
CPSR	0x800000D3
SPSR	0x00000000

The memory location of

Dividend = 0x00001000

Divisor = 0x00001004

Quotient = 0x00001008

Reminder= 0x0000100C

```
0x00001000: 00 00 00 15 00 00 00 04
0x00001008: 00 00 00 05 00 00 00 01
```

Result:

The experiments on division operation has been performed and verified to be correct.