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 be the divider.

Code:

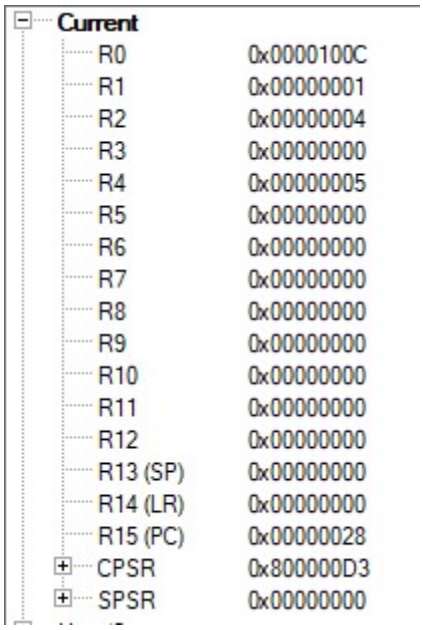
```
 AREA PROGRAM, CODE, READONLY
 ENTRY
MAIN
        LDR R0,=0X00001000 ;start of input address
        LDR R1, [R0], #4 ; load dividend
        LDR R2, [R0], #4 ; load divisor
LOOP0   CMP R1,R2 ; compare if dividend is greater
        BMI LOOP2 ;if not end loop
        ADD R4,R4,#1 ; add quotient
        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



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.