

Div8_8

Write a function named Div8_8 to divide an unsigned 8 bit number by an unsigned 8 bit number.

You can find this program in your textbook (Mazidi). Test your function by writing a program

named Div8_8test to test the subroutine Div8_8 by dividing the 8-bit-number: 0xAA by the 8-

bit-number 0x55.

The screenshot shows an AVR assembler IDE with the following components:

- Registers Window:** Shows registers R00 through R28. R21 contains 0x55 and R22 contains 0x02.
- Code Editor:** Contains assembly code for the Div8_8 subroutine and its test program.


```

      .INCLUDE <mc20pae1.inc>
      .CSEG
      .DEF Num=R20
      .DEF Denominator=R21
      .DEF Quotient=R22
      .ORG 0x0000
      ldi Num, 0xAA
      ldi Denominator, 0x55
      //call the 8 bit division
      rcall Div8
      ret
      /******
      * subroutine divides unsigned 8bit by 8bit
      * Quotient = Numerator/Denominator *
      *   r22 = r20 / r21
      * with remainder in r20 *
      * *****/
      Div8:
      clr Quotient // r22
      // quotient is going to increment by 1 everytime L1 loops
      // loop L1 stops when the numerator-denominator = less than the denominator
      L1:
      inc Quotient
      sub Num,Denominator // r20,r21
      brcc L1
      //since the quotient is incremented by 1 when the loop began, after the loop quotient is dec
      dec Quotient
      //notice L1 is going to branch off when the numerator is no longer divisible by the denominator
      //which means L1 is branching off when numerator-denominator results in a negative value.
      //therefore, the denominator is going to be added to the numerator after the loop.
      add Num,Denominator // r20,r21
      ret
      
```
- Watch Window:** A floating window titled "Watch" showing the current values of variables:

Name	Value	Type	Location
Num	0 ''	Register	R20
Denominator	65 'U'	Register	R21
Quotient	2 '1'	Register	R22