

# Re: minimum change digit factor computation

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  - *Date:* 15 Jan 2007 20:49:04 -0800
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user923005 wrote:

Alexander Higgins wrote:

I am trying to write a computer program to do this, and math is not my strong suit.

I am given a string of DIGITS from 0 to 50 characters long who values when multiplied together are supposed to equal VALUE. I need to calculate the minimum number of DIGITS that need to be changed to make the equation true.

Example

DIGITS: 123  
VALUE: 24

Answer: 1 (change the one to a six)

DIGITS:132456765434132524562  
VALUE:0

Answer:1 - (change on digit to a zero)

The DIGITS can be up to 50 characters long.  
Value can be an integer between 0 and  $2^{63}-1$  and contains no leading zeros

If there is no solution I need to return -1 (ie  $9^{\text{digits.length}} < \text{value}$ )

I am trying solve the equation as follows:

I factor the the value in prime factors less than 10

```
while VALUE mod 2 =0  
twos = twos +1  
value = value/2
```

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```
while VALUE mod 3 =0  
threes = threes +1  
value = value/3
```

```
while VALUE mod 5 =0  
fives = fives +1  
value = value/5
```

```
while value mod 7 =0  
sevens = sevens +1  
value = value /7
```

if twos and threes and fives and sevens = 0 or i > 0 then return -1

This gives me a string of factors ie for 12 - 223

I then go through the digits and get a string of factors  
for example if digits is 145890 - > 0122222335

From here I cancel out the factors in each and come up with  
the number

of digits that need to be changed  
in th above example

Digits 145890

Value: 12

Answer: 4

--1 does not have to be changed

--4 (22) matches 22 from our value factors, does not have to be changed

-5 needs to be changed to a 1

-8 needs to be changed to a 1

-9 needs to be changed to a 1

-0 need to be changed to 3 ( the last factor required in the value  
factors to match)

I also sort the factors from highest to lowest before balancing out the  
equation

Here is my problem:

If I am given

Digits:824 --->factors 222222

Value:8 --->factors 222

My equation will select the 8 (222) and mark the 2 and four as needed  
to be changed.

This is on a smaller basis, but whe