Problem 17 - Project Euler

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Problem 17. If the numbers 1 to 5 are written out in words: one, two, three, four, five, then there are $3 + 3 + 5 + 4 + 4 = 19$ letters used in total.

If all the numbers from 1 to 1000 (one thousand) inclusive were written out in words, how many letters would be used?

NOTE: Do not count spaces or hyphens. For example, 342 (three hundred and forty-two) contains 23 letters and 115 (one hundred and fifteen) contains 20 letters. The use of "and" when writing out numbers is in compliance with British usage.

Solution

A primary philosophy I have for solving problems is to not reinvent the wheel. Project Euler problems are mathematically rigorous, and using tools and functions already in existence is crucial.

Like with other Project Euler problems, Microsoft Excel is useful. The first step was to make a numbered list from 1 to 1000 in column A of an Excel workbook, which can be done using steps at this link.

Next, one has to make a Visual Basic Macro to interact with the numbered list. An excellent StackOverflow Q&A at this link provides both the macro and instructions on how to install it.

After this, the only step left is to apply the macro to all of column A. This can be done by writing out the formula in cell 1 of column C (e.g. "=WordNum(A1)"). Using the box on the bottom right, drag this through row 1000. This will yield all numbers 1-1000 in word form.

What I did next was to copy and paste the results of column C into a character counter. The result was 21,124 characters without spaces (otherwise known as letters).

Q.E.D.