Roman Numerals

Problem Description

For an existing large, object-oriented command line application that performs various complex text manipulations, a new component is required that converts numbers to roman numerals. The component must be able to scan a provided text input for numbers and replace the found numbers with their roman numeral representation.

Here are a few examples:

- "Lorem ipsum 2 dolor sit amet." becomes "Lorem ipsum II dolor sit amet."
- "Consectetur 5 adipiscing elit 9." becomes "Consectetur V adipiscing elit IX."
- "Ut enim quis nostrum 1904 qui." becomes "Ut enim quis nostrum M CM IV qui."

Roman numerals consist of the letters I (1), V (5), X (10), L (50), C (100), D (500), M (1000)

Tasks

For the individual tasks listed below, proceed as follows:

- Implement the above using C#.
- Target the .NET Framework, .NET Standard or .NET Core.
- Use any supporting library/tools you need (except roman numerals libraries, this has to be your own code).
- Focus on clean and readable code in the same way you would in a large real-world code-base.
- Commit your work to a Git repository (as if the repository was a real project repository). Make sure you commit regularly. Single-commit repositories will not be accepted.
- You don't have to provide an application, the unit tests as a mechanism to run your solution are enough.
- Document build instructions (a simple "open in VS and build" may be enough).
- You are not allowed to copy existing solutions, it has to be your own work.
- If any requirements are missing or unclear, make assumptions and document them.
- Once you are finished, send the Git repository back to us (zipped).

TASK 1

- Implement a service that is able to convert a single number (e.g. 42) into roman numerals.
- Find suitable test cases and implement tests.

TASK 2

- Before starting on Task 2, make sure all your work from task 1 is committed.
- Extend your solution so that it is able to scan a string for numbers and return a new string where the numbers have been replaced with their roman numeral counterpart.
- Together with the result string, the number of replacements that were carried out needs to be returned.
- Implement tests.

Additional Requirements & Information

The logic that converts numbers into roman numerals will be required in other parts of the application, too, so this functionality must be implemented as a stand-alone service.

- Roman numerals represent each digit separately, so 999 is CM XC IX and not IM.
- Roman numerals do not represent digits that are zero.
- Input values are known to be in the range 1..3999.
- Input texts are known to not contain fractions or decimal numbers.
- To aid readability, the digits must be separated with spaces (e.g. 16 is X VI instead of XVI).

THANK YOU FOR TAKING THE TIME TO DO THE TEST.

Please send the results by e-mail to anyako.armbruster@talentum.ch (mailto:anyako.armbruster@talentum.ch) or upload it directly into your application folder (by using the link in our previous e-mail)

We will review it as soon as possible and communicate you a feedback. Good luck!