## Git

* GitHub Repository: https://github.com/exproguest/RomanNumerals.git
* Username: exproguest
* Password: Play$tat10n
* Please make sure that you branch from and merge back to **develop**

## Instructions

* We would like you to implement the 2 stories, TT-1 and TT-2 (defined below) using C#. There is a solution at the GitHub repository to get you started.
* The solution is a Visual Studio 2017 .sln file, and, targets the .Net Framework version 4.7.
* Notes
  + The stories should be implemented in the ExproWWS.TechnicalTest assembly.
  + The implementation should be unit tested as you see fit.
  + All Classes/Methods/Code should be clearly commented where appropriate.
  + Remember to commit to Git, using a branching strategy you feel is appropriate.
  + We would expect this to take approximately 2 hours(ish), and does not have to be completed in one sitting.
  + Any problems, call Mark Strudwick on 07966 636532

## Stories to be completed:

|  |  |  |
| --- | --- | --- |
|  | **Story** | **Acceptance Criteria** |
| TT-1 | As a user, I should be able to convert Integer numbers to their Roman Numeral string equivalent. | The following integers should be converted;   |  |  | | --- | --- | | -1 | ? | | 0 | ? | | 4 | IV | | 6 | VI | | 47 | XLVII | | 123 | CXXIII | | 1998 | MCMXCVIII | | 2345 | MMCCCXLV | |
| TT-2 | As a user, I should be able to convert a Roman Numeral string to its Integer value. | The following Roman Numerals should be converted;   |  |  | | --- | --- | | DCXLVIII | 648 | | MCMXLVI | 1946 | | MCMXLIV | 1944 | | MMDXLIX | 2549 | | MCMLV | 1955 | | MCMXCIX | 1999 | |

# Roman Numerals

(https://www.math.nmsu.edu/~pmorandi/math111f01/RomanNumerals.html)

The way we write numbers, using Hindu-Arabic numerals, is hardly the only way to do so. Many civilizations used other means to denote numbers.

For example, the Romans represented numbers using the numerals I, V, X, L, C, D, and M. These numerals represent the following numbers:

|  |  |
| --- | --- |
| Roman Numeral | Hindu-Arabic Equivalent |
| I | 1 |
| V | 5 |
| X | 10 |
| L | 50 |
| C | 100 |
| D | 500 |
| M | 1000 |

There are a few rules for writing numbers with Roman numerals.

Repeating a numeral up to three times represents addition of the number. For example, III represents 1 + 1 + 1 = 3. Only I, X, C, and M can be repeated; V, L, and D cannot be, and there is no need to do so.

Writing numerals that decrease from left to right represents addition of the numbers. For example, LX represents 50 + 10 = 60 and XVI represents 10 + 5 + 1 = 16.

To write a number that otherwise would take repeating of a numeral four or more times, there is a subtraction rule. Writing a smaller numeral to the left of a larger numeral represents subtraction.

For example, IV represents 5 - 1 = 4 and IX represents 10 - 1 = 9. To avoid ambiguity, the only pairs of numerals that use this subtraction rule are;

|  |  |
| --- | --- |
| Roman Numeral | Hindu-Arabic Equivalent |
| IV | 4 = 5 - 1 |
| IX | 9 = 10 - 1 |
| XL | 40 = 50 - 10 |
| XC | 90 = 100 - 10 |
| CD | 400 = 500 - 100 |
| CM | 900 = 1000 - 100 |