# RomanNumerals

**Assignment:**

1. You will create a class with two public static methods. One will receive an int number and return a String with that int converted into Roman Numerals. The other method will receive a String of Roman Numerals and return the int value of the Roman Numerals.

1. These two methods are static because there is no reason to create an object just to run these calculations.
2. Think of using helper methods to reuse algorithms needed to solve these problems.
3. Assume that your client gives you valid Roman Numerals and the Arabic numbers are positive and less than 4000.

**Instructions:**

Roman Numerals work differently than our normal Arabic number system. Roman Numerals have symbols, all in capital letters (and sometimes in lower case), which represent Arabic numbers. Roman Numerals have been used for identifying movie sequels (i.e., *The Godfather: Part II*), for publication copyright dates, for numbering monarchs such as Queen Elizabeth II, and for numbering Super Bowls. See the following table for the Roman Numerals symbols up to 1000.

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| **Roman Numeral** | **Arabic Number** |
| I or i | 1 |
| V | 5 |
| X | 10 |
| L | 50 |
| C | 100 |
| D | 500 |
| M | 1000 |

Usually, numbers are formed by stringing the Roman numerals together and adding them up to make the required number (i.e., II = 2, or XII = 12). If smaller numbers follow larger numbers, the numbers are added (i.e., VIII = 5 + 3 or 8), but if a smaller number precedes a larger number, the smaller number is subtracted from the larger number (i.e., IX = 10 - 1 or 9).

There is shorthand for the case when there are four of the same symbols in a row. Instead of IIII for 4, it is written as IV or 5 - 1 = 4. This only applies to symbols that represent powers of ten. Since our numbers will be less than 4000, this only makes sense for I, X and C. Some people think this means you can write IC for 99 but that is not going to be allowed. When using this shortcut, a symbol can only precede a symbol whose value is 5 or 10 times its own value.

For example, X (10) can only precede L (50) or C (100). So XL (40) is acceptable, but XD (490?) is not.

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| **Roman Numeral** | **Arabic Number** |
| XLVI | 46 |
| XCIX | 99 |
| MDCCCXIX | 1819 |
| DCXLIX | 649 |
| MCMLXXXIII | 1983 |