# Space trading

## Problem Description

You decided to give up on earth after the latest financial collapse left 99.99% of the earth's population with 0.01% of the wealth. Luckily, with the scant sum of money that is left in your account, you are able to afford to rent a spaceship, leave earth, and fly all over the galaxy to sell common metals and dirt (which apparently is worth a lot). Buying and selling over the galaxy requires you to convert numbers and units, and you decided to write a program to help you.The numbers used for intergalactic transactions follows similar convention to the roman numerals and you have painstakingly collected the appropriate translation between them. Roman numerals are based on seven symbols:

Symbol Value:

I 1

V 5

X 10

L 50

C 100

D 500

M 1,000

Numbers are formed by combining symbols together and adding the values. For example, MMVI is 1000 + 1000 + 5 + 1 = 2006. Generally, symbols are placed in order of value, starting with the largest values. When smaller values precede larger values, the smaller values are subtracted from the larger values, and the result is added to the total. For example MCMXLIV = 1000 + (1000 − 100) + (50 − 10) + (5 − 1) = 1944.

The symbols "I", "X", "C", and "M" can be repeated three times in succession, but no more. (They may appear four times if the third and fourth are separated by a smaller value, such as XXXIX.) "D", "L", and "V" can never be repeated.

"I" can be subtracted from "V" and "X" only. "X" can be subtracted from "L" and "C" only. "C" can be subtracted from "D" and "M" only. "V", "L", and "D" can never be subtracted.

Only one small-value symbol may be subtracted from any large-value symbol.

A number written in Arabic numerals can be broken into digits. For example, 1903 is composed of 1, 9, 0, and 3. To write the Roman numeral, each of the non-zero digits should be treated separately. In the above example, 1,000 = M, 900 = CM, and 3 = III. Therefore, 1903 = MCMIII.

***-- Source: Wikipedia*** (<http://en.wikipedia.org/wiki/Roman_numerals>)

**Test Input:**

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glek is I

prob is V

pash is X

teskj is L

glek glek Silver is 34 Credits

glek prob Gold is 57800 Credits

pash pash Iron is 3910 Credits

how much is pash teskj glek glek ?

how many Credits is glek prob Silver ?

how many Credits is glek glek Gold ?

how many Credits is pash teskj glek Iron ?

Does pash teskj glek glek Iron has more Credits than glek glek Gold ?

Is glek prob larger than pash pash?

how much wood could a woodchuck chuck if a woodchuck could chuck wood ?

**Expecting Output:**

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pash teskj glek glek is 42

glek prob Silver is 68 Credits

glek glek Gold is 28900 Credits

pash teskj glek Iron is 8015.5 Credits

pash teskj glek glek Iron has less Credits than glek prob Gold

glek prob is smaller than pash pash

I have no idea what you are talking about

## Requirements

* Input to your program consists of lines of text detailing your notes on the conversion between intergalactic units and roman numerals. **You are expected to handle invalid queries appropriately**.
* Basic components such as Input/Output processing and business logic core are essential. But please **design your application as complete and modular as possible**, following a standard software system requirements such as error handling, etc.
* Apply **proper design pattern** and follow **object oriented design style** to design your application.
* **Well refactor the code** to follow good code practices. (Some good relevant resources can be found here: <http://en.wikipedia.org/wiki/Clean_Code>)
* **Unit/Integration tests** covering all the scenarios are good to have to show proper testing skills.
* Implement your application using **C#.**
* Please document clearly about your **system design solution** (feel free to use professional diagrams if you think necessary), **nontrivial assumptions** as well as the clear instructions on **compiling and invoking the program** with program environment details. **Proper server setup instructions** are also essential if you develop a web application for presenting the results.

## \*\*NOTE\*\*:

* **Please DO NOT copy the solution online**. We have already collected a list of typical solutions online. If we found your work is exactly same with some of them, we may have to terminate the review process.
* This code challenge is mean to demonstrate your software engineering skills and practice so Please structure your project code **clean and clearly**.

## Submission

• You are expected to submit your source code project with the README document containing the required content stated above.