Practice Arena

Practice problems aimed to improve your coding skills.

- PRACTICE-02_SCAN-PRINT
- PRACTICE-03_TYPES
- LAB-PRAC-02_SCAN-PRINT
- LAB-PRAC-01
- PRACTICE-04_COND
- BONUS-PRAC-02
- LAB-PRAC-03_TYPES
- PRACTICE-05_COND-LOOPS
- LAB-PRAC-04_COND
- LAB-PRAC-05_CONDLOOPS
- PRACTICE-07_LOOPS-ARR
- LAB-PRAC-06_LOOPS
- LAB-PRAC-07_LOOPS-ARR
- LABEXAM-PRAC-01_MIDSEM
- PRACTICE-09_PTR-MAT
- LAB-PRAC-08_ARR-STR
- PRACTICE-10_MAT-FUN
- LAB-PRAC-09_PTR-MAT
  - Mr C writes a Story
  - Matrix Arithmetic
  - Spin the Matrix
  - Crony Capitalization
  - Matrix Mirroring
  - Sodoku
  - The Last Line
  - Singular Value Decomposition
  - Matrix Flip
  - Now we are in Rome
  - Search for the Submatrix
  - Convoluted Convolutions
- LAB-PRAC-10_MAT-FUN
- PRACTICE-11_FUN-PTR
- LAB-PRAC-11_FUN-PTR
- LAB-PRAC-12_FUN-STRUC
- LABEXAM-PRAC-02_ENDSEM
- LAB-PRAC-13_STRUC-NUM
- LAB-PRAC-14_SORT-MISC

Now we are in Rome

LAB-PRAC-09_PTR-MAT

Now we are in Rome [10 marks]

Problem Statement

We learnt the binary, octal, hexadecimal and decimal number systems in the lectures. Let's go back in the history. Before the decimal system and other place value systems were introduced, other number systems were popular. One among them (which still finds place among people) is the Roman number system. The Roman numeral system is based on seven symbols and calculates values based on three simple rules (addition, subtraction, and concatenation rule). The numbers are represented using a sequence of these seven symbols.

I	V	X	L	C	D	M
1	5	10	50	100	500	1000

Addition Rule: When read from right to left, till the characters appear in non-decreasing order of their value, their values keep getting added to the final total value. For example III is 3, MX is 1010, CLXI is 161, XX is 20.

III	3	1 + 1 + 1
CLXI	161	100 + 50 + 10 + 1
MMCXVIII	2118	2*1000 + 100 + 10 + 5 + 3*1

Subtraction Rule: If when read from right to left, if a character with lower value appears after a character of higher value, then the value of the lower value character is subtracted from the total i.e. IV is 4 and IX is 9, CM is 900.

XLIX	49	(-10) + 50 + (-1) + 10
CMXCIX	999	(-100) + 1000 + (-10) + (100) + (-1) + 10
MMCXIX	2019	2*1000 + 100 + 10 + (-1) + 10

Concatenation Rule: Once subtraction rule has been applied, the characters must again resume being of higher and higher value so that addition rule kicks in again. This means that a number like IVX is illegal.

In your input you will be given a roman numeral as a string of no more than 15 characters. Find the corresponding decimal value and print it in the output.

Note: We must admit that we have not explained all the rules of the roman numeral system here since explaining all the rules would take ages. The system is actually very cumbersome and not neat at all which is why people stopped using it the moment the decimal system was available. However, believe it or not, some people were actually afraid of the decimal system and thought the decimal

system was the work of the devil. In hindsight it is the Roman system that seems like a devilishly complicated system :)

EXAMPLE:
INPUT
XIV

OUTPUT:
14

Grading Scheme:
Total marks: **[10 Points]**

There will be no partial grading in this question. An exact match will receive full marks whereas an incomplete match will receive 0 points. Please be careful of missing/extra spaces and missing/lines (take help of visible test cases). Each visible test case is worth 1 point and each hidden test case is worth 2 points. There are 2 visible and 4 hidden test cases.

Start Solving! (/editor/practice/6191)