**MCS 253**

**HW 7**

[Read this first on what to submit for homework.](https://drive.google.com/open?id=1vvTZzNrXNrxFCFVuzryEuAX6c8rfGERsEc7t4TS1vAA)

**HW 7.1 - Roman Numeral Converter (50 pts)**

Write a program that converts integers into Roman numerals and Roman numerals into integers. We will be using the rule that no Roman numeral is to be repeated in succession more than 3 times, thus there will be a bound on the size of the numbers your program can process.

Your program should be efficient, both in terms of space and memory.

Input:

* a Roman numeral or Integer (via stdin)

Output:

* the corresponding converted form if possible (via stdout)

Example:

input:

9

IX

476

CDLXXVI

output:

IX

9

CDLXXVI

476

**HW 7.2 - Two LeetCode Problems (25 points each)**

Possible LeetCode Problems:

* 42. Trapping Rain Water
* 407. Trapping Rain Water II
* 1224. Maximum Equal Frequency
* 778. Swim in Rising Water
* 315. Count of Smaller Numbers After Self
* 952. Largest Component Size by Common Factor