

13. Roman to Integer

Easy

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Roman numerals are represented by seven different symbols: **I**, **V**, **X**, **L**, **C**, **D** and **M**.

| Symbol | Value |
|--------|-------|
| I | 1 |
| V | 5 |
| X | 10 |
| L | 50 |
| C | 100 |
| D | 500 |
| M | 1000 |

For example, **2** is written as **II** in Roman numeral, just two one's added together. **12** is written as **XII**, which is simply **X** + **II**. The number **27** is written as **XXVII**, which is **XX** + **V** + **II**.

Roman numerals are usually written largest to smallest from left to right. However, the numeral for four is not **IIII**. Instead, the number four is written as **IV**. Because the one is before the five we subtract it making four. The same principle applies to the number nine, which is written as **IX**. There are six instances where subtraction is used:

- I** can be placed before **V** (5) and **X** (10) to make 4 and 9.
- X** can be placed before **L** (50) and **C** (100) to make 40 and 90.
- C** can be placed before **D** (500) and **M** (1000) to make 400 and 900.

Given a roman numeral, convert it to an integer.

Example 1:

Input: $s = \text{"III"}$

Output: 3

Example 2:

Input: $s = \text{"IV"}$

Output: 4

Example 3:

Input: $s = \text{"IX"}$

Output: 9

Example 4:

Input: $s = \text{"LVIII"}$

Output: 58

Explanation: L = 50, V = 5, III = 3.

Example 5:

Input: $s = \text{"MCMXCIV"}$

Output: 1994

Explanation: M = 1000, CM = 900, XC = 90 and IV = 4.

Constraints:

- `1 <= s.length <= 15`
- `s` contains only the characters `('I', 'V', 'X', 'L', 'C', 'D', 'M')`.
- It is **guaranteed** that `s` is a valid roman numeral in the range `[1, 3999]`.

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Problem is simpler to solve by working the string from back to front and using a map.