

12. Integer to Roman

Medium

👍 3308

💬 4098

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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 an integer, convert it to a roman numeral.

Example 1:

Input: num = 3

Output: "III"

Explanation: 3 is represented as 3 ones.

Example 2:

Input: num = 58

Output: "LVIII"

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

Example 3:

Input: num = 1994

Output: "MCMXCIV"

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

Constraints:

- $1 \leq \text{num} \leq 3999$

```
string intToRoman(int num) {  
    string ones[] = {"", "I", "II", "III", "IV", "V", "VI", "VII", "VIII", "IX"};  
    string tens[] = {"", "X", "XX", "XXX", "XL", "L", "LX", "LXX", "LXXX", "XC"};  
    string hrns[] = {"", "C", "CC", "CCC", "CD", "D", "DC", "DCC", "DCCC", "CM"};  
    string ths[] = {"", "M", "MM", "MMM"};  
  
    return ths[num/1000] + hrns[(num%1000)/100] + tens[(num%100)/10] + ones[num%10];  
}
```

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