(3) → Roman to integer -

1. Question

Given a roman numeral, convert it to an integer

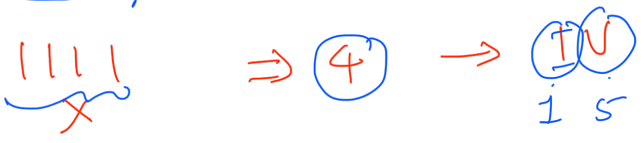
integer string

2. Examples -

"III" → 3

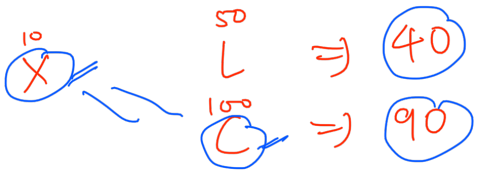
Symbol	Value
I	1
V	5
X	10
L	50
C	100
D	500
M	1000

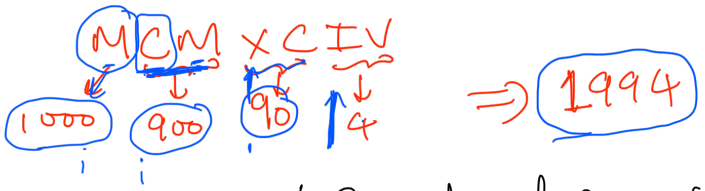
Roman numbers are usually written (largest to smallest) from (left to right)



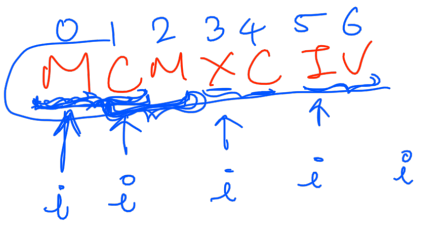
small first and then large ⟨ large - small ⟩
10 - 1 ⇒ 9

Instances when it occurs -

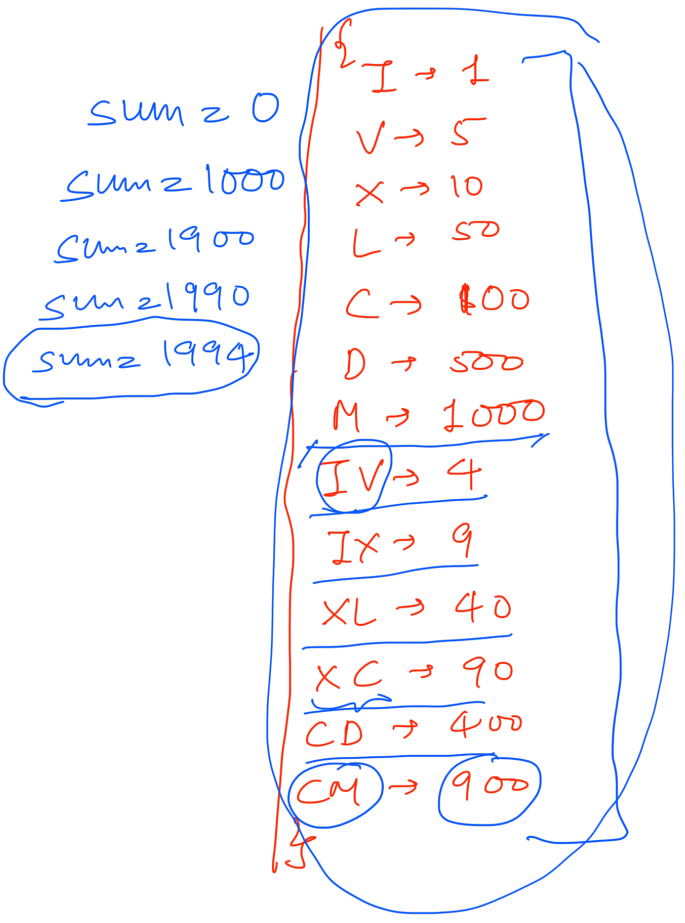




3. Intuition / Brute force sol^n / Optimized Solution



MC



4. Time complexity / space complexity -

Time complexity = O(n)

Space complexity = O(1)

5. Code walkthrough -

MAP

```
int romanToInt(String s) {
    i = 0, sum = 0
    while (i < s.length()) {
        if (i < s.length()-1) {
            digit = (C at i) + (C at i+1)   // in S
            if (MAP has digit) {
                sum += MAP.get(digit)
                i += 2
                continue;
            }
        }
        sum += map.get(i);
        i += 1;
    }
    return sum
}
```

0 1 2 3

i i

2 < (4-1)

3

3 < (4-1) X 2