171. Excel Sheet Column Number

https://leetcode.com/problems/excel-sheet-column-number/

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171. Excel Sheet Column Number

Easy 2499 240 Add to List Share

Given a string `columnTitle` that represents the column title as appear in an Excel sheet, return *its corresponding column number*.

For example:

```
A -> 1
B -> 2
C -> 3
...
Z -> 26
AA -> 27
AB -> 28
...
```

Example 1:

```
Input: columnTitle = "A"
Output: 1
```

Example 2:

```
Input: columnTitle = "AB"
Output: 28
```

Example 3:

```
Input: columnTitle = "ZY"
Output: 701
```

Constraints: Read it carefully

- `1 <= columnTitle.length <= 7`
- `columnTitle` consists only of uppercase English letters.
- `columnTitle` is in the range `["A", "FXSHRXW"]`.

Range for Input

What to find ??

Finding the column Number

Example 1:

```
Input: columnTitle = "A"
Output: 1
```

→ "A" → Value of A = 1 ✓

Example 2:

```
Input: columnTitle = "AB"
Output: 28
```

→ "AB" → 1(26 ^ 1) + Value of B = 26 + 2 = 28 ✓

Example 3:

```
Input: columnTitle = "ZY"
Output: 701
```

→ "ZY" → 26(26 ^ 1) + Value of Y = 676 + 25 = 701 ✓

Basic Formula => [Value of character * (Base ^ Position of Character) + Value of Last Character]

It look something like this

Look Some More Examples

Like ⇒ "ABC" ⟶

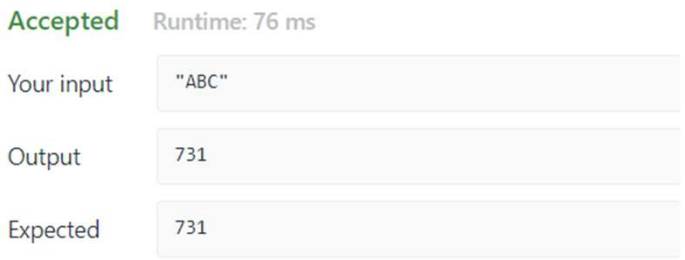
= Value of A * (Base ^ Position of A) + Value of B * (Base ^ Position of B) + Value of C

= 1 * (26 ^ 2) + 2 * (26 ^ 1) + 3

= 676 + 2 * 26 + 3

= 676 + 52 + 3

= 731



Example : 2

"ZXYP"

= Value of Z * (Base ^ Pos of Z) + Val. of X * (Base ^ Pos. of X) + Val. of Y * (Base ^ Pos of Y)

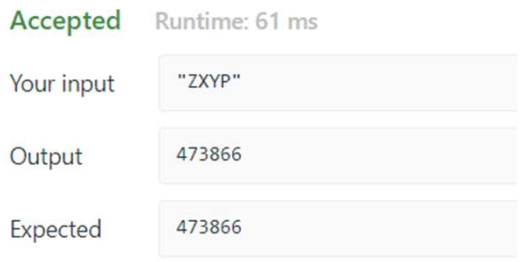
+ Val. of P

= 26 * (26^3) + 24 * (26^2) + 25 * (26) + 16

= 26 * 17576 + 24 * 676 + 650 + 16

= 456976 + 16224 + 650 + 16

= 473866



For every additional character of the string we multiply the value of the digit by 26^n

↳ where n is the no. of digits it is away from one's place

We have atmost 26 characters for denoting columns that's why we take the Base is "26"

Algorithm (Iterative)

Time: O(n)
Space: O(1)

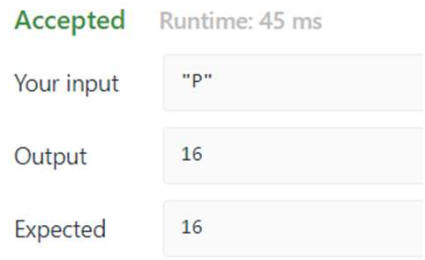
```
Columnno(str):
    if str == None:
        return -1
    Sum = 0
    for ele in str:
        Sum *= 26
        Sum += Ascii(ele) - Ascii('A') + 1
    return sum
```

Base Case

O(n) time for iterating through every character of string

for Ex if we want to find the value of P

= Ascii('P') - Ascii('A') + 1
= 80 - 65 + 1
= 15 + 1 = 16



If you want you can store values of 'A' – 'Z' in some data structures and pull it out when you need it.

But I prefer not to do this because it will take an extra space.

→ { If you don't get the intution try to run it sometimes on paper You'll definetly get the idea.

```python
class Solution:
    def titleToNumber(self, columnTitle: str) -> int:
        if columnTitle == '':
            return -1

        columnNumber = 0
        for ele in columnTitle:
            columnNumber *= 26
            columnNumber += ord(ele) - ord('A') + 1

        return columnNumber
```

Thank you

If you like Please share this and feel free to connect for any queries.
GitHub: https://github.com/priyanshu-arya/DSA/tree/master/Leetcode%201
Discord: https://discord.gg/qPer56TP
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