Howell's Discovered Note

Some Bush on Moss Hill Road

1 Welcome

You were not meant to read this note. Or... maybe you were? It was hidden - deliberately - beneath bark, behind branches, in the one bush that does not belong. Now it's in your hands, and that changes everything. This page hums with quiet rules and forgotten names, and those who follow its puzzles to their end do not walk away empty-handed. There is treasure here - not of coins or crowns, but something stranger, rarer. To be honest with you, I'm not quite sure what it is myself, but you need to help me. What I know is that such treasures are not given freely. You must earn them with wit, and with attention. Solve what follows, and you may hold something no one else was ever meant to find. Let your cleverness guide you, and may everything fall into place. Solving this puzzle will lead you to me. I'll see you soon.

2 Preliminaries

DEFINITION (First Letter Function). Let $\mathcal{A} = \{\texttt{A}, \texttt{B}, \ldots, \texttt{Z}\}$ denote the set of uppercase English letters. For any tangible, nameable object $\mathcal{O}$ and any phrase x that refers to $\mathcal{O}$ without revealing its actual name, define the *first letter function*

$$\mathbb{L}\colon \{x \mid x \text{ is a phrase referring to some } \mathcal{O}\} \longrightarrow \mathcal{A}, \qquad \mathbb{L}(x) = \text{first letter of } \mathcal{O}.$$

EXAMPLE 1.

1. $\mathbb{L}(\text{``the colour of Corey's shirt''}) = \texttt{O}$ because Corey's shirt is Orange.
2. $\mathbb{L}(\text{``Eleni's GPA spelled out as a word''}) = \texttt{F}$ because Eleni's GPA is Four.
3. $\mathbb{L}(\text{``the weather outside today''}) = \texttt{S}$ because it is Sunny.

You try. What is $\mathbb{L}(\text{``the units digit of the day of the month of Eleni's birthday''})$? If you said Z - I mean O then you are correct!

DEFINITION (String Append). In Python, the expressions `'A' + 'X'` and `'AX'` are identical. Analogously, for any finite strings $\alpha, \beta \in \mathcal{A}^*$ we define the binary *string append operator* $+$ by

$$\alpha + \beta = \alpha\beta,$$

so, for example, $\texttt{A} + \texttt{B} = \texttt{AB}$.

3 The Puzzle

Your best friend's brother knows about God's number. Ask them. The below can shift the possessor of this number:

$$\begin{aligned} &\mathbb{L}(\text{Color of right-lane car}) \\ +&\mathbb{L}(\text{Non-cardinal directional description of right-lane car}) \\ +&\mathbb{L}(\text{Color of left-lane car}) \\ +&\mathbb{L}(\text{Non-cardinal directional description of left-lane car}) \end{aligned}$$

To visualize the possessor is nearly impossible, so I left a birthday present for you under the right-most tree.

We want to SOLVE this puzzle, don't we? The possesor should be aligned just like how the bunny sits above your garden, munching on green herbs to the left and tomatoes on the right.

When aligned, shifting according to the above leaves a colorful message on three faces. The side of the tree that brought you here is the side I desire. Read this face like a book where the words are hues, and with each hue, record $\mathbb{L}(\text{hue})$.

This string is meaningless to me right now, and you must pass it through a tool I left in a bush. This bush is not on green, however. It is on white.

Those last three letters will be unmistakeable. If one letter of the alphabet described the shape of this place, what is it? Have someone else pronounce this letter to you. It will become obvious what you must click.