Problem Diary

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Problem Set #1 - Problem E

1. Solution Process

Getting started, and completely grasping the scope of this problem considering all requirements and constraints was arguably the hardest part. It took a lot of going through test cases to first of all understand the problem.

Initially i had the idea of using binary search to look for c - which was lower bounded by k, and upper bounded by 2^n roughly, but i quickly there was no way to check whether a c is possible without actually solving the problem.

I decided that i needed to figure out how many possible substrings, and prefixes were possible between any two strings, and then tackle the constraint of k after - this turned out to be the right logical approach.

I observed the differences of the number of prefixes, when s contained a b and t contained an a. And after some thought, visualising the problem space as a tree really helped to model the problem to the k strings constraint, as there can be a maximum of k paths taken at each level and was ultimately able to arrive at the solution by myself.

2. Challenges and Reflections

During the process of solving this problem, I encountered the following challenges:

- Understanding how to approach the problem
- Struggled with thinking, when faced with so many different constraints and requirements

To overcome these challenges, I:

- For both challenges mentioned, i just decided to break the problem down to two parts - figuring out how many substrings can exist between any two strings s and t, and then how to apply the k constrain to figure out the solution. Although I didn't know they were necessary steps, i knew that trying to figure them out would increase my understanding and grasp of the problem aspect better.

3. Collaboration

For this problem, I didn't collaborate with anyone.