

1. Trie to Delete 0's and 1's?

Suppose we inserted all possible binary strings of length 0-3 (ej. 1, 0, 10, ..., 110, 111) into a Trie.

- (a) If we deleted all binary numbers of length 2, how many nodes would we have to delete?

- (b) After part a, if we deleted all binary numbers of length 3, how many nodes would we have to delete?

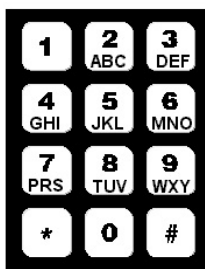
2. Call Me Maybe

- (a) Suppose you want to transfer someone's phone book to a data structure so that you can call all the phone numbers with a particular area code efficiently. What data structure would you use? How would you implement it?

- (b) What is the time complexity of your solution? What is the space complexity?

3. Let's Trie to be Old School

Text on nine keys (T9)'s objective is to make it easier to type text messages with 9 keys. It allows words to be entered by a single keypress for each letter in which several letters are associated with each key. It combines the groups of letters on each phone key with a fast-access dictionary of words. It looks up in the dictionary all words corresponding to the sequence of keypresses and orders them by frequency of use. So for example, the input '2665' could be the words {book, cook, cool}. Describe how you would implement a T9 dictionary for a mobile phone.



T9 Example