Implement a Phone Directory Suggestions CodeStudio

You are given a list/array of strings which denotes the contacts that exist in your phone directory. The search query on a string ‘str’ which is a query string displays all the contacts which are present in the given directory with the prefix as ‘str’. One special property of the search function is that when a user searches for a contact from the contact list then suggestions (contacts with prefix as the string entered so for) are shown after the user enters each character.>

Example: str = [“cod”, “coding”, “codding”, “code”, “coly”], query: “coding”

Output: [[“cod”, “coding”, “codding”, “code”, “coly”], [“cod”, “coding”, “codding”, “code”, “coly”], [“cod”, “coding”, “codding”, “code”], [“coding”], [“coding”], [“coding”]]

Approach 1: Function to get suggestions from a phone directory using Trie

- **Classes:**
  - **TrieNode**: Represents a node in the Trie.
  - **Trie**: Represents the Trie data structure and includes functions for insertion and suggestion retrieval.
- **Functions:**
  - **insert**: Inserts a word into the Trie.
  - **printSuggestions**: Recursively prints suggestions starting from a given node.
  - **getSuggestions**: Retrieves suggestions for a given query string.
  - **phoneDirectory**: Main function to get suggestions from a phone directory using Trie.
- **Explanation:**
  - Inserts each contact from the contact list into the Trie.
  - For a given query string, traverses the Trie based on the characters in the query.
  - Retrieves suggestions at each character position.
  - Returns suggestions for each prefix of the query string.
  - If a prefix does not match any contact, returns "No Suggestions Found."
- **Time Complexity:**
  - **O(N * (W^2)), where N is the number of elements in the given array/list and W is the average length of the string.**

- **Space Complexity:**
    - **O(N * W), where N is the number of elements in the given array/list and W is the average length of the string.**