NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

SC1007 Data Structures and Algorithms

Tutorial 6: Trie

Q1 You are given a Trie that stores multiple words. Write a function **`count_words()`** to count how many words are stored in the Trie. The function prototype is given as follow:

```
def count_words(node):
```

Example: For a trie consisting of words: ["cat", "cap", "bat", "ball"], the output will be 4.

Q2 Given a Trie that stores multiple words, implement a function **`find_words_with_prefix()`** that returns all words that start with a given prefix. The function prototype is given as follow:

```
def find_words_with_prefix(node,prefix):
```

Example: for a trie consisting of words: ["cat", "cap", "bat", "ball", "car", "cart"], prefix = "ca", the output will be ['cap', 'car', 'cart', 'cat']

Q3 Given a Trie storing multiple words, write a function **`find_shortest_word_with_prefix()`** that returns the shortest word that starts with a given prefix. If no word starts with the prefix, return None.

```
def find_shortest_word_with_prefix(node,prefix):
```

Example: for a trie consisting of words: ["cat", "cap", "bat", "ball", "car", "cart"], prefix = "ca", the output will be ['cap', 'car', 'cat'].