

Tries

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public class TrieNode {
    char data;
    boolean isTerminal;
    TrieNode[] children;
    public int childCount;
    public TrieNode(char data){
        this.data=data;
        this.isTerminal=false;
        this.children=new TrieNode[26];
        this.childCount=0;
    }
}

public class Trie {
    private TrieNode root;

    public Trie() {
        root = new TrieNode('\0');
    }

    // 1st method
    public void add(String word) {
        addHelper(root, word);
    }

    // helper for add method
    private void addHelper(TrieNode root, String word) {
        if (word.length() == 0) {
            root.isTerminal = true;
            return;
        }
        int childIndex = word.charAt(0) - 'a';
        TrieNode child = root.children[childIndex];
        if (child == null) {
            child = new TrieNode(word.charAt(0));
            root.children[childIndex] = child;
            root.childCount++;
        }
        addHelper(child, word.substring(1));
    }

    // 2nd method
    public boolean search(String word) {
        return searchHelper(root, word);
    }

    // helper method for search
    private boolean searchHelper(TrieNode root, String word) {
        if (word.length() == 0) {
            return root.isTerminal;
        }
        int childIndex = word.charAt(0) - 'a';
        TrieNode child = root.children[childIndex];
        if (child == null)
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        return false;
    return searchHelper(child, word.substring(1));
}

// 3rd method
public void remove(String word) {
    removeHelper(root, word);
}

// helper method for remove
public void removeHelper(TrieNode root, String word) {
    if (word.length()==0){
        root.isTerminal=false;
        return;
    }
    int childIndex=word.charAt(0)-'a';
    TrieNode child=root.children[childIndex];
    if (child==null)
        return;
    removeHelper(child,word.substring(1));
    if (!child.isTerminal && child.childCount==0){
        root.children[childIndex]=null;
        root.childCount--;
    }
}
}

```