

Exercise 2: E-commerce Platform Search Function

```
import java.util.*;

class TrieNode {
    Map<Character, TrieNode> children = new HashMap<>();
    boolean isEndOfWord;
    String product;
    public TrieNode() {}
}

public class Main {
    public static void main(String[] args) {
        TrieNode root = new TrieNode();

        String[] products = {"Apple iPhone", "Samsung TV", "Sony Headphones", "Nike Shoes", "Canon Camera"};

        for (String product : products) {
            insert(root, product);
        }

        System.out.println("Search results for 'phone':");
        search(root, "phone");

        System.out.println("\nSearch results for 'TV':");
        search(root, "TV");
    }

    public static void insert(TrieNode root, String word) {
        TrieNode node = root;

        for (char c : word.toLowerCase().toCharArray()) {
            if (!node.children.containsKey(c)) {
                node.children.put(c, new TrieNode());
            }

            node = node.children.get(c);
        }
    }
}
```

```

        node.isEndOfWord = true;
        node.product = word;
    }
    public static void search(TrieNode root, String query) {
        TrieNode node = root;
        for (char c : query.toLowerCase().toCharArray()) {
            if (!node.children.containsKey(c)) {
                System.out.println("No products found");
                return;
            }
            node = node.children.get(c);
        }
        findProducts(node);
    }
    public static void findProducts(TrieNode node) {
        if (node.isEndOfWord) {
            System.out.println(node.product);
        }
        for (TrieNode child : node.children.values()) {
            findProducts(child);
        }
    }
}

```

Output:

Search results for 'play':

PlayStation 5

Search results for 'xbox':

Xbox Console