Exercise 2: E-commerce Platform Search Function

Code:

**package** exercise2;

**import** java.util.Arrays;

**import** java.util.Comparator;

**import** java.util.Scanner;

**class** Product {

**int** productId;

String productName;

String category;

Product(**int** id, String name, String category) {

**this**.productId = id;

**this**.productName = name;

**this**.category = category;

}

**public** String toString() {

**return** productId + " - " + productName + " (" + category + ")";

}

}

**public** **class** SimpleSearch {

**public** **static** Product linearSearch(Product[] products, String name) {

**for** (Product p : products) {

**if** (p.productName.equalsIgnoreCase(name)) {

**return** p;

}

}

**return** **null**;

}

**public** **static** Product binarySearch(Product[] products, String name) {

**int** low = 0, high = products.length - 1;

**while** (low <= high) {

**int** mid = (low + high) / 2;

**int** compare = products[mid].productName.compareToIgnoreCase(name);

**if** (compare == 0) **return** products[mid];

**else** **if** (compare < 0) low = mid + 1;

**else** high = mid - 1;

}

**return** **null**;

}

**public** **static** **void** main(String[] args) {

Product[] products = {

**new** Product(1, "Phone", "Electronics"),

**new** Product(2, "Laptop", "Electronics"),

**new** Product(3, "Book", "Education"),

**new** Product(4, "Shirt", "Clothing")

};

Scanner scanner = **new** Scanner(System.***in***);

System.***out***.print("Enter product name to search (Linear Search): ");

String linearInput = scanner.nextLine();

Product result1 = *linearSearch*(products, linearInput);

System.***out***.println("Linear Search: " + (result1 != **null** ? result1 : "Product not found"));

Arrays.*sort*(products, Comparator.*comparing*(p -> p.productName.toLowerCase()));

System.***out***.print("Enter product name to search (Binary Search): ");

String binaryInput = scanner.nextLine();

Product result2 = *binarySearch*(products, binaryInput);

System.***out***.println("Binary Search: " + (result2 != **null** ? result2 : "Product not found"));

scanner.close();

}

}

Output:

