**E-commerce Platform Search Function**

**Product.java**

public class Product {

int productId;

String productName;

String category;

public Product(int productId, String productName, String category) {

this.productId = productId;

this.productName = productName;

this.category = category;

}

@Override

public String toString() {

return "ID: " + productId + ", Name: " + productName + ", Category: " + category;

}

}

**LinearSearch.java**

public class LinearSearch {

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

for (Product product : products) {

if (product.productName.equalsIgnoreCase(name)) {

return product;

}

}

return null;

}

}

**BinarySearch.java**

import java.util.Arrays;

import java.util.Comparator;

public class BinarySearch {

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

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

int left = 0, right = products.length - 1;

while (left <= right) {

int mid = (left + right) / 2;

String midName = products[mid].productName.toLowerCase();

int cmp = name.toLowerCase().compareTo(midName);

if (cmp == 0) {

return products[mid];

} else if (cmp < 0) {

right = mid - 1;

} else {

left = mid + 1;

}

}

return null;

}

}

**Main.java**

import java.util.Scanner;

public class TestSearch {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter number of products: ");

int n = sc.nextInt();

sc.nextLine();

Product[] products = new Product[n];

for (int i = 0; i < n; i++) {

System.out.println("\nEnter details for product " + (i + 1) + ":");

System.out.print("Product ID: ");

int id = sc.nextInt();

sc.nextLine();

System.out.print("Product Name: ");

String name = sc.nextLine();

System.out.print("Category: ");

String category = sc.nextLine();

products[i] = new Product(id, name, category);

}

while (true) {

System.out.print("\nEnter product name to search (or type 'exit' to quit): ");

String searchName = sc.nextLine();

if (searchName.equalsIgnoreCase("exit")) break;

System.out.println("Choose search method:");

System.out.println("1. Linear Search");

System.out.println("2. Binary Search");

System.out.print("Enter choice: ");

int choice = sc.nextInt();

sc.nextLine();

Product result = null;

if (choice == 1) {

result = LinearSearch.linearSearch(products, searchName);

} else if (choice == 2) {

result = BinarySearch.binarySearch(products, searchName);

} else {

System.out.println("Invalid choice.");

continue;

}

if (result != null) {

System.out.println("Product found: " + result);

} else {

System.out.println("Product not found.");

}

}

sc.close();

System.out.println("Search session ended.");

}

}