**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 "Product{" + productId + ", " + productName + ", " + category + "}";

}

}

***ProductSearch.java***

import java.util.Arrays;

import java.util.Comparator;

public class ProductSearch {

// Linear Search by product name

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

for (Product product : products) {

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

return product;

}

}

return null;

}

// Binary Search by product name (array must be sorted!)

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

int left = 0;

int right = products.length - 1;

while (left <= right) {

int mid = (left + right) / 2;

int cmp = products[mid].productName.compareToIgnoreCase(targetName);

if (cmp == 0) return products[mid];

else if (cmp < 0) left = mid + 1;

else right = mid - 1;

}

return null;

}

}

***SearchTest.java***

import java.util.Arrays;

import java.util.Comparator;

public class SearchTest {

public static void main(String[] args) {

Product[] products = {

new Product(1, "Laptop", "Electronics"),

new Product(2, "Phone", "Electronics"),

new Product(3, "Shoes", "Fashion"),

new Product(4, "Watch", "Accessories"),

new Product(5, "Book", "Stationery")

};

// Linear Search

Product result1 = ProductSearch.linearSearch(products, "Watch");

System.out.println("Linear Search Result: " + result1);

// Sort array before Binary Search

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

// Binary Search

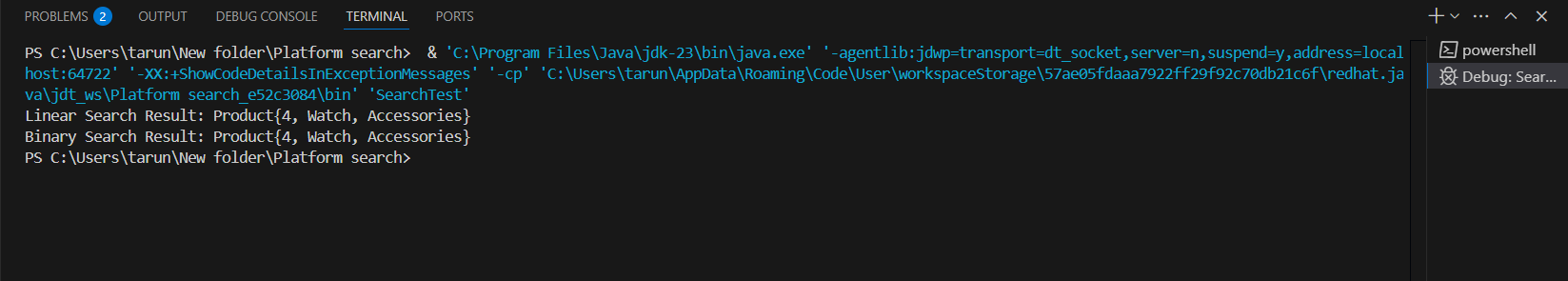
Product result2 = ProductSearch.binarySearch(products, "Watch");

System.out.println("Binary Search Result: " + result2);

}

}

**Output**

****