**E-commerce Platform Search Function**

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 "[" + productId + ", " + productName + ", " + category + "]";

}

}

----

import java.util.Arrays;

import java.util.Comparator;

public class SearchExample {

public static Product linearSearch(Product[] products, int targetId) {

for (Product p : products) {

if (p.productId == targetId) {

return p;

}

}

return null;

}

public static Product binarySearch(Product[] products, int targetId) {

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

while (left <= right) {

int mid = (left + right) / 2;

if (products[mid].productId == targetId) {

return products[mid];

} else if (products[mid].productId < targetId) {

left = mid + 1;

} else {

right = mid - 1;

}

}

return null;

}

public static void main(String[] args) {

Product[] products = {

new Product(104, "Headphones", "Electronics"),

new Product(101, "Shampoo", "Personal Care"),

new Product(105, "Mouse", "Electronics"),

new Product(102, "Notebook", "Stationery"),

new Product(103, "Pen", "Stationery")

};

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

Product result1 = linearSearch(products, 105);

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

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

Arrays.sort(products, Comparator.comparingInt(p -> p.productId));

Product result2 = binarySearch(products, 105);

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

}

}