**ECOMMERCE CODE**

class Product {

int productId;

String productName;

String category;

Product(int id, String name, String cat) {

productId = id;

productName = name;

category = cat;

}

public String toString() {

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

}

}

class EcommerceSearch {

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

for (int i = 0; i < products.length; i++) {

if (products[i].productId == searchId) {

return products[i];

}

}

return null;

}

public static Product binarySearch(Product[] sortedProducts, int searchId) {

int left = 0;

int right = sortedProducts.length - 1;

while (left <= right) {

int mid = (left + right) / 2;

int midId = sortedProducts[mid].productId;

if (midId == searchId) {

return sortedProducts[mid];

} else if (midId < searchId) {

left = mid + 1;

} else {

right = mid - 1;

}

}

return null;

}

public static void main(String[] args) {

Product[] products = {

new Product(3, "TV", "Electronics"),

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

new Product(4, "Keyboard", "Electronics"),

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

};

Product[] sortedProducts = {

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

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

new Product(3, "TV", "Electronics"),

new Product(4, "Keyboard", "Electronics")

};

System.out.println("Trying Linear Search for Product ID 4:");

Product found1 = linearSearch(products, 4);

if (found1 != null) {

System.out.println("Found: " + found1);

} else {

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

}

System.out.println("\nTrying Binary Search for Product ID 4:");

Product found2 = binarySearch(sortedProducts, 4);

if (found2 != null) {

System.out.println("Found: " + found2);

} else {

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

}

}

}

**OUTPUT**

