**BinarySearch.java**

import java.util.Arrays;

import java.util.Comparator;

public class BinarySearch {

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

Arrays.sort(products, Comparator.comparing(Product::getProductName));

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

while (left <= right) {

int mid = (left + right) / 2;

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

if (compare == 0) {

return products[mid];

} else if (compare < 0) {

left = mid + 1;

} else {

right = mid - 1;

}

}

return null;

}

}

**LinearSearch.java**

public class LinearSearch {

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

for (Product product : products) {

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

return product;

}

}

return null;

}

}

**Product.java**

public class Product {

private int productId;

private String productName;

private String category;

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

this.productId = productId;

this.productName = productName;

this.category = category;

}

public int getProductId() { return productId; }

public String getProductName() { return productName; }

public String getCategory() { return category; }

@Override

public String toString() {

return "Product{" +

"ID=" + productId +

", Name='" + productName + '\'' +

", Category='" + category + '\'' +

'}';

}

}

**Main.java**

public class Main {

public static void main(String[] args) {

Product[] products = {

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

new Product(2, "Shoes", "Footwear"),

new Product(3, "Watch", "Accessories"),

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

new Product(5, "T-shirt", "Clothing")

};

System.out.println(" Linear Search for 'Watch':");

Product linearResult = LinearSearch.searchByName(products, "Watch");

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

System.out.println("\n Binary Search for 'Watch':");

Product binaryResult = BinarySearch.searchByName(products, "Watch");

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

}

}

OUTPUT :

