**Exercise 2: 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;

}

public String toString() {

return "[ID=" + productId + ", Name=" + productName + ", Category=" + category + "]";

}

}

**Search.java**

import java.util.\*;

public class Search {

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

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

if (products[i].productName.equalsIgnoreCase(name)) {

return products[i];

}

}

return null;

}

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

int low = 0;

int high = products.length - 1;

while (low <= high) {

int mid = (low + high) / 2;

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

if (compare == 0) {

return products[mid];

} else if (compare < 0) {

low = mid + 1;

} else {

high = mid - 1;

}

}

return null;

}

}

**Main.java**

public class Main {

public static void main(String[] args) {

Product[] products = {

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

new Product(2, "Saree", "Clothing"),

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

new Product(4, "Shoes", "Footwear"),

new Product(5, "Airpods", "Electronics")

};

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

Product result1 = Search.linearSearch(products, "Saree");

System.out.println(result1+"\n");

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

Product result2 = Search.binarySearch(products, "Saree");

System.out.println(result2);

}

}

**Output**

