**Exercise 2: E-commerce Platform Search Function**

**LINEAR SEARCH:**

* Checks each element one by one from start to end.
* It should be used when the data is already sorted and the lists are small and simple.

**CODE:**

package emc;

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 productId + " - " + productName + " - " + category;

}

}

public class Test {

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

for(Product p:products) {

if(p.productName.equals(name)) {

return p;

}

}

return null;

}

public static void main(String[] args) {

Product[]products= {

new Product(101,"iPhone","Electronics"),

new Product(102,"Laptop","Electronics"),

new Product(103,"Shoes","Fashion"),

new Product(104,"Pencil","Stationary"),

new Product(105,"Salt","Grocery")

};

String name ="iPhone";

Product result = *linearsearch*(products,name);

if(result!=null) {

System.***out***.println("Product: " +result);

}

else {

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

}

}

}

**OUTPUT:**

Product: 101 - iPhone - Electronics

**BINARY SEARCH:**

* Divides list in half each time to find the item faster.
* It should be used only when the list is sorted.

**CODE:**

package emc;

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 productId + " - " + productName + " - " + category;

}

}

public class Tester {

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<-1) {

low = mid+1;

}

else {

high=mid-1;

}

}

return null;

}

public static void main(String[] args) {

Product[] products= {

new Product(101,"iPhone","Electronics"),

new Product(102,"Laptop","Electronics"),

new Product(103,"Shoes","Fashion"),

new Product(104,"Pencil","Stationary"),

new Product(105,"Salt","Grocery")

};

String name="iPhone";

Product result = *binarySearch*(products,name);

if(result!=null) {

System.***out***.println("Product: "+result);

}

else {

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

}

}

}

**OUTPUT:**

Product: 101 - iPhone - Electronics