Exercise 1: Inventory Management System

Code:

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 Main {  
 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;  
 int right = products.length - 1;  
  
 while (left <= right) {  
 int mid = left + (right - left) / 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(101, "Phone", "Electronics"),  
 new Product(203, "Shoes", "Fashion"),  
 new Product(305, "Laptop", "Electronics"),  
 new Product(402, "Book", "Education"),  
 new Product(120, "T-shirt", "Fashion"),  
 new Product(333,"Desktop","Electronics"),  
 new Product(334,"Films","Entertainment"),  
 new Product(337,"Macbook","Electronics"),  
 new Product(388,"Formal Shirt","Fashion")  
 };  
 int targetId = 388;  
  
  
 System.*out*.println("=== Linear Search ===");  
 long startTime = System.*nanoTime*();  
 Product foundLinear = *linearSearch*(products, targetId);  
 long endTime = System.*nanoTime*();  
 System.*out*.println("Found: " + foundLinear);  
 System.*out*.println("Time (ns): " + (endTime - startTime));  
  
  
 Arrays.*sort*(products, Comparator.*comparingInt*(p -> p.productId));  
 System.*out*.println("\n=== Binary Search ===");  
 startTime = System.*nanoTime*();  
 Product foundBinary = *binarySearch*(products, targetId);  
 endTime = System.*nanoTime*();  
 System.*out*.println("Found: " + foundBinary);  
 System.*out*.println("Time (ns): " + (endTime - startTime));  
 }  
}

Output:

A black screen with a black border

AI-generated content may be incorrect.

A screen shot of a computer

AI-generated content may be incorrect.