**EXERCISE 1:**

**INVENTORY MANAGEMENT SYSTEM**

import java.util.HashMap;  
import java.util.Map;  
  
class Product {  
 private String productId;  
 private String productName;  
 private int quantity;  
 private double price;  
  
 public Product(String productId, String productName, int quantity, double price) {  
 this.productId = productId;  
 this.productName = productName;  
 this.quantity = quantity;  
 this.price = price;  
 }  
  
 // Getters and setters  
 public String getProductId() { return productId; }  
 public String getProductName() { return productName; }  
 public int getQuantity() { return quantity; }  
 public double getPrice() { return price; }  
  
 public void setProductName(String productName) { this.productName = productName; }  
 public void setQuantity(int quantity) { this.quantity = quantity; }  
 public void setPrice(double price) { this.price = price; }  
  
 @Override  
 public String toString() {  
 return "Product{" +  
 "productId='" + productId + '\'' +  
 ", productName='" + productName + '\'' +  
 ", quantity=" + quantity +  
 ", price=" + price +  
 '}';  
 }  
}  
  
class InventoryManager {  
 private Map<String, Product> inventory;  
  
 public InventoryManager() {  
 inventory = new HashMap<>();  
 }  
  
 public void addProduct(Product product) {  
 inventory.put(product.getProductId(), product);  
 }  
  
 public void updateProduct(String productId, String productName, int quantity, double price) {  
 Product product = inventory.get(productId);  
 if (product != null) {  
 product.setProductName(productName);  
 product.setQuantity(quantity);  
 product.setPrice(price);  
 }  
 }  
  
 public void deleteProduct(String productId) {  
 inventory.remove(productId);  
 }  
  
 public Product getProduct(String productId) {  
 return inventory.get(productId);  
 }  
  
 public void displayInventory() {  
 for (Product product : inventory.values()) {  
 System.*out*.println(product);  
 }  
 }  
}  
  
public class InventoryManagementSystem {  
 public static void main(String[] args) {  
 InventoryManager manager = new InventoryManager();  
  
 // Add products  
 manager.addProduct(new Product("1", "Product A", 10, 99.99));  
 manager.addProduct(new Product("2", "Product B", 5, 199.99));  
  
 // Display inventory  
 System.*out*.println("Inventory after adding products:");  
 manager.displayInventory();  
  
 // Update product  
 manager.updateProduct("1", "Product A+", 15, 109.99);  
  
 // Display inventory  
 System.*out*.println("Inventory after updating a product:");  
 manager.displayInventory();  
  
 // Delete product  
 manager.deleteProduct("2");  
  
 // Display inventory  
 System.*out*.println("Inventory after deleting a product:");  
 manager.displayInventory();  
 }  
}