**Exercise 1: Inventory Management System**

**Scenario:**

You are developing an inventory management system for a warehouse. Efficient data storage and retrieval are crucial.

package dsinventory;

public class Product {

int productId;

String productName;

int quantity;

double price;

public Product(int productId, String productName, int quantity, double price) {

this.productId = productId;

this.productName = productName;

this.quantity = quantity;

this.price = price;

}

*@Override*

public String toString() {

return "ID: " + productId + ", Name: " + productName +

", Quantity: " + quantity + ", Price: " + price;

}

}

package dsinventory;

import java.util.HashMap;

public class Inventory {

HashMap<Integer, Product> inventory = new HashMap<>();

public void addProduct(Product product) {

if (inventory.containsKey(product.productId)) {

System.***out***.println("Product already exists with ID: " + product.productId);

} else {

inventory.put(product.productId, product);

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

}

}

public void updateProduct(int productId, int newQuantity, double newPrice) {

if (inventory.containsKey(productId)) {

Product p = inventory.get(productId);

p.quantity = newQuantity;

p.price = newPrice;

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

} else {

System.***out***.println("Product not found with ID: " + productId);

}

}

public void deleteProduct(int productId) {

if (inventory.containsKey(productId)) {

Product removed = inventory.remove(productId);

System.***out***.println("Deleted product: " + removed);

} else {

System.***out***.println("Product not found with ID: " + productId);

}

}

public void displayInventory() {

if (inventory.isEmpty()) {

System.***out***.println("Inventory is empty.");

} else {

for (Product p : inventory.values()) {

System.***out***.println(p);

}

}

}

public static void main(String[] args) {

Inventory manager = new Inventory();

Product p1 = new Product(1, "Laptop", 10, 59999.99);

Product p2 = new Product(2, "Mouse", 50, 499.50);

Product p3 = new Product(3, "Keyboard", 30, 999.00);

manager.addProduct(p1);

manager.addProduct(p2);

manager.addProduct(p3);

manager.updateProduct(2, 60, 479.00);

manager.deleteProduct(3);

System.***out***.println("Product in the inventory");

manager.displayInventory();

}

}