**Exercise 1: Inventory Management System**

**Code:**

import java.util.HashMap;

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;

    }

    public String getProductId() { return productId; }

    public String getProductName() { return productName; }

    public int getQuantity() { return quantity; }

    public double getPrice() { return price; }

    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 +

   '}';

    }

}

public class InventoryManager {

    private HashMap<String, Product> inventory;

    public InventoryManager() {

        inventory = new HashMap<>();

    }

    public void addProduct(Product product) {

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

            System.out.println("Product ID already exists. Use updateProduct instead.");

        } else {

            inventory.put(product.getProductId(), product);

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

        }

    }

    public void updateProduct(String productId, int quantity, double price) {

        Product product = inventory.get(productId);

        if (product != null) {

            product.setQuantity(quantity);

            product.setPrice(price);

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

        } else {

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

        }

    }

    public void deleteProduct(String productId) {

        Product removed = inventory.remove(productId);

        if (removed != null) {

            System.out.println("Product removed: " + removed);

        } else {

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

        }

    }

    public void listProducts() {

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

            System.out.println(product);

        }

    }

    public static void main(String[] args) {

        InventoryManager manager = new InventoryManager();

        Product p1 = new Product("P001", "Laptop", 10, 50000);

        Product p2 = new Product("P002", "Mouse", 50, 500);

        manager.addProduct(p1);

        manager.addProduct(p2);

        manager.listProducts();

        manager.updateProduct("P001", 12, 48000);

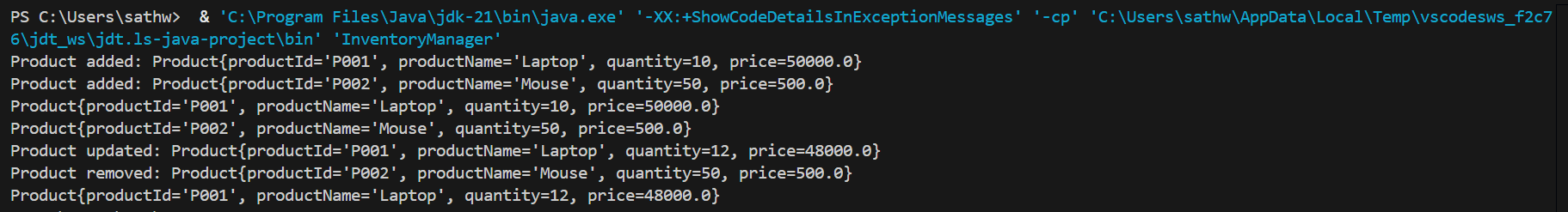
        manager.deleteProduct("P002");

        manager.listProducts();

    }

}

**Output:**

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