**MODULE-2**

**DATA STRUCTURE AND ALGORITHM**

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**EXERCISE** **1: Inventory Management System**

**Product.java**

package inventory;

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 productId + " | " + productName + " | Qty: " + quantity + " | Price: ₹" + price;

}

}

**InventoryManager.java**

package inventory;

import java.util.HashMap;

public class InventoryManager {

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

public void addProduct(Product product) {

inventory.put(product.productId, product);

}

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

Product product = inventory.get(productId);

if (product != null) {

product.quantity = newQuantity;

product.price = newPrice;

return true;

}

return false;

}

public boolean deleteProduct(int productId) {

return inventory.remove(productId) != null;

}

public void displayInventory() {

if (inventory.isEmpty()) {

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

} else {

inventory.values().forEach(System.out::println);

}

}

}

**Main.java**

package inventory;

import java.util.Scanner;

public class Main {

public static void main(String[] args) {

InventoryManager manager = new InventoryManager();

Scanner sc = new Scanner(System.in);

int choice;

do {

System.out.println("\n--- Inventory Menu ---");

System.out.println("1. Add Product");

System.out.println("2. Update Product");

System.out.println("3. Delete Product");

System.out.println("4. Show Inventory");

System.out.println("5. Exit");

System.out.print("Choose an option: ");

choice = sc.nextInt();

switch (choice) {

case 1:

System.out.print("Product ID: ");

int id = sc.nextInt();

sc.nextLine(); // consume newline

System.out.print("Product Name: ");

String name = sc.nextLine();

System.out.print("Quantity: ");

int qty = sc.nextInt();

System.out.print("Price: ");

double price = sc.nextDouble();

manager.addProduct(new Product(id, name, qty, price));

break;

case 2:

System.out.print("Product ID to update: ");

int updateId = sc.nextInt();

System.out.print("New Quantity: ");

int newQty = sc.nextInt();

System.out.print("New Price: ");

double newPrice = sc.nextDouble();

boolean updated = manager.updateProduct(updateId, newQty, newPrice);

System.out.println(updated ? "Updated successfully." : "Product not found.");

break;

case 3:

System.out.print("Product ID to delete: ");

int deleteId = sc.nextInt();

boolean deleted = manager.deleteProduct(deleteId);

System.out.println(deleted ? "Deleted successfully." : "Product not found.");

break;

case 4:

manager.displayInventory();

break;

case 5:

System.out.println("Exiting...");

break;

default:

System.out.println("Invalid option.");

}

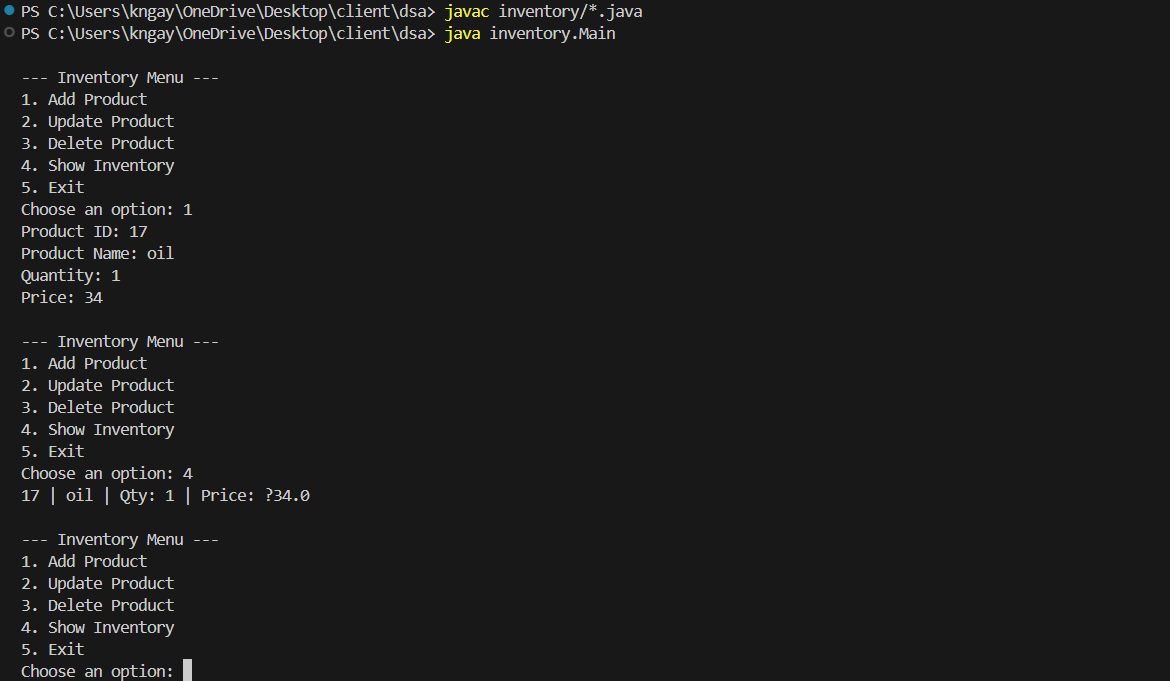
} while (choice != 5);

sc.close();

}

}

**OUTPUT:**

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