Main.java

import java.util.Scanner;  
  
public class Main {  
 public static void main(String[] args) {  
 Scanner sc = new Scanner(System.*in*);  
  
 while (true) { // ✅ Keeps the program running until user exits  
 System.*out*.println("\n===== Electricity Billing System =====");  
 System.*out*.println("1. Add New Customer and Generate Bill");  
 System.*out*.println("2. View All Saved Bills");  
 System.*out*.println("3. Search Bill by Customer ID");  
 System.*out*.println("4. Delete a Bill by Customer ID");  
 System.*out*.println("5. Exit");  
 System.*out*.print("Enter your choice: ");  
  
 // ✅ Check if user enters a valid number  
 if (!sc.hasNextInt()) {  
 System.*out*.println("❌ Invalid input! Please enter a number between 1 and 5.");  
 sc.next(); // Consume invalid input  
 continue;  
 }  
  
 int choice = sc.nextInt();  
 sc.nextLine(); // Fix scanner issue  
  
 if (choice == 1) {  
 // ✅ Take user input for customer details  
 System.*out*.print("Enter Customer Name: ");  
 String name = sc.nextLine();  
  
 System.*out*.print("Enter Customer Address: ");  
 String address = sc.nextLine();  
  
 System.*out*.print("Enter Customer ID: ");  
 int customerID = sc.nextInt();  
 sc.nextLine(); // Fix scanner issue  
  
 System.*out*.print("Enter Units Consumed: ");  
 int units = sc.nextInt();  
  
 // ✅ Create customer object  
 Customer customer = new Customer(name, address, customerID, units);  
  
 // ✅ Display customer and bill details  
 System.*out*.println("\nElectricity Bill Details:");  
 customer.displayCustomerInfo();  
  
 // ✅ Save bill to file  
 BillManager.*saveBillToFile*(customer);  
 }  
 else if (choice == 2) {  
 // ✅ Read and display saved bills  
 BillManager.*readBillsFromFile*();  
 }  
 else if (choice == 3) {  
 // ✅ Search for a bill by Customer ID  
 System.*out*.print("Enter Customer ID to search: ");  
 int searchID = sc.nextInt();  
 BillManager.*searchBillByID*(searchID);  
 }  
 else if (choice == 4) {  
 // ✅ Delete a bill by Customer ID  
 System.*out*.print("Enter Customer ID to delete: ");  
 int deleteID = sc.nextInt();  
 BillManager.*deleteBillByID*(deleteID); // ✅ Calls deleteBillByID()  
 }  
 else if (choice == 5) {  
 // ✅ Exit the program  
 System.*out*.println("Exiting Electricity Billing System. Thank you!");  
 break;  
 }  
 else {  
 System.*out*.println("❌ Invalid choice! Please enter a number between 1 and 5.");  
 }  
 }  
  
 sc.close();  
 }  
}

Customer.java

import java.util.Scanner;  
  
public class Main {  
 public static void main(String[] args) {  
 Scanner sc = new Scanner(System.*in*);  
  
 while (true) { // ✅ Keeps the program running until user exits  
 System.*out*.println("\n===== Electricity Billing System =====");  
 System.*out*.println("1. Add New Customer and Generate Bill");  
 System.*out*.println("2. View All Saved Bills");  
 System.*out*.println("3. Search Bill by Customer ID");  
 System.*out*.println("4. Delete a Bill by Customer ID");  
 System.*out*.println("5. Exit");  
 System.*out*.print("Enter your choice: ");  
  
 // ✅ Check if user enters a valid number  
 if (!sc.hasNextInt()) {  
 System.*out*.println("❌ Invalid input! Please enter a number between 1 and 5.");  
 sc.next(); // Consume invalid input  
 continue;  
 }  
  
 int choice = sc.nextInt();  
 sc.nextLine(); // Fix scanner issue  
  
 if (choice == 1) {  
 // ✅ Take user input for customer details  
 System.*out*.print("Enter Customer Name: ");  
 String name = sc.nextLine();  
  
 System.*out*.print("Enter Customer Address: ");  
 String address = sc.nextLine();  
  
 System.*out*.print("Enter Customer ID: ");  
 int customerID = sc.nextInt();  
 sc.nextLine(); // Fix scanner issue  
  
 System.*out*.print("Enter Units Consumed: ");  
 int units = sc.nextInt();  
  
 // ✅ Create customer object  
 Customer customer = new Customer(name, address, customerID, units);  
  
 // ✅ Display customer and bill details  
 System.*out*.println("\nElectricity Bill Details:");  
 customer.displayCustomerInfo();  
  
 // ✅ Save bill to file  
 BillManager.*saveBillToFile*(customer);  
 }  
 else if (choice == 2) {  
 // ✅ Read and display saved bills  
 BillManager.*readBillsFromFile*();  
 }  
 else if (choice == 3) {  
 // ✅ Search for a bill by Customer ID  
 System.*out*.print("Enter Customer ID to search: ");  
 int searchID = sc.nextInt();  
 BillManager.*searchBillByID*(searchID);  
 }  
 else if (choice == 4) {  
 // ✅ Delete a bill by Customer ID  
 System.*out*.print("Enter Customer ID to delete: ");  
 int deleteID = sc.nextInt();  
 BillManager.*deleteBillByID*(deleteID); // ✅ Calls deleteBillByID()  
 }  
 else if (choice == 5) {  
 // ✅ Exit the program  
 System.*out*.println("Exiting Electricity Billing System. Thank you!");  
 break;  
 }  
 else {  
 System.*out*.println("❌ Invalid choice! Please enter a number between 1 and 5.");  
 }  
 }  
  
 sc.close();  
 }  
}

BillManager.java

mport java.io.\*;  
import java.util.Scanner;  
  
public class BillManager {  
 // ✅ Save bill to a file  
 public static void saveBillToFile(Customer customer) {  
 try (FileWriter writer = new FileWriter("bills.txt", true)) {  
 writer.write("Customer ID: " + customer.customerID + ", Name: " + customer.name + ", Address: " +  
 customer.address + ", Units Consumed: " + customer.unitsConsumed +  
 ", Total Bill: $" + customer.calculateBill() + "\n");  
 System.*out*.println("✅ Bill saved successfully in 'bills.txt'!");  
 } catch (IOException e) {  
 System.*out*.println("❌ Error saving bill: " + e.getMessage());  
 }  
 }  
  
 // ✅ Read and display all saved bills  
 public static void readBillsFromFile() {  
 File file = new File("bills.txt");  
  
 if (!file.exists()) {  
 System.*out*.println("❌ No bills found! The file is empty.");  
 return;  
 }  
  
 try (Scanner fileReader = new Scanner(file)) {  
 System.*out*.println("\n===== Saved Bills =====");  
 while (fileReader.hasNextLine()) {  
 System.*out*.println(fileReader.nextLine());  
 }  
 } catch (IOException e) {  
 System.*out*.println("❌ Error reading file: " + e.getMessage());  
 }  
 }  
  
 // ✅ Search for a bill by Customer ID (Fixed to search correctly)  
 public static void searchBillByID(int searchID) {  
 File file = new File("bills.txt");  
  
 if (!file.exists()) {  
 System.*out*.println("❌ No bills found!");  
 return;  
 }  
  
 try (Scanner fileReader = new Scanner(file)) {  
 boolean found = false;  
  
 while (fileReader.hasNextLine()) {  
 String line = fileReader.nextLine();  
 // ✅ Now searches properly within the stored bill format  
 if (line.contains("Customer ID: " + searchID)) {  
 System.*out*.println("\n✅ Bill Found: " + line);  
 found = true;  
 break;  
 }  
 }  
  
 if (!found) {  
 System.*out*.println("❌ No bill found for Customer ID: " + searchID);  
 }  
 } catch (IOException e) {  
 System.*out*.println("❌ Error searching file: " + e.getMessage());  
 }  
 }  
  
 // ✅ Delete a bill by Customer ID (Fixed deletion logic)  
 public static void deleteBillByID(int deleteID) {  
 File inputFile = new File("bills.txt");  
 File tempFile = new File("temp.txt");  
  
 if (!inputFile.exists()) {  
 System.*out*.println("❌ No bills found!");  
 return;  
 }  
  
 try (BufferedReader reader = new BufferedReader(new FileReader(inputFile));  
 BufferedWriter writer = new BufferedWriter(new FileWriter(tempFile))) {  
  
 String line;  
 boolean deleted = false;  
 while ((line = reader.readLine()) != null) {  
 // ✅ Now deletes correctly by checking if ID is inside the stored bill format  
 if (!line.contains("Customer ID: " + deleteID)) {  
 writer.write(line + System.*lineSeparator*());  
 } else {  
 deleted = true; // ✅ Mark that we deleted a bill  
 }  
 }  
  
 if (!deleted) {  
 System.*out*.println("❌ No bill found for Customer ID: " + deleteID);  
 if (!tempFile.delete()) {  
 System.*out*.println("❌ Warning: Could not delete temporary file.");  
 }  
 return;  
 }  
  
 // ✅ Check if delete() and renameTo() were successful  
 if (!inputFile.delete()) {  
 System.*out*.println("❌ Error: Could not delete the original file.");  
 return;  
 }  
  
 if (!tempFile.renameTo(inputFile)) {  
 System.*out*.println("❌ Error: Could not rename temp file.");  
 } else {  
 System.*out*.println("✅ Bill deleted successfully for Customer ID: " + deleteID);  
 }  
  
 } catch (IOException e) {  
 System.*out*.println("❌ Error deleting file: " + e.getMessage());  
 }  
 }  
}