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import java.io.FileWriter;
import java.io.OutputStream;
import java.io.PrintStream;
import java.io.PrintWriter;
import java.util.Scanner;

public class EBConsumer {
    public static void main(String[] args) throws Exception {
        // Setup log file and dual output
        FileWriter fw = new FileWriter("eb_log.txt", true); // Append mode
        PrintWriter logWriter = new PrintWriter(fw, true);
        PrintStream originalOut = System.out;

        // Redirect output to both console and file
        PrintStream logOut = new PrintStream(new OutputStream() {
            public void write(int b) {
                originalOut.write(b);
                logWriter.write(b);
            }
        }, true);
        System.setOut(logOut);

        // Run consumer logic
        Consumer c1 = new Consumer(logWriter);
        c1.inputs();
        c1.calculate();

        logWriter.close();
        fw.close();
    }
}

class Consumer {
    int c_no;
    String c_name;
    double prev_reading;
    double cur_reading;
    String c_type;
    double units;
    double amount = 0;

    PrintWriter logWriter;

    public Consumer(PrintWriter writer) {
        this.logWriter = writer;
    }

    public void inputs() {
        Scanner sc = new Scanner(System.in);

        System.out.print("Enter Consumer Number: ");
        if (sc.hasNextInt()) {
            c_no = sc.nextInt();
            sc.nextLine();
            logWriter.println("INPUT Consumer Number: " + c_no);
        } else {
            System.out.println("Consumer Number Should Be an Integer");
            sc.nextLine();
        }

        System.out.print("Enter Consumer Name: ");
        c_name = sc.nextLine();
        logWriter.println("INPUT Consumer Name: " + c_name);
        if (c_name.trim().isEmpty()) {
            System.out.println("Consumer Name Should Not Be Empty");
        }
    }
}
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System.out.print("Enter Previous Reading: ");
if (sc.hasNextDouble()) {
    prev_reading = sc.nextDouble();
    sc.nextLine();
    logWriter.println("INPUT Previous Reading: " + prev_reading);
    if (prev_reading < 0) {
        System.out.println("Reading Should Be a Positive Real Number");
    }
} else {
    System.out.println("Reading Should Be a Positive Real Number");
    sc.nextLine();
}

System.out.print("Enter Current Reading: ");
if (sc.hasNextDouble()) {
    cur_reading = sc.nextDouble();
    sc.nextLine();
    logWriter.println("INPUT Current Reading: " + cur_reading);
    if (cur_reading < 0) {
        System.out.println("Reading Should Be a Positive Real Number");
    } else if (cur_reading < prev_reading) {
        System.out.println("Current Reading cannot be less than Previous
Reading");
    }
} else {
    System.out.println("Reading Should Be a Positive Real Number");
    sc.nextLine();
}

System.out.print("Enter Type (commercial/domestic): ");
c_type = sc.nextLine();
logWriter.println("INPUT Type: " + c_type);
if (!(c_type.equalsIgnoreCase("commercial") ||
c_type.equalsIgnoreCase("domestic"))) {
    System.out.println("Consumer Type Must Be 'commercial' or 'domestic'");
}

units = cur_reading - prev_reading;
sc.close();
}

public void calculate() {
    if (c_type.equalsIgnoreCase("domestic")) {
        if (units <= 100) {
            amount = units * 1;
        } else if (units <= 200) {
            amount = 100 * 1 + (units - 100) * 2.5;
        } else if (units <= 500) {
            amount = 100 * 1 + 100 * 2.5 + (units - 200) * 4;
        } else {
            amount = 100 * 1 + 100 * 2.5 + 300 * 4 + (units - 500) * 6;
        }
    } else if (c_type.equalsIgnoreCase("commercial")) {
        if (units <= 100) {
            amount = units * 2;
        } else if (units <= 200) {
            amount = 100 * 2 + (units - 100) * 4.5;
        } else if (units <= 500) {
            amount = 100 * 2 + 100 * 4.5 + (units - 200) * 6;
        } else {
            amount = 100 * 2 + 100 * 4.5 + 300 * 6 + (units - 500) * 7;
        }
    } else {
        System.out.println("Invalid Type");
    }
}
```

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        return;
    }

    // Output bill
    System.out.println("\n--- Electricity Bill ---");
    System.out.println("Consumer Number: " + c_no);
    System.out.println("Consumer Name: " + c_name);
    System.out.println("Consumer Type: " + c_type);
    System.out.println("Units Consumed: " + units);
    System.out.println("Amount to Pay: " + amount);

    // Also log it explicitly (redundant, since System.out is already logging to file)
    logWriter.println("OUTPUT Units: " + units);
    logWriter.println("OUTPUT Amount: " + amount);
}
}
```

Enter Consumer Number: INPUT Consumer Number: 454454
Enter Consumer Name: INPUT Consumer Name: Siddharth
Enter Previous Reading: INPUT Previous Reading: 4569.0
Enter Current Reading: INPUT Current Reading: 4862.0
Enter Type (commercial/domestic): INPUT Type: domestic

--- Electricity Bill ---
Consumer Number: 454454
Consumer Name: Siddharth
Consumer Type: domestic
Units Consumed: 293.0
Amount to Pay: 722.0
OUTPUT Units: 293.0
OUTPUT Amount: 722.0

Enter Consumer Number: INPUT Consumer Number: 755486
Enter Consumer Name: INPUT Consumer Name: 10025
Enter Previous Reading: INPUT Previous Reading: 12589.0
Enter Current Reading: INPUT Current Reading: 14859.0
Enter Type (commercial/domestic): INPUT Type: comercial
Consumer Type Must Be 'commercial' or 'domestic'
Invalid Type

Enter Consumer Number: INPUT Consumer Number: 755486
Enter Consumer Name: INPUT Consumer Name: IBM
Enter Previous Reading: INPUT Previous Reading: 10025.0
Enter Current Reading: INPUT Current Reading: 12589.0
Enter Type (commercial/domestic): INPUT Type: commercial

--- Electricity Bill ---
Consumer Number: 755486
Consumer Name: IBM
Consumer Type: commercial
Units Consumed: 2564.0
Amount to Pay: 16898.0
OUTPUT Units: 2564.0
OUTPUT Amount: 16898.0

Enter Consumer Number: INPUT Consumer Number: 456923
Enter Consumer Name: INPUT Consumer Name: ABC TEXTILES
Enter Previous Reading: INPUT Previous Reading: 10025.0
Enter Current Reading: INPUT Current Reading: 9096.0
Current Reading cannot be less than Previous Reading

Enter Consumer Number: Consumer Number Should Be an Integer
Enter Consumer Name: INPUT Consumer Name: 4454
Enter Previous Reading: INPUT Previous Reading: 5421.0
Enter Current Reading: Reading Should Be a Positive Real Number
Enter Type (commercial/domestic): INPUT Type: commercial
Consumer Type Must Be 'commercial' or 'domestic'
Invalid Type