CODE:

```
import java.io.FileOutputStream;
import java.io.PrintStream;
import java.util.Scanner;

public class ex1 {
    public static class electricitybill {
        int c_no;
        String c_name;
        int p_monthreading;
        int c_monthreading;
        String type_eb;
        double bill_amount;
        int units;
        PrintStream console = System.out;

        public void input() {
            Scanner inp = new Scanner(System.in);

            while (true) {
                console.println("Enter the consumer number:");
                if (inp.hasNextInt()) {
                    c_no = inp.nextInt();
                    System.out.println("Consumer Number: " + c_no);
                    if (c_no >= 0) break;
                    else console.println("Consumer number cannot be negative.");
                } else {
                    console.println("Invalid input. Please enter a number.");
```

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        inp.next();
    }
}
inp.nextLine();

console.println("Enter the consumer name:");
c_name = inp.nextLine();
System.out.println("Consumer Name: " + c_name);

while (true) {
    console.println("Enter the previous month reading:");
    if (inp.hasNextInt()) {
        p_monthreading = inp.nextInt();
        System.out.println("Previous Reading: " + p_monthreading);
        if (p_monthreading >= 0) break;
        else console.println("Previous reading cannot be negative.");
    } else {
        console.println("Invalid input. Please enter a number.");
        inp.next();
    }
}

while (true) {
    console.println("Enter the current month reading:");
    if (inp.hasNextInt()) {
        c_monthreading = inp.nextInt();
        System.out.println("Current Reading: " + c_monthreading);
        if (c_monthreading >= 0) {
```

```
                if (c_monthreading >= p_monthreading) break;
                else console.println("Current reading must be greater than or equal to previous reading.");
            } else console.println("Current reading cannot be negative.");
        } else {
            console.println("Invalid input. Please enter a number.");
            inp.next();
        }
    }
    inp.nextLine();

    while (true) {
        console.println("Enter the type of EB connection:");
        type_eb = inp.nextLine();
        System.out.println("EB Type: " + type_eb);
        if (type_eb != null && !type_eb.trim().isEmpty()) break;
        else console.println("EB Connection type cannot be empty.");
    }

    units = c_monthreading - p_monthreading;
    inp.close();
}

public void billing() {
    if (type_eb.equalsIgnoreCase("domestic")) {
        if (units <= 100) {
            bill_amount = units;
        } else if (units <= 200) {
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            bill_amount = 100 + ((units - 100) * 2.5);
        } else if (units < 500) {
            bill_amount = 100 + (100 * 2.5) + ((units - 200) * 4);
        } else {
            bill_amount = 100 + (100 * 2.5) + (300 * 4) + ((units - 500) * 6);
        }
    } else if (type_eb.equalsIgnoreCase("commercial")) {
        if (units <= 100) {
            bill_amount = units * 2;
        } else if (units <= 200) {
            bill_amount = 200 + ((units - 100) * 4.5);
        } else if (units < 500) {
            bill_amount = 200 + (100 * 4.5) + ((units - 200) * 6);
        } else {
            bill_amount = 200 + (100 * 4.5) + (300 * 6) + ((units - 500) * 7);
        }
    } else {
        System.out.println("Unknown EB connection type. No bill calculated.");
    }
  }

  public void display() {
    billing();
    System.out.println("");
    System.out.println("The electricity bill for the month is " + bill_amount + ".");
    System.out.println();
  }
}
```

```
    public static void main(String[] args) {
        try {
            PrintStream logStream = new PrintStream(new FileOutputStream("log.txt", true));
            System.setOut(logStream);
            System.setErr(logStream);

            electricitybill eb = new electricitybill();
            eb.input();
            eb.display();

        } catch (Exception e) {
            e.printStackTrace();
        }
    }
}
```

LOG FILE:

Enter the consumer number:

Consumer Number: 1

Enter the consumer name:

Consumer Name: rishie

Enter the previous month reading:

Previous Reading: 1234

Enter the current month reading:

Current Reading: 2345

Enter the type of EB connection:

EB Type: domestic

The electricity bill for the month is 5216.0.

Enter the consumer number:

Consumer Number: 2

Enter the consumer name:

Consumer Name: abcd

Enter the previous month reading:

Previous Reading: 2345

Enter the current month reading:

Current Reading: 5678

Enter the type of EB connection:

EB Type: domestic

The electricity bill for the month is 18548.0.

Enter the consumer number:

Consumer Number: 3

Enter the consumer name:

Consumer Name: xyz

Enter the previous month reading:

Previous Reading: 2345

Enter the current month reading:

Current Reading: 1234

Current reading must be greater than or equal to previous reading.

Enter the consumer number:

Consumer Number: 4

Enter the consumer name:

Consumer Name: rishie

Enter the previous month reading:

Previous Reading: 3424

Enter the current month reading:

Current Reading: -234

Current reading cannot be negative.

Enter the current month reading:

Current Reading: 24678

Enter the type of EB connection:

EB Type: commercial

The electricity bill for the month is 147728.0.

Enter the consumer number:

Consumer Number: 5

Enter the consumer name:

Consumer Name: sdjnvbikhb

Enter the previous month reading:

Previous Reading: 4534

Enter the current month reading:

Current Reading: 6244

Enter the type of EB connection:

EB Type: apeknv

Unknown EB connection type. No bill calculated.