

Dharmsinh Desai University



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**Department: Faculty of Management &
Information Science**

**Subject: Object Oriented Programming With
JAVA**

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Question – 1 : Electricity Cost Estimate

Write a console-based java program to estimate electricity bill for a device based on given user input. Take wattage of the device, number of usage hours/day from the user Steps to calculate cost:

- Multiply the device's wattage by the number of hours the appliance is used per day
- Divide by 1000
- Multiply by your kWh rate

For example, if you have a 150 watt television that you watch five hours per day, it consumes 750 watt-hours per day ($150 \times 5 = 750$). Divide 750 by 1000 to convert 750 watt-hours into 0.75 kWh ($750 \div 1000 = 0.75$). If your electricity rate is 70 paisa per kWh, that means it costs 525 Paisa per day to use your television ($0.75 \times 0.70 = 0.525$). That should account for about Rs. 15.75 of your monthly electric bill ($0.525 \times 30 = 15.75$).

Source Code :

```
import java.util.*;

class T_P1 {
    public static void main(String args[]) {
        double watt, hours, totupd;
        double kwatt, totbpd, finalbill;
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter Wattage of the device : ");
        watt = sc.nextDouble();
        System.out.println("Enter Hours/day You Are Using It : ");
        hours = sc.nextDouble();
        totupd = watt * hours;
        System.out.println("Total Usge Of Entered Dvice/per Is : " + totupd);
        kwatt = totupd / 1000;
```

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```
        System.out.println("Total Usge Of Entered Dvice/per In kWattIs : " + kwatt);
        totbpd = kwatt * 0.70;
        totbpd = Math.round(totbpd * 1000.0) / 1000.0;
        System.out.println("Total Bill For One Day Usage As 0.70/Kwatt : " + totbpd);
        finalbill = totbpd * 30;
        System.out.println("");
        System.out.println("");
        System.out.println("-----Final Bill-----");
        System.out.println("Total Bill Per Month For This Device : " + finalbill);
    }
}
```

Output :

```
PS D:\TW_sem-2\oopj> javac T_P1.java
PS D:\TW_sem-2\oopj> java T_P1.java
Enter Wattage of the device :
200
Enter Hours/day You Are Using It :
7
Total Usge Of Entered Dvice/per Is : 1400.0
Total Usge Of Entered Dvice/per In kWattIs : 1.4
Total Bill For One Day Usage As 0.70/Kwatt : 0.98

-----Final Bill-----
Total Bill Per Month For This Device : 29.4
PS D:\TW_sem-2\oopj> █
```

Question – 2 :

Write a java program using socket for client server communication.

Source Code :

→ CLIENT :

```
import java.net.*;
import java.io.*;

public class T_P2_CLIENT {
    public static void main(String[] args) throws IOException {
        try (Socket clientSocket = new Socket("localhost", 5000)) {
            System.out.println("Connected to server");

            try (BufferedReader in = new BufferedReader(new
InputStreamReader(clientSocket.getInputStream()));
                PrintWriter out = new PrintWriter(clientSocket.getOutputStream(), true);
                BufferedReader stdIn = new BufferedReader(new
InputStreamReader(System.in))) {

                String userInput;
                while ((userInput = stdIn.readLine()) != null) {
                    out.println(userInput);
                    System.out.println("Server response: " + in.readLine());
                }
            }
        } catch (IOException e) {
```

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```
        System.err.println("Error in client: " + e.getMessage());
    }
}
}
```

➔ SERVER :

```
import java.net.*;
import java.io.*;

public class T_P2_SERVER {
    public static void main(String[] args) throws IOException {
        try (ServerSocket serverSocket = new ServerSocket(5000)) {
            System.out.println("Server started");
            Socket clientSocket = serverSocket.accept();
            System.out.println("Client connected");

            try (BufferedReader in = new BufferedReader(new
InputStreamReader(clientSocket.getInputStream()));
                PrintWriter out = new PrintWriter(clientSocket.getOutputStream(), true))
            {

                String inputLine;
                while ((inputLine = in.readLine()) != null) {
                    System.out.println("Received message: " + inputLine);
                    out.println("Received message: " + inputLine);
                }
            }
        }
    }
}
```

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```
    } catch (IOException e) {  
        System.err.println("Error in server: " + e.getMessage());  
    }  
}  
}
```

Output :

First of all run the SERVER code after that run the CLIENT code. Then write down Message Client side ; the server will respond.

➔ Server

```
PS D:\TW_sem-2\oopj> javac T_P2_SERVER.java  
PS D:\TW_sem-2\oopj> java T_P2_SERVER.java  
Server started  
Client connected
```

```
PS D:\TW_sem-2\oopj> javac T_P2_SERVER.java  
PS D:\TW_sem-2\oopj> java T_P2_SERVER.java  
Server started  
Client connected  
Received message: hello
```

➔ Client

```
PS D:\TW_sem-2\oopj> javac T_P2_CLIENT.java  
PS D:\TW_sem-2\oopj> java T_P2_CLIENT.java  
Connected to server
```

```
PS D:\TW_sem-2\oopj> javac T_P2_CLIENT.java  
PS D:\TW_sem-2\oopj> java T_P2_CLIENT.java  
Connected to server  
hello  
Server response: Received message: hello  
□
```