Dharmsinh Desai University

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Subject: Object Oriented Programming With
JAVA

Full Name: Alyani Mamad   **Submitted to**
                                                              Prof.Vivek Vyas

Roll No: MA003   **MCA**
ID No : 22MAPBG029   **Department**

Student Sign: **Professor Sign:**

Object Oriented Programming With JAVA

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 x 5 = 750). Divide 750 by 1000 to convert 750 watt-hours into 0.75 kWh (750 ÷ 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 x 0.70 = 0.525). That should account for about Rs. 15.75 of your monthly electric bill (0.525 x 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 Divice/per Is : " + totupd);
        kwatt = totupd / 1000;
```

```java
System.out.println("Total Usge Of Entered Divice/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 Divice/per Is : 1400.0
Total Usge Of Entered Divice/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>
```

Object Oriented Programming With JAVA

Question – 2 :

Write a java program using socket for client server communication.

Source Code :

➔ CLIENT :

```java
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) {
```

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

➔ **SERVER :**

```java
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);
        }
      }
```

```
        } 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 Massage 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
```