Dharmsinh Desai University

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Department:

Faculty of Management and information science

Subject:

Object oriented Programming with Java

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Student sign. **Professor sign.**

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).

Code

```
import java.util.Scanner;

public class p1 {
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);

        System.out.print("Enter the wattage of the device: ");
        int wattage = input.nextInt();

        System.out.print("Enter the number of usage hours per day: ");
        int usageHours = input.nextInt();

        System.out.print("Enter your electricity rate in paisa per kWh: ");
        double rate = input.nextDouble()/100;

        double wattHours = wattage * usageHours;
        double kWh = wattHours / 1000;
        double costPerDay = kWh * rate;
        double costPerMonth = costPerDay * 30;
```

```
        System.out.printf("The estimated cost of using the device is Rs. %.2f per
day.%n", costPerDay);
        System.out.printf("The estimated cost of using the device is Rs. %.2f per
month.%n", costPerMonth);
        input.close();
    }
}
```

Output

```
PS C:\Drive\Study\MCA\DDU\SEM_2\OOPJ\Practicals\Term work> javac .\p1.java
PS C:\Drive\Study\MCA\DDU\SEM_2\OOPJ\Practicals\Term work> java p1
Enter the wattage of the device: 150
Enter the number of usage hours per day: 5
Enter your electricity rate in paisa per kWh: 70
The estimated cost of using the device is Rs. 0.52 per day.
The estimated cost of using the device is Rs. 15.75 per month.
```

2. Write a java program using socket for client server communication.

Code(server)

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

public class p2_server {
    public static void main(String[] args) throws IOException {
        // create a new ServerSocket on port 5500
        ServerSocket serverSocket = new ServerSocket(5500);
        // wait for a client to connect and accept the connection
        Socket socket = serverSocket.accept();
        // create input and output streams for communication with the client
        DataInputStream dataInputStream = new DataInputStream(socket.getInputStream());
        DataOutputStream dataOutputStream = new
DataOutputStream(socket.getOutputStream());
        // read an integer value from the client
        int value = dataInputStream.readInt();
        // process the value (here it is being squared)
        System.out.println("Received "+value);
        value = value * value;
        System.out.println("Sending "+value);
        // send the processed value back to the client
        dataOutputStream.writeInt(value);
        // close the socket and serverSocket
        socket.close();
```

```
        serverSocket.close();
    }
}
```

Code(client)

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

public class p2_client {
    public static void main(String[] args) throws IOException {
        // create a scanner object for reading input from the user
        Scanner scanner = new Scanner(System.in);
        // create a new socket to connect to the server at "localhost" on port 5500
        Socket socket = new Socket("localhost", 5500);
        // create input and output streams for communication with the server
        DataInputStream dataInputStream = new DataInputStream(socket.getInputStream());
        DataOutputStream dataOutputStream = new
DataOutputStream(socket.getOutputStream());
        // read an integer value from the user
        System.out.println("Enter a value: ");
        int value = scanner.nextInt();
        // send the value to the server
        dataOutputStream.writeInt(value);
        // receive the processed value from the server
        int result = dataInputStream.readInt();
        // print the result
        System.out.println("Result: " + result);
        // close the socket
        socket.close();
    }
}
```

Output

```
PS C:\Drive\Study\MCA\DDU\SEM_2\OOPJ\Practicals\Term work> javac .\p2_server.java
PS C:\Drive\Study\MCA\DDU\SEM_2\OOPJ\Practicals\Term work> java p2_server
Received 5
Sending 25
PS C:\Drive\Study\MCA\DDU\SEM_2\OOPJ\Practicals\Term work>
```

```
PS C:\Drive\Study\MCA\DDU\SEM_2\OOPJ\Practicals\Term work> javac .\p2_client.java
PS C:\Drive\Study\MCA\DDU\SEM_2\OOPJ\Practicals\Term work> java p2_client
Enter a value:
5
Result: 25
PS C:\Drive\Study\MCA\DDU\SEM_2\OOPJ\Practicals\Term work>
```