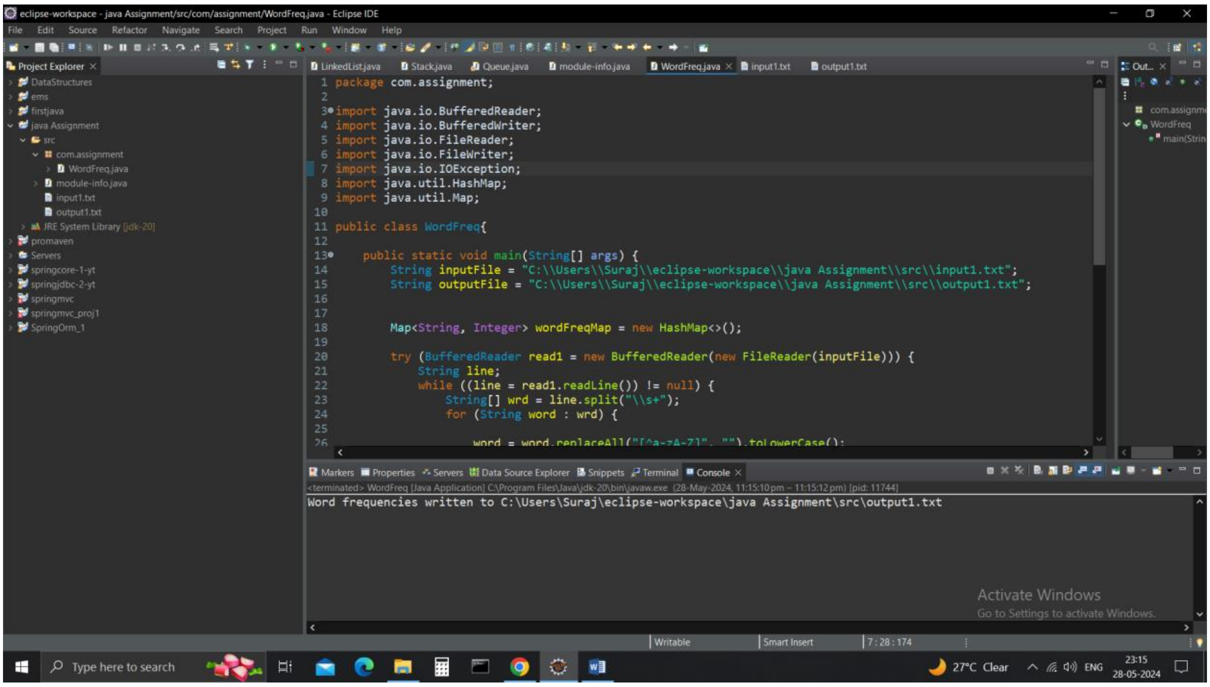
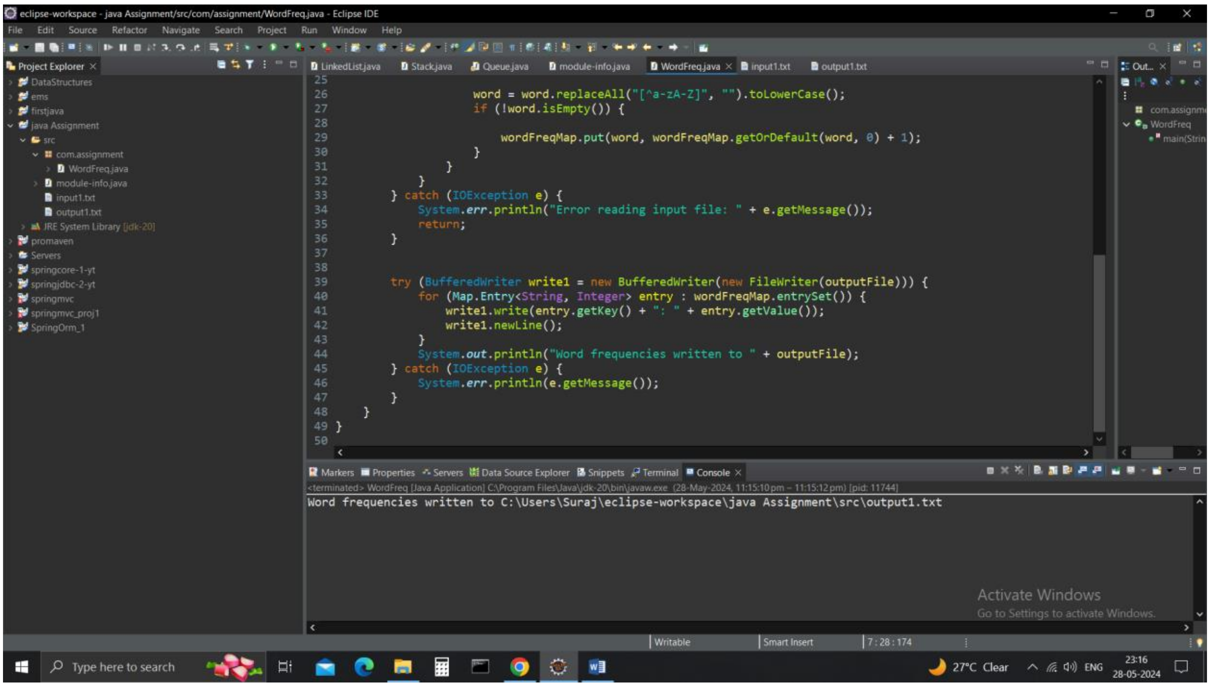
Task1:java IO Basics Write a program that reads a text file and counts the frequency of each word using FileReader and FileWriter


eclipse-workspace - java Assignment/src/com/assignment/WordFreq.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Project Explorer
LinkedList.java
Stack.java
Queue.java
module-info.java
WordFreq.java
input1.txt
output1.txt
Markers Properties Servers Data Source Explorer Snippets Terminal Console
Writable
Smart Insert
7 : 28 : 174
27°C Clear
23:15
28-05-2024

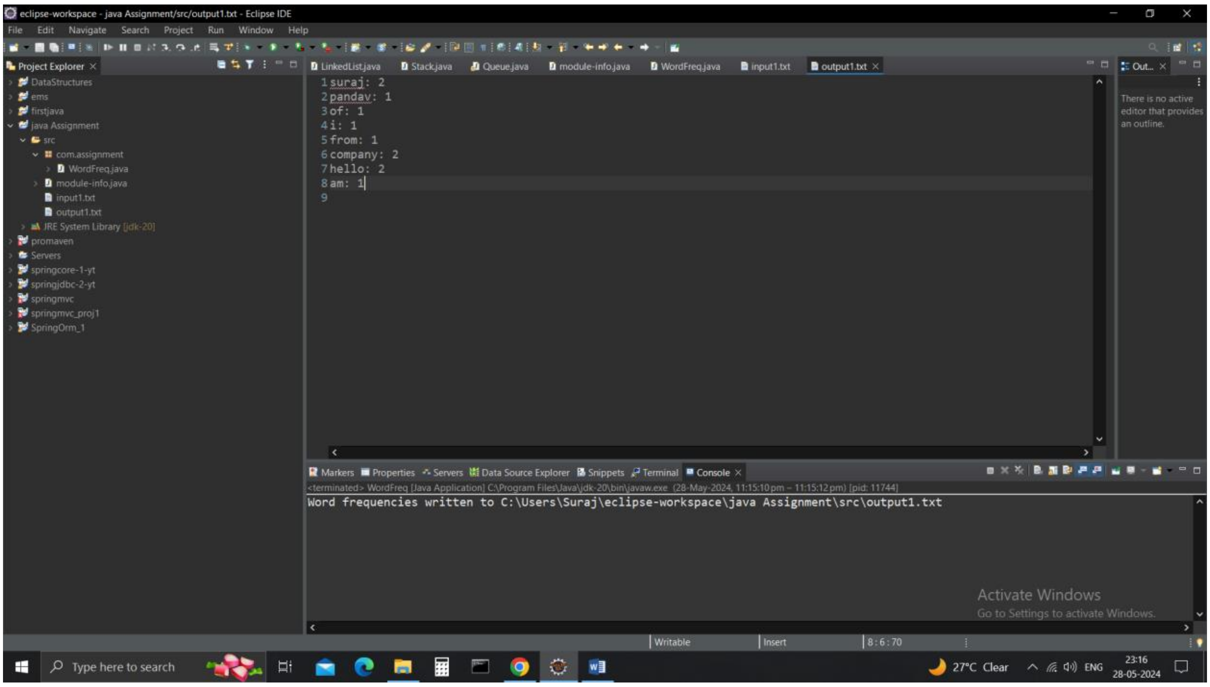
```java
package com.assignment;

import java.io.BufferedReader;
import java.io.BufferedWriter;
import java.io.FileReader;
import java.io.FileWriter;
import java.io.IOException;
import java.util.HashMap;
import java.util.Map;

public class WordFreq{

    public static void main(String[] args) {
        String inputFile = "C:\\Users\\Suraj\\eclipse-workspace\\java Assignment\\src\\input1.txt";
        String outputFile = "C:\\Users\\Suraj\\eclipse-workspace\\java Assignment\\src\\output1.txt";


        Map<String, Integer> wordFreqMap = new HashMap<>();

        try (BufferedReader read1 = new BufferedReader(new FileReader(inputFile))) {
            String line;
            while ((line = read1.readLine()) != null) {
                String[] wrd = line.split("\\s+");
                for (String word : wrd) {

                    word = word.replaceAll("[^a-zA-Z]", "").toLowerCase();
```

```
<terminated> WordFreq [Java Application] C:\Program Files\Java\jdk-20\bin\javaw.exe (28-May-2024, 11:15:10 pm – 11:15:12 pm) [pid: 11744]
Word frequencies written to C:\Users\Suraj\eclipse-workspace\java Assignment\src\output1.txt
```


eclipse-workspace - java Assignment/src/com/assignment/WordFreq.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Project Explorer
LinkedList.java
Stack.java
Queue.java
module-info.java
WordFreq.java
input1.txt
output1.txt
Markers Properties Servers Data Source Explorer Snippets Terminal Console
Writable
Smart Insert
7 : 28 : 174
27°C Clear
23:16
28-05-2024

```java

                    word = word.replaceAll("[^a-zA-Z]", "").toLowerCase();
                    if (!word.isEmpty()) {

                        wordFreqMap.put(word, wordFreqMap.getOrDefault(word, 0) + 1);
                    }
                }
            }
        } catch (IOException e) {
            System.err.println("Error reading input file: " + e.getMessage());
            return;
        }


        try (BufferedWriter write1 = new BufferedWriter(new FileWriter(outputFile))) {
            for (Map.Entry<String, Integer> entry : wordFreqMap.entrySet()) {
                write1.write(entry.getKey() + ": " + entry.getValue());
                write1.newLine();
            }
            System.out.println("Word frequencies written to " + outputFile);
        } catch (IOException e) {
            System.err.println(e.getMessage());
        }
    }
}

```

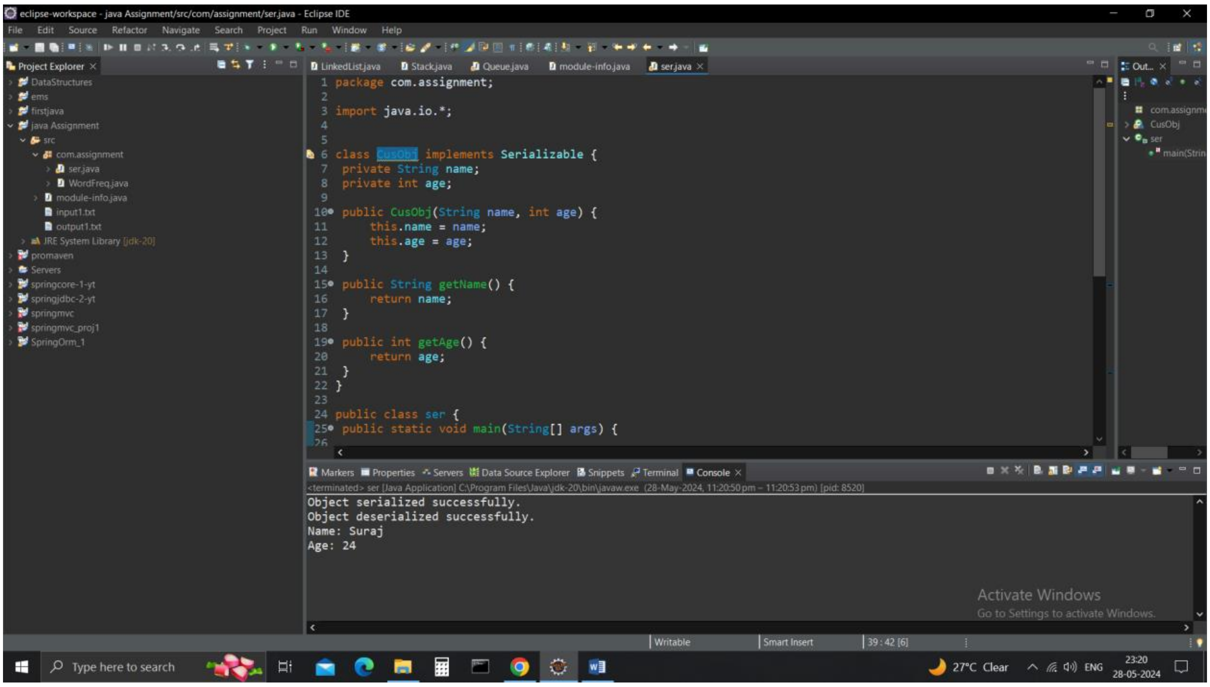
```
<terminated> WordFreq [Java Application] C:\Program Files\Java\jdk-20\bin\javaw.exe (28-May-2024, 11:15:10 pm – 11:15:12 pm) [pid: 11744]
Word frequencies written to C:\Users\Suraj\eclipse-workspace\java Assignment\src\output1.txt
```



```
suraj: 2
pandav: 1
of: 1
i: 1
from: 1
company: 2
hello: 2
am: 1
```

```
<terminated> WordFreq [Java Application] C:\Program Files\Java\jdk-20\bin\javaw.exe  (28-May-2024, 11:15:10 pm – 11:15:12 pm) [pid: 11744]
Word frequencies written to C:\Users\Suraj\eclipse-workspace\java Assignment\src\output1.txt
```

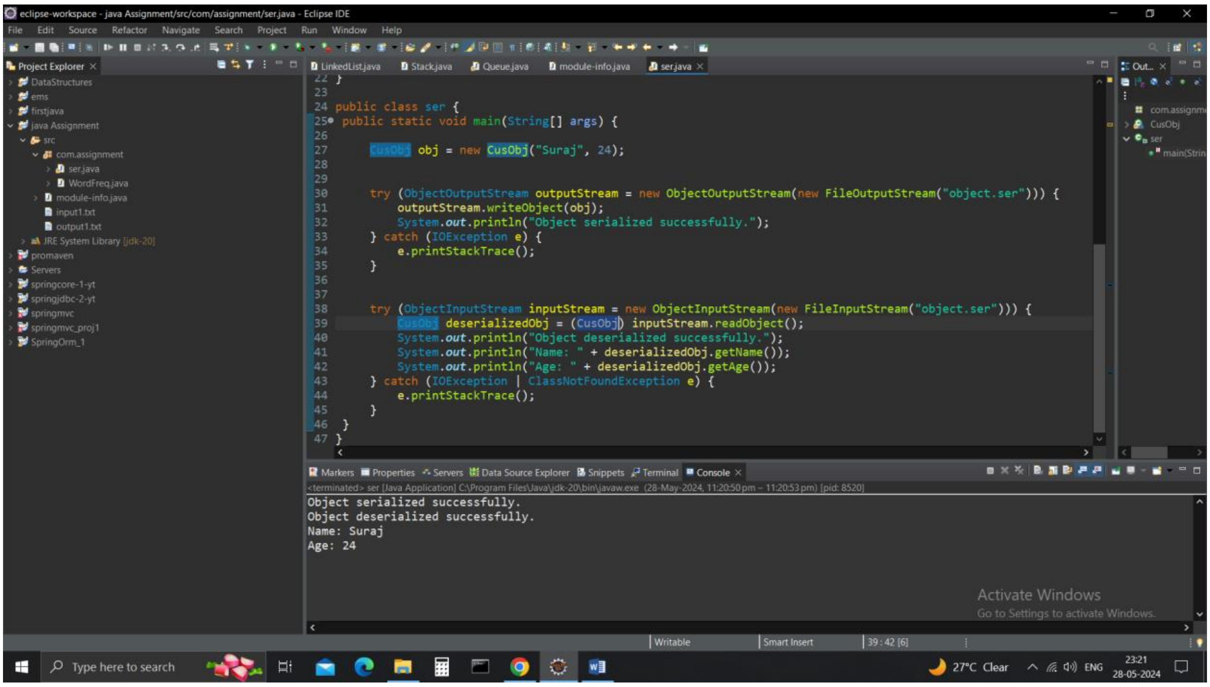
Task2:Serialize a custom object to a file and then deserialize it back to recover the object state.



eclipse-workspace - java Assignment/src/com/assignment/ser.java - Eclipse IDE
Project Explorer
LinkedList.java
Stack.java
Queue.java
module-info.java
ser.java

```java
package com.assignment;

import java.io.*;


class CusObj implements Serializable {
 private String name;
 private int age;

 public CusObj(String name, int age) {
     this.name = name;
     this.age = age;
 }

 public String getName() {
     return name;
 }

 public int getAge() {
     return age;
 }
}

public class ser {
 public static void main(String[] args) {
```

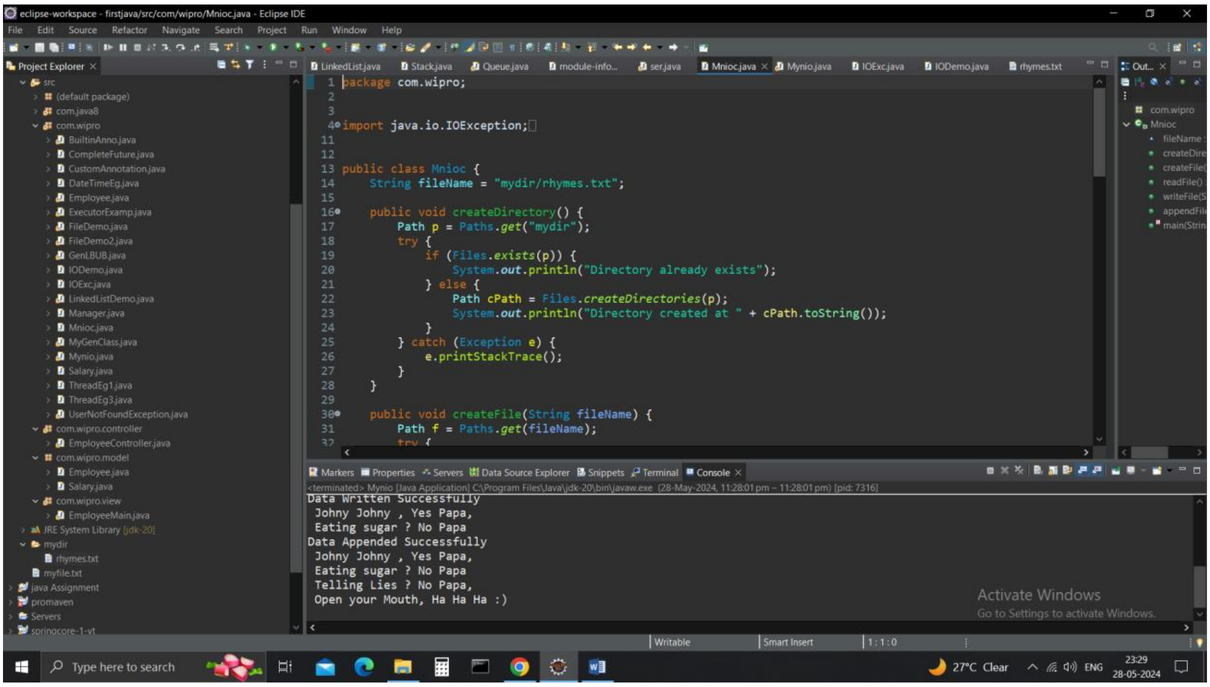
```
<terminated> ser [Java Application] C:\Program Files\Java\jdk-20\bin\javaw.exe  (28-May-2024, 11:20:50 pm – 11:20:53 pm) [pid: 8520]
Object serialized successfully.
Object deserialized successfully.
Name: Suraj
Age: 24
```


eclipse-workspace - java Assignment/src/com/assignment/ser.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Project Explorer
LinkedList.java Stack.java Queue.java module-info.java ser.java
Markers Properties Servers Data Source Explorer Snippets Terminal Console
Writable Smart Insert 39 : 42 [6]
Activate Windows
Go to Settings to activate Windows.
Type here to search
27°C Clear ENG 23:21 28-05-2024

```java
}

public class ser {
 public static void main(String[] args) {

    CusObj obj = new CusObj("Suraj", 24);


    try (ObjectOutputStream outputStream = new ObjectOutputStream(new FileOutputStream("object.ser"))) {
        outputStream.writeObject(obj);
        System.out.println("Object serialized successfully.");
    } catch (IOException e) {
        e.printStackTrace();
    }


    try (ObjectInputStream inputStream = new ObjectInputStream(new FileInputStream("object.ser"))) {
        CusObj deserializedObj = (CusObj) inputStream.readObject();
        System.out.println("Object deserialized successfully.");
        System.out.println("Name: " + deserializedObj.getName());
        System.out.println("Age: " + deserializedObj.getAge());
    } catch (IOException | ClassNotFoundException e) {
        e.printStackTrace();
    }
 }
}
```

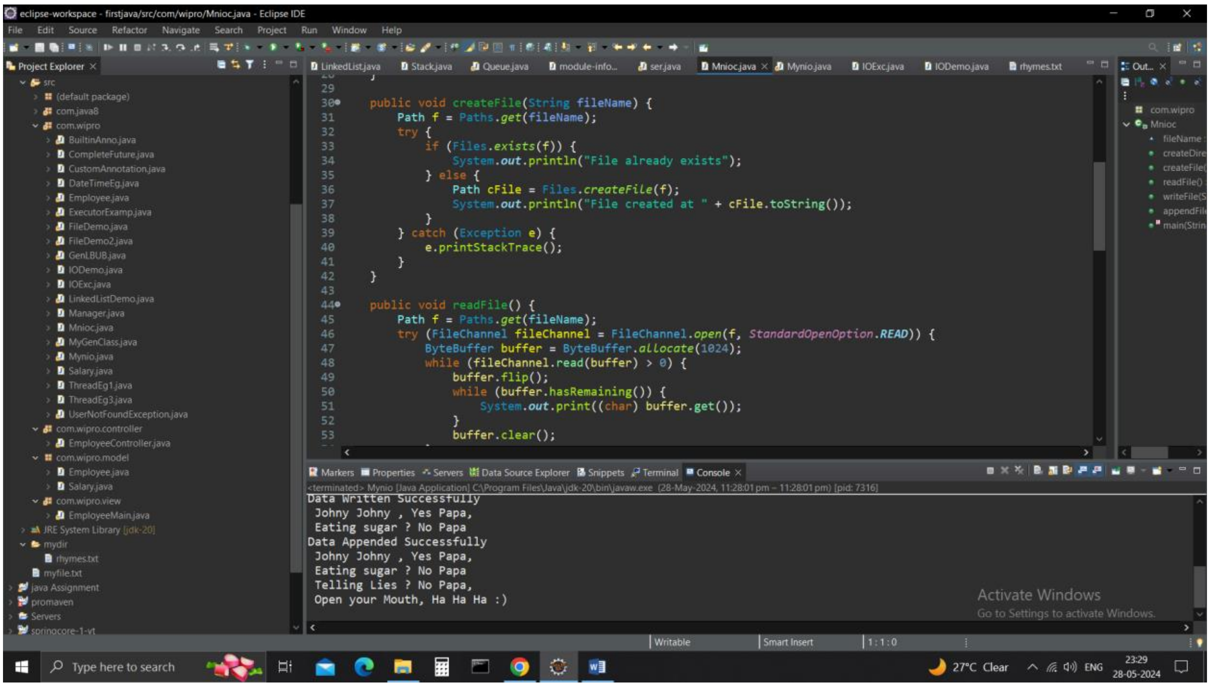
```
<terminated> ser [Java Application] C:\Program Files\Java\jdk-20\bin\javaw.exe (28-May-2024, 11:20:50 pm – 11:20:53 pm) [pid: 8520]
Object serialized successfully.
Object deserialized successfully.
Name: Suraj
Age: 24
```

Task3Use NIO Channels and Buffers to read content from a file and write to another file


eclipse-workspace - firstjava/src/com/wipro/Mnioc.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Project Explorer
LinkedList.java Stack.java Queue.java module-info... ser.java Mnioc.java Mynio.java IOExc.java IODemo.java rhymes.txt
Markers Properties Servers Data Source Explorer Snippets Terminal Console
Writable Smart Insert 1 : 1 : 0
Activate Windows
Go to Settings to activate Windows.
Type here to search
27°C Clear ENG 23:29 28-05-2024

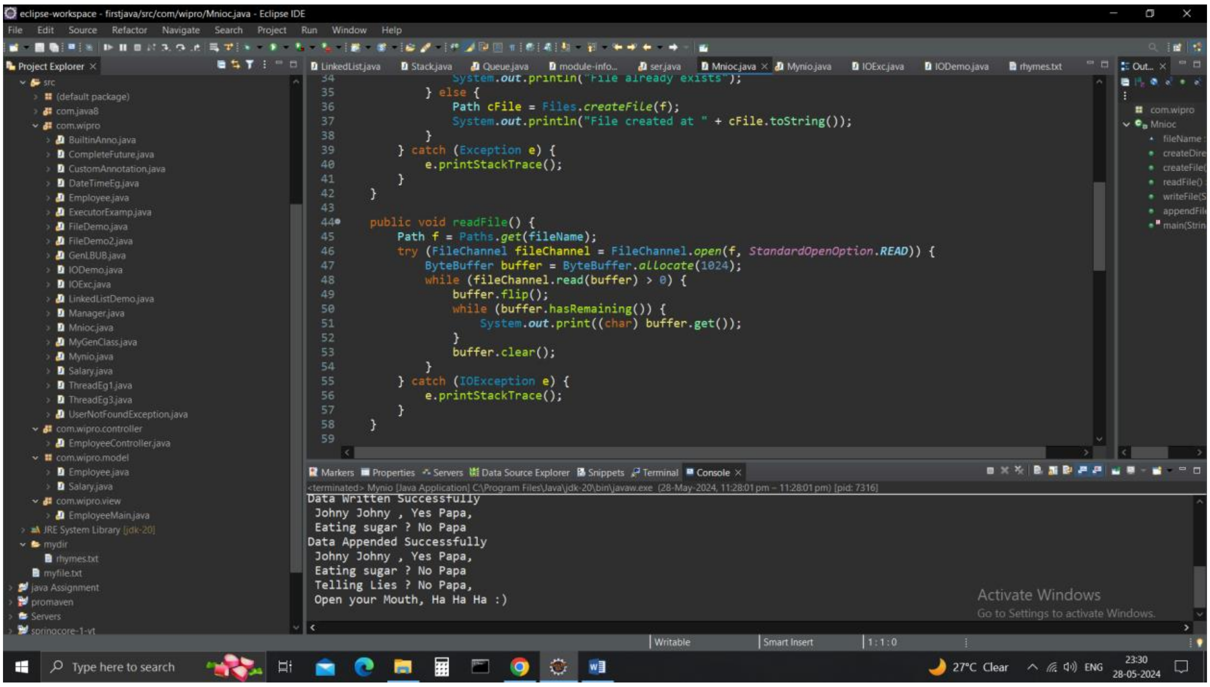
```java
package com.wipro;


import java.io.IOException;


public class Mnioc {
    String fileName = "mydir/rhymes.txt";

    public void createDirectory() {
        Path p = Paths.get("mydir");
        try {
            if (Files.exists(p)) {
                System.out.println("Directory already exists");
            } else {
                Path cPath = Files.createDirectories(p);
                System.out.println("Directory created at " + cPath.toString());
            }
        } catch (Exception e) {
            e.printStackTrace();
        }
    }

    public void createFile(String fileName) {
        Path f = Paths.get(fileName);
        try {
```

```
<terminated> Mynio [Java Application] C:\Program Files\Java\jdk-20\bin\javaw.exe (28-May-2024, 11:28:01 pm – 11:28:01 pm) [pid: 7316]
Data Written Successfully
 Johny Johny , Yes Papa,
 Eating sugar ? No Papa
Data Appended Successfully
 Johny Johny , Yes Papa,
 Eating sugar ? No Papa
 Telling Lies ? No Papa,
 Open your Mouth, Ha Ha Ha :)
```


eclipse-workspace - firstjava/src/com/wipro/Mnioc.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Project Explorer
LinkedList.java Stack.java Queue.java module-info... ser.java Mnioc.java Mynio.java IOExc.java IODemo.java rhymes.txt
Markers Properties Servers Data Source Explorer Snippets Terminal Console
Writable Smart Insert 1 : 1 : 0
Type here to search
27°C Clear ENG 23:29 28-05-2024

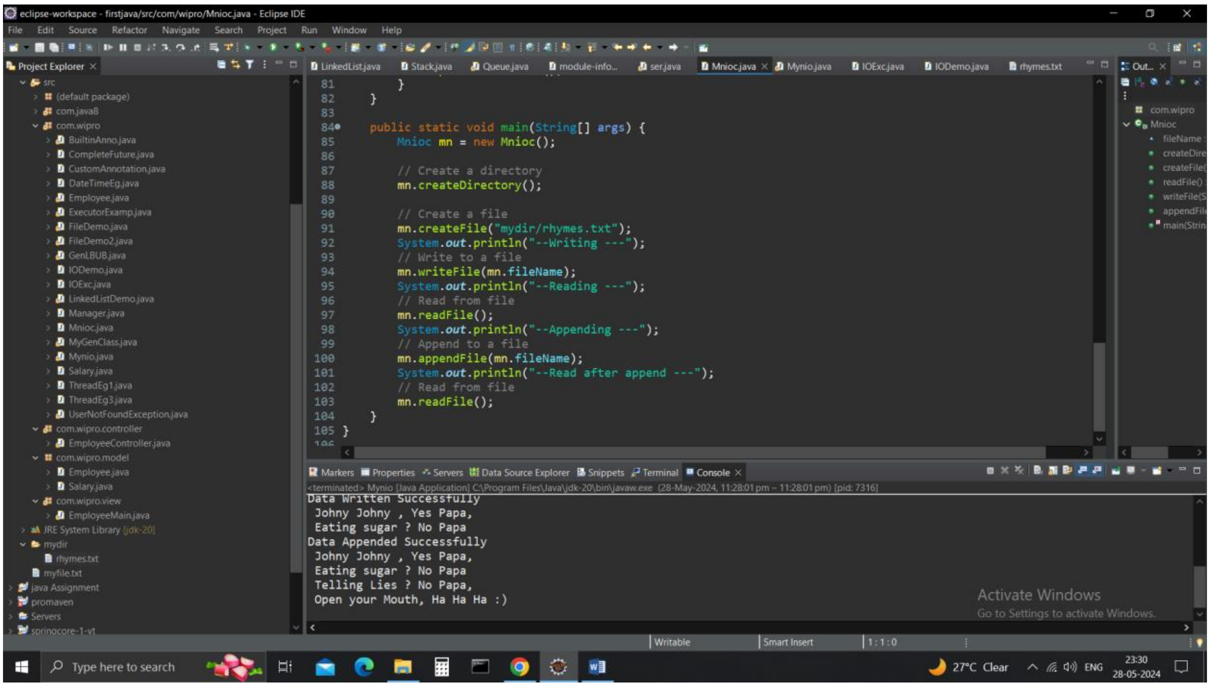
```java
    public void createFile(String fileName) {
        Path f = Paths.get(fileName);
        try {
            if (Files.exists(f)) {
                System.out.println("File already exists");
            } else {
                Path cFile = Files.createFile(f);
                System.out.println("File created at " + cFile.toString());
            }
        } catch (Exception e) {
            e.printStackTrace();
        }
    }

    public void readFile() {
        Path f = Paths.get(fileName);
        try (FileChannel fileChannel = FileChannel.open(f, StandardOpenOption.READ)) {
            ByteBuffer buffer = ByteBuffer.allocate(1024);
            while (fileChannel.read(buffer) > 0) {
                buffer.flip();
                while (buffer.hasRemaining()) {
                    System.out.print((char) buffer.get());
                }
                buffer.clear();
```

```
<terminated> Mynio [Java Application] C:\Program Files\Java\jdk-20\bin\javaw.exe (28-May-2024, 11:28:01 pm – 11:28:01 pm) [pid: 7316]
Data Written Successfully
 Johny Johny , Yes Papa,
 Eating sugar ? No Papa
Data Appended Successfully
 Johny Johny , Yes Papa,
 Eating sugar ? No Papa
 Telling Lies ? No Papa,
 Open your Mouth, Ha Ha Ha :)
```


eclipse-workspace - firstjava/src/com/wipro/Mnioc.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Project Explorer
LinkedList.java Stack.java Queue.java module-info... ser.java Mnioc.java Mynio.java IOExc.java IODemo.java rhymes.txt
Markers Properties Servers Data Source Explorer Snippets Terminal Console
Writable Smart Insert 1 : 1 : 0
Type here to search
27°C Clear ENG 23:30 28-05-2024

```java
                System.out.println("File already exists");
            } else {
                Path cFile = Files.createFile(f);
                System.out.println("File created at " + cFile.toString());
            }
        } catch (Exception e) {
            e.printStackTrace();
        }
    }

    public void readFile() {
        Path f = Paths.get(fileName);
        try (FileChannel fileChannel = FileChannel.open(f, StandardOpenOption.READ)) {
            ByteBuffer buffer = ByteBuffer.allocate(1024);
            while (fileChannel.read(buffer) > 0) {
                buffer.flip();
                while (buffer.hasRemaining()) {
                    System.out.print((char) buffer.get());
                }
                buffer.clear();
            }
        } catch (IOException e) {
            e.printStackTrace();
        }
    }
```

```
<terminated> Mynio [Java Application] C:\Program Files\Java\jdk-20\bin\javaw.exe (28-May-2024, 11:28:01 pm – 11:28:01 pm) [pid: 7316]
Data Written Successfully
 Johny Johny , Yes Papa,
 Eating sugar ? No Papa
Data Appended Successfully
 Johny Johny , Yes Papa,
 Eating sugar ? No Papa
 Telling Lies ? No Papa,
 Open your Mouth, Ha Ha Ha :)
```

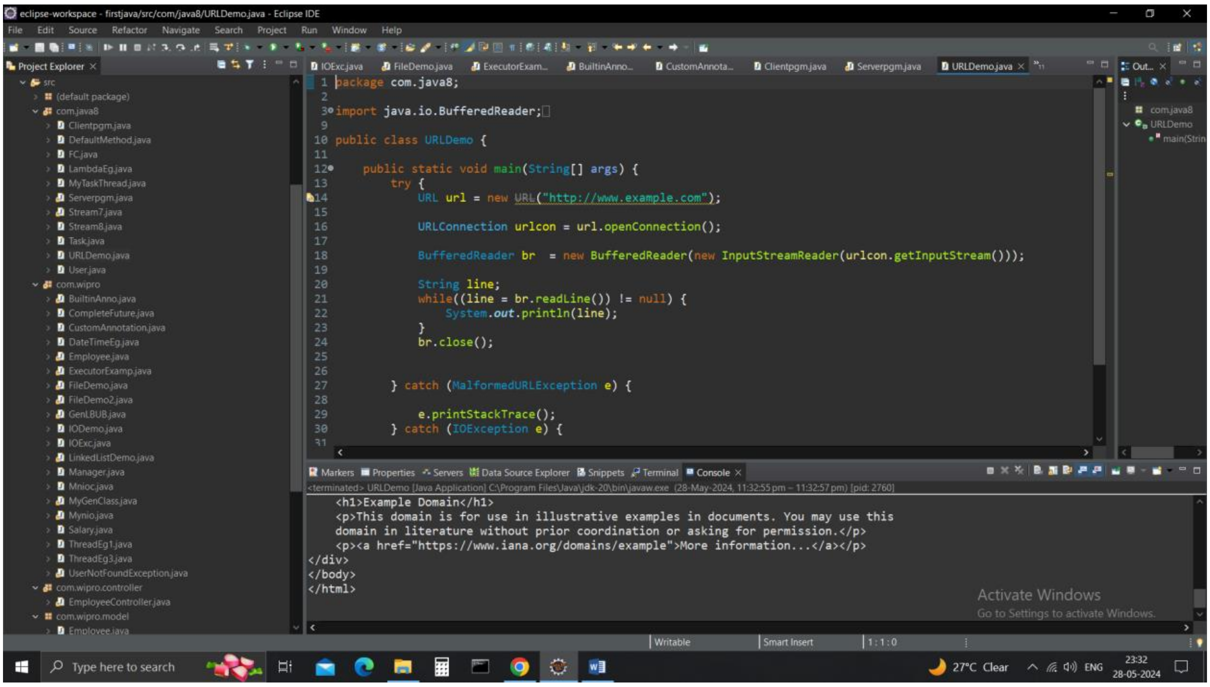

eclipse-workspace - firstjava/src/com/wipro/Mnioc.java - Eclipse IDE

```java
        }
    }

    public static void main(String[] args) {
        Mnioc mn = new Mnioc();

        // Create a directory
        mn.createDirectory();

        // Create a file
        mn.createFile("mydir/rhymes.txt");
        System.out.println("--Writing ---");
        // Write to a file
        mn.writeFile(mn.fileName);
        System.out.println("--Reading ---");
        // Read from file
        mn.readFile();
        System.out.println("--Appending ---");
        // Append to a file
        mn.appendFile(mn.fileName);
        System.out.println("--Read after append ---");
        // Read from file
        mn.readFile();
    }
}
```

<terminated> Mynio [Java Application] C:\Program Files\Java\jdk-20\bin\javaw.exe (28-May-2024, 11:28:01 pm – 11:28:01 pm) [pid: 7316]

```
Data Written Successfully
 Johny Johny , Yes Papa,
 Eating sugar ? No Papa
Data Appended Successfully
 Johny Johny , Yes Papa,
 Eating sugar ? No Papa
 Telling Lies ? No Papa,
 Open your Mouth, Ha Ha Ha :)
```

Task4: Write a simple HTTP client that connects to a URL, sends a request, and displays the response headers and body.

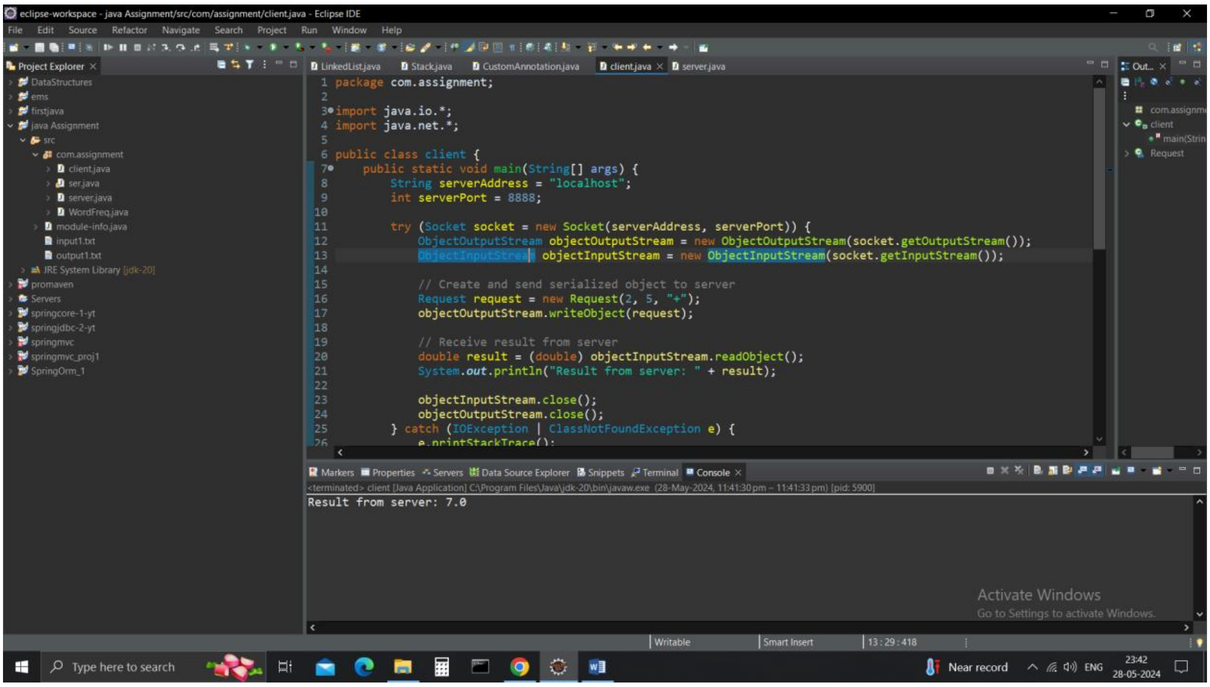

eclipse-workspace - firstjava/src/com/java8/URLDemo.java - Eclipse IDE

```java
package com.java8;

import java.io.BufferedReader;

public class URLDemo {

    public static void main(String[] args) {
        try {
            URL url = new URL("http://www.example.com");

            URLConnection urlcon = url.openConnection();

            BufferedReader br  = new BufferedReader(new InputStreamReader(urlcon.getInputStream()));

            String line;
            while((line = br.readLine()) != null) {
                System.out.println(line);
            }
            br.close();


        } catch (MalformedURLException e) {

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

<terminated> URLDemo [Java Application] C:\Program Files\Java\jdk-20\bin\javaw.exe (28-May-2024, 11:32:55 pm – 11:32:57 pm) [pid: 2760]

```
    <h1>Example Domain</h1>
    <p>This domain is for use in illustrative examples in documents. You may use this
    domain in literature without prior coordination or asking for permission.</p>
    <p><a href="https://www.iana.org/domains/example">More information...</a></p>
</div>
</body>
</html>
```

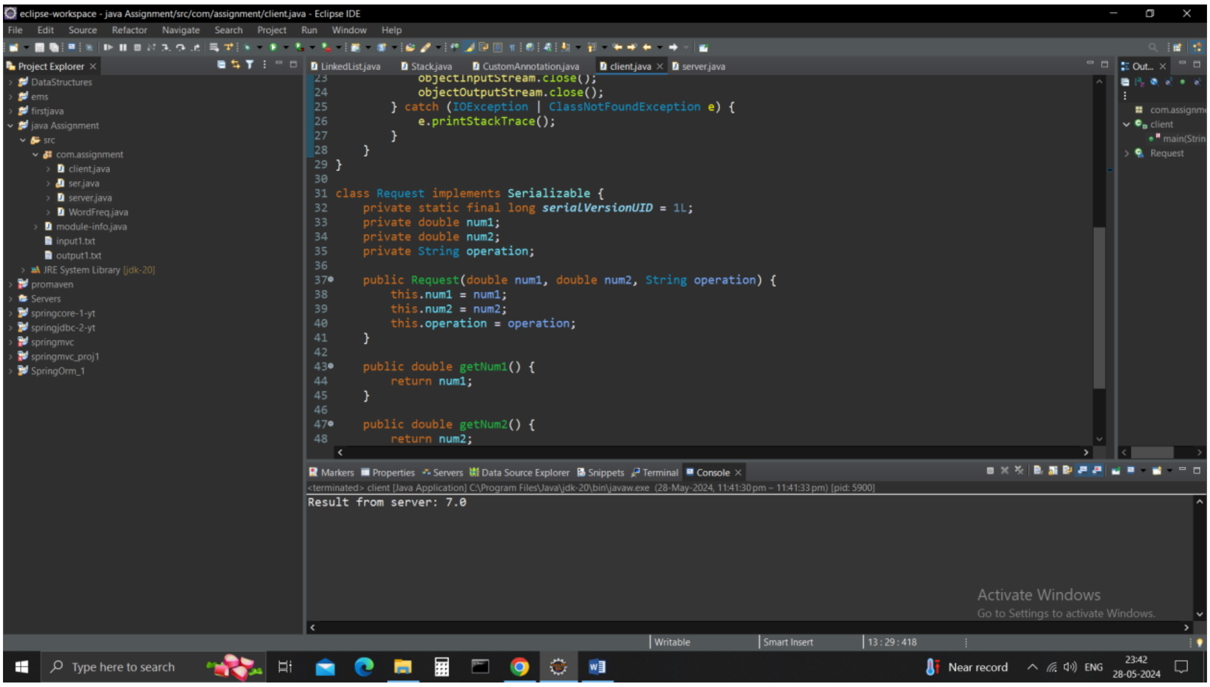
Task5: Develop a basic TCP client and server application where the client sends a serialized object with 2 numbers and operation to be performed on them to the server, and the server computes the result and sends it back to the client. for eg, we could send 2, 2, "+" which would mean 2 + 2



```java
package com.assignment;

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

public class client {
    public static void main(String[] args) {
        String serverAddress = "localhost";
        int serverPort = 8888;

        try (Socket socket = new Socket(serverAddress, serverPort)) {
            ObjectOutputStream objectOutputStream = new ObjectOutputStream(socket.getOutputStream());
            ObjectInputStream objectInputStream = new ObjectInputStream(socket.getInputStream());

            // Create and send serialized object to server
            Request request = new Request(2, 5, "+");
            objectOutputStream.writeObject(request);

            // Receive result from server
            double result = (double) objectInputStream.readObject();
            System.out.println("Result from server: " + result);

            objectInputStream.close();
            objectOutputStream.close();
        } catch (IOException | ClassNotFoundException e) {
            e.printStackTrace();
```

<terminated> client [Java Application] C:\Program Files\Java\jdk-20\bin\javaw.exe (28-May-2024, 11:41:30 pm – 11:41:33 pm) [pid: 5900]

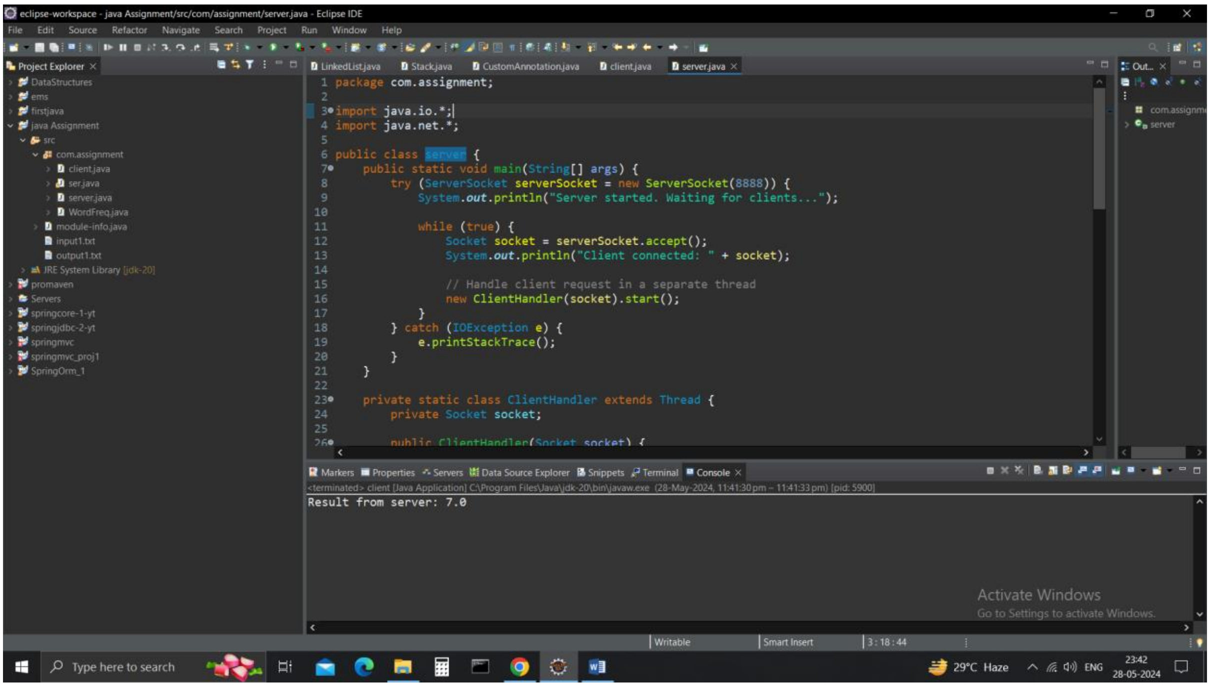
```
Result from server: 7.0
```



```java
            objectInputStream.close();
            objectOutputStream.close();
        } catch (IOException | ClassNotFoundException e) {
            e.printStackTrace();
        }
    }
}

class Request implements Serializable {
    private static final long serialVersionUID = 1L;
    private double num1;
    private double num2;
    private String operation;

    public Request(double num1, double num2, String operation) {
        this.num1 = num1;
        this.num2 = num2;
        this.operation = operation;
    }

    public double getNum1() {
        return num1;
    }

    public double getNum2() {
        return num2;
```

<terminated> client [Java Application] C:\Program Files\Java\jdk-20\bin\javaw.exe (28-May-2024, 11:41:30 pm – 11:41:33 pm) [pid: 5900]

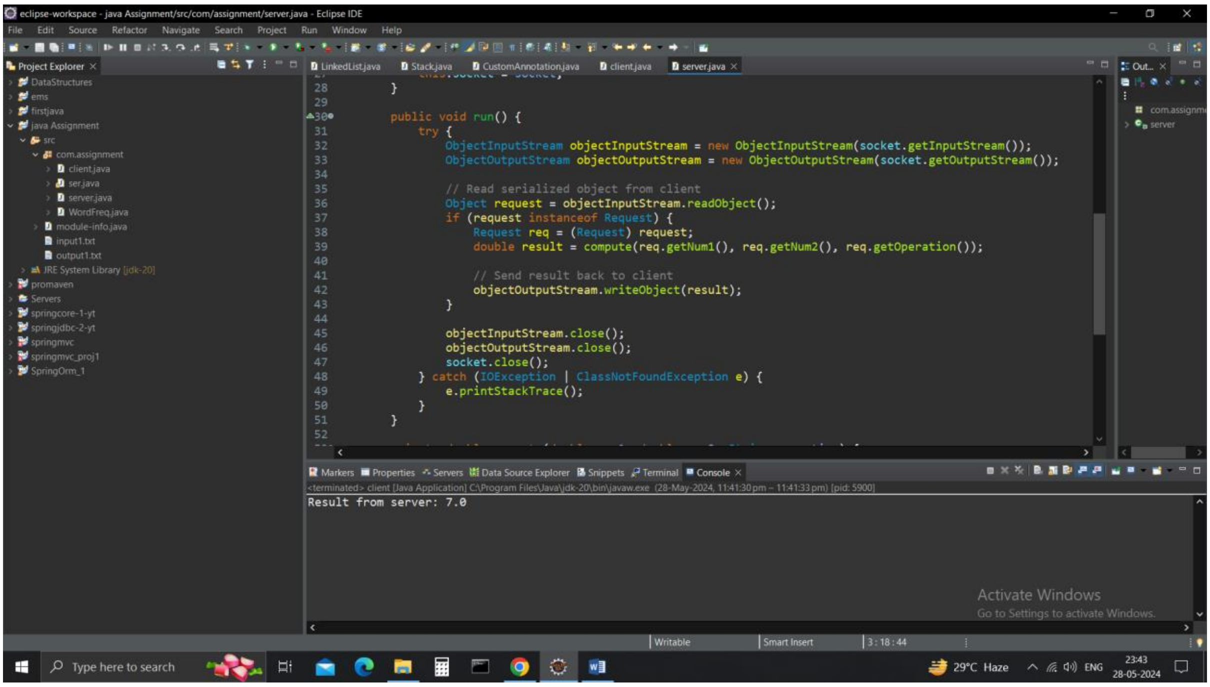
```
Result from server: 7.0
```



eclipse-workspace - java Assignment/src/com/assignment/server.java - Eclipse IDE
LinkedList.java
Stack.java
CustomAnnotation.java
client.java
server.java

```java
package com.assignment;

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

public class server {
    public static void main(String[] args) {
        try (ServerSocket serverSocket = new ServerSocket(8888)) {
            System.out.println("Server started. Waiting for clients...");

            while (true) {
                Socket socket = serverSocket.accept();
                System.out.println("Client connected: " + socket);

                // Handle client request in a separate thread
                new ClientHandler(socket).start();
            }
        } catch (IOException e) {
            e.printStackTrace();
        }
    }

    private static class ClientHandler extends Thread {
        private Socket socket;

        public ClientHandler(Socket socket) {
```

```
<terminated> client [Java Application] C:\Program Files\Java\jdk-20\bin\javaw.exe (28-May-2024, 11:41:30 pm – 11:41:33 pm) [pid: 5900]
Result from server: 7.0
```

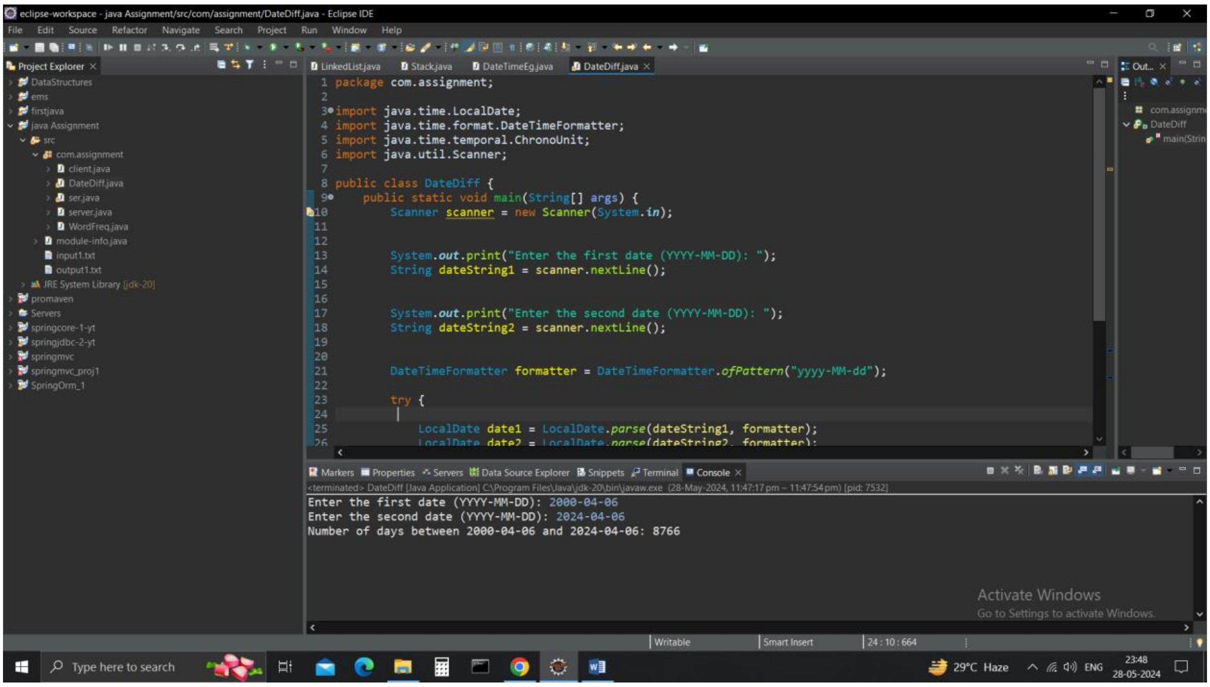


eclipse-workspace - java Assignment/src/com/assignment/server.java - Eclipse IDE
LinkedList.java
Stack.java
CustomAnnotation.java
client.java
server.java

```java
        }

        public void run() {
            try {
                ObjectInputStream objectInputStream = new ObjectInputStream(socket.getInputStream());
                ObjectOutputStream objectOutputStream = new ObjectOutputStream(socket.getOutputStream());

                // Read serialized object from client
                Object request = objectInputStream.readObject();
                if (request instanceof Request) {
                    Request req = (Request) request;
                    double result = compute(req.getNum1(), req.getNum2(), req.getOperation());

                    // Send result back to client
                    objectOutputStream.writeObject(result);
                }

                objectInputStream.close();
                objectOutputStream.close();
                socket.close();
            } catch (IOException | ClassNotFoundException e) {
                e.printStackTrace();
            }
        }

```

```
<terminated> client [Java Application] C:\Program Files\Java\jdk-20\bin\javaw.exe (28-May-2024, 11:41:30 pm – 11:41:33 pm) [pid: 5900]
Result from server: 7.0
```

Task6: Write a program that calculates the number of days between two dates input by the user

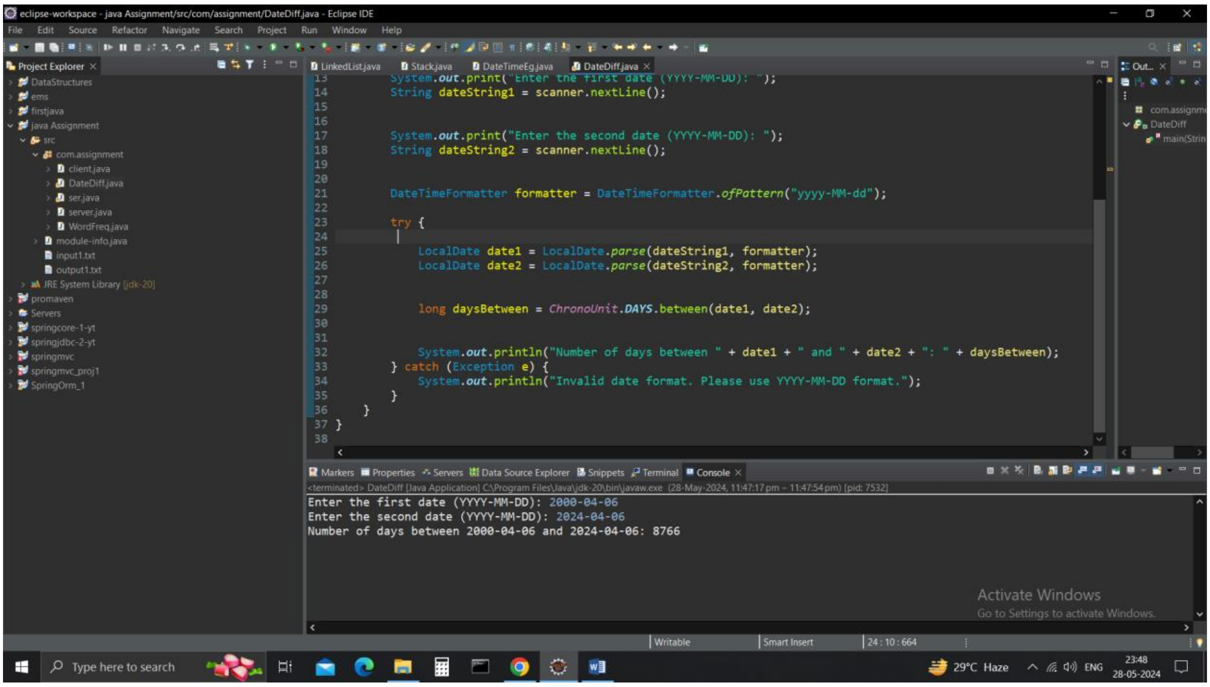


eclipse-workspace - java Assignment/src/com/assignment/DateDiff.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Project Explorer
LinkedList.java
Stack.java
DateTimeEg.java
DateDiff.java
Markers Properties Servers Data Source Explorer Snippets Terminal Console
Activate Windows
Go to Settings to activate Windows.
Writable
Smart Insert
24 : 10 : 664
Type here to search
29°C Haze
ENG
23:48
28-05-2024

```java
package com.assignment;

import java.time.LocalDate;
import java.time.format.DateTimeFormatter;
import java.time.temporal.ChronoUnit;
import java.util.Scanner;

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


        System.out.print("Enter the first date (YYYY-MM-DD): ");
        String dateString1 = scanner.nextLine();


        System.out.print("Enter the second date (YYYY-MM-DD): ");
        String dateString2 = scanner.nextLine();


        DateTimeFormatter formatter = DateTimeFormatter.ofPattern("yyyy-MM-dd");

        try {
            |
            LocalDate date1 = LocalDate.parse(dateString1, formatter);
            LocalDate date2 = LocalDate.parse(dateString2, formatter);
```

<terminated> DateDiff [Java Application] C:\Program Files\Java\jdk-20\bin\javaw.exe (28-May-2024, 11:47:17 pm – 11:47:54 pm) [pid: 7532]

```
Enter the first date (YYYY-MM-DD): 2000-04-06
Enter the second date (YYYY-MM-DD): 2024-04-06
Number of days between 2000-04-06 and 2024-04-06: 8766
```



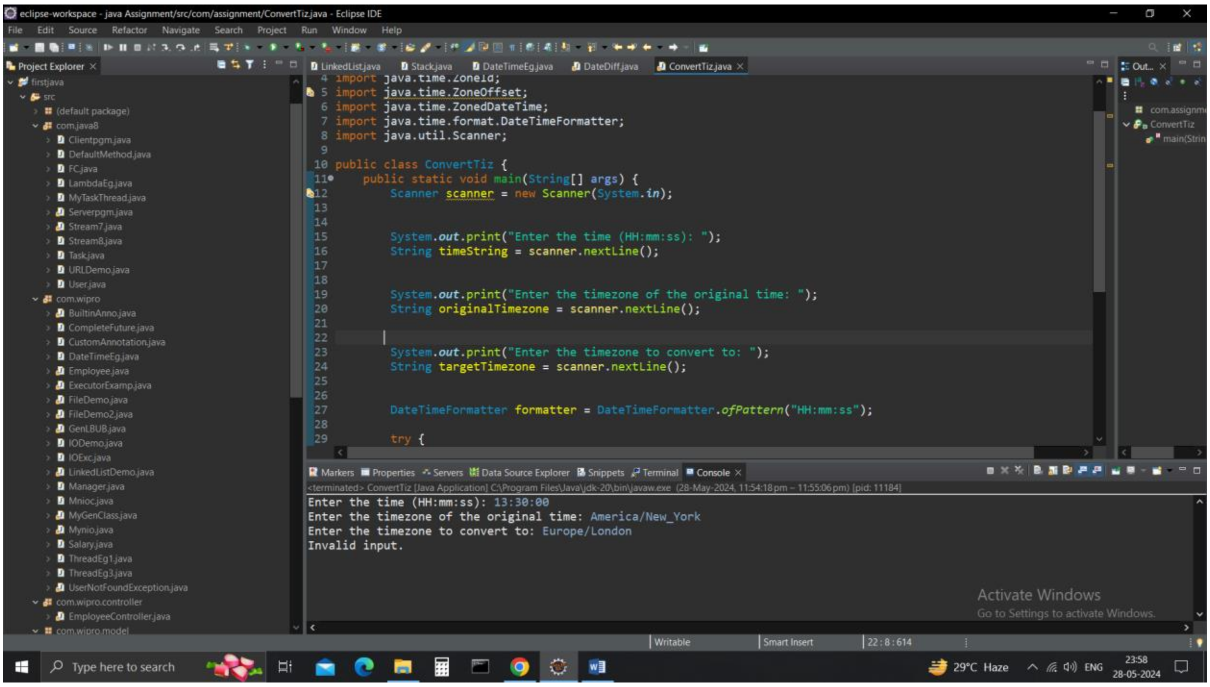
eclipse-workspace - java Assignment/src/com/assignment/DateDiff.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Project Explorer
LinkedList.java
Stack.java
DateTimeEg.java
DateDiff.java
Markers Properties Servers Data Source Explorer Snippets Terminal Console
Activate Windows
Go to Settings to activate Windows.
Writable
Smart Insert
24 : 10 : 664
Type here to search
29°C Haze
ENG
23:48
28-05-2024

```java
        System.out.print("Enter the first date (YYYY-MM-DD): ");
        String dateString1 = scanner.nextLine();


        System.out.print("Enter the second date (YYYY-MM-DD): ");
        String dateString2 = scanner.nextLine();


        DateTimeFormatter formatter = DateTimeFormatter.ofPattern("yyyy-MM-dd");

        try {
            |
            LocalDate date1 = LocalDate.parse(dateString1, formatter);
            LocalDate date2 = LocalDate.parse(dateString2, formatter);


            long daysBetween = ChronoUnit.DAYS.between(date1, date2);


            System.out.println("Number of days between " + date1 + " and " + date2 + ": " + daysBetween);
        } catch (Exception e) {
            System.out.println("Invalid date format. Please use YYYY-MM-DD format.");
        }
    }
}

```

<terminated> DateDiff [Java Application] C:\Program Files\Java\jdk-20\bin\javaw.exe (28-May-2024, 11:47:17 pm – 11:47:54 pm) [pid: 7532]

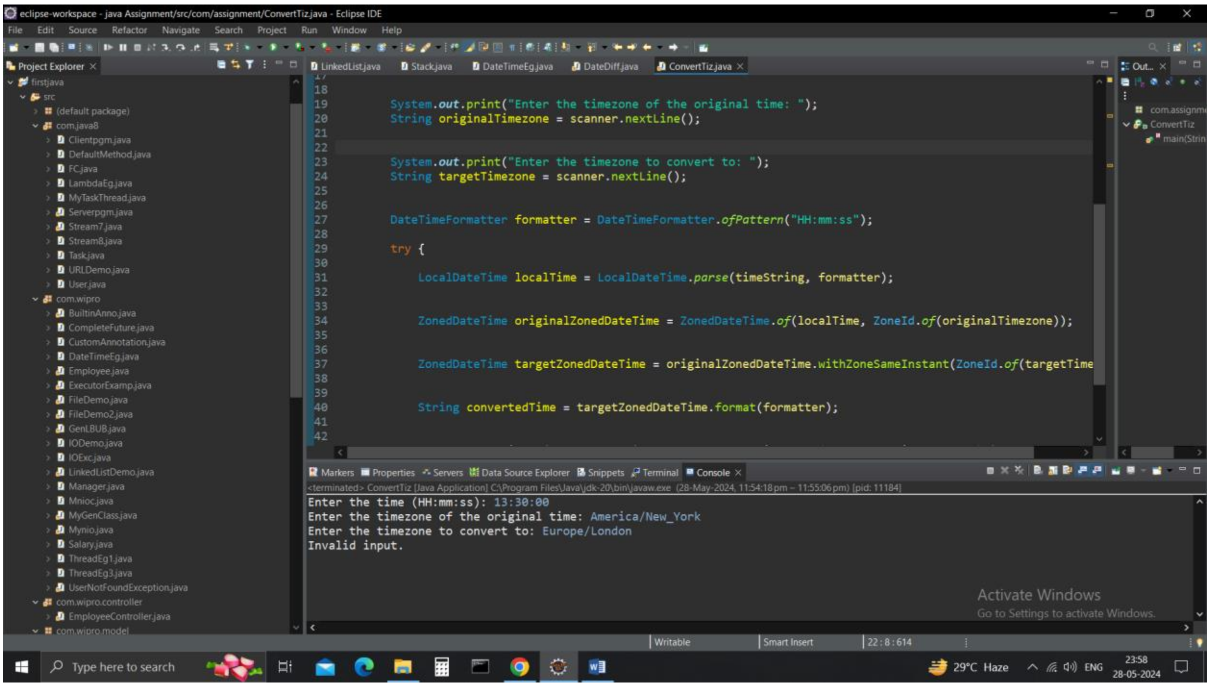
```
Enter the first date (YYYY-MM-DD): 2000-04-06
Enter the second date (YYYY-MM-DD): 2024-04-06
Number of days between 2000-04-06 and 2024-04-06: 8766
```

Task7: Create a timezone converter that takes a time in one timezone and converts it to another timezone


eclipse-workspace - java Assignment/src/com/assignment/ConvertTiz.java - Eclipse IDE
LinkedList.java
Stack.java
DateTimeEg.java
DateDiff.java
ConvertTiz.java
Console

```java
import java.time.ZoneId;
import java.time.ZoneOffset;
import java.time.ZonedDateTime;
import java.time.format.DateTimeFormatter;
import java.util.Scanner;

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


        System.out.print("Enter the time (HH:mm:ss): ");
        String timeString = scanner.nextLine();


        System.out.print("Enter the timezone of the original time: ");
        String originalTimezone = scanner.nextLine();


        System.out.print("Enter the timezone to convert to: ");
        String targetTimezone = scanner.nextLine();


        DateTimeFormatter formatter = DateTimeFormatter.ofPattern("HH:mm:ss");

        try {
```

```
<terminated> ConvertTiz [Java Application] C:\Program Files\Java\jdk-20\bin\javaw.exe (28-May-2024, 11:54:18 pm – 11:55:06 pm) [pid: 11184]
Enter the time (HH:mm:ss): 13:30:00
Enter the timezone of the original time: America/New_York
Enter the timezone to convert to: Europe/London
Invalid input.
```


eclipse-workspace - java Assignment/src/com/assignment/ConvertTiz.java - Eclipse IDE
LinkedList.java
Stack.java
DateTimeEg.java
DateDiff.java
ConvertTiz.java
Console

```java

        System.out.print("Enter the timezone of the original time: ");
        String originalTimezone = scanner.nextLine();


        System.out.print("Enter the timezone to convert to: ");
        String targetTimezone = scanner.nextLine();


        DateTimeFormatter formatter = DateTimeFormatter.ofPattern("HH:mm:ss");

        try {

            LocalDateTime localTime = LocalDateTime.parse(timeString, formatter);


            ZonedDateTime originalZonedDateTime = ZonedDateTime.of(localTime, ZoneId.of(originalTimezone));


            ZonedDateTime targetZonedDateTime = originalZonedDateTime.withZoneSameInstant(ZoneId.of(targetTime


            String convertedTime = targetZonedDateTime.format(formatter);


```

```
<terminated> ConvertTiz [Java Application] C:\Program Files\Java\jdk-20\bin\javaw.exe (28-May-2024, 11:54:18 pm – 11:55:06 pm) [pid: 11184]
Enter the time (HH:mm:ss): 13:30:00
Enter the timezone of the original time: America/New_York
Enter the timezone to convert to: Europe/London
Invalid input.
```