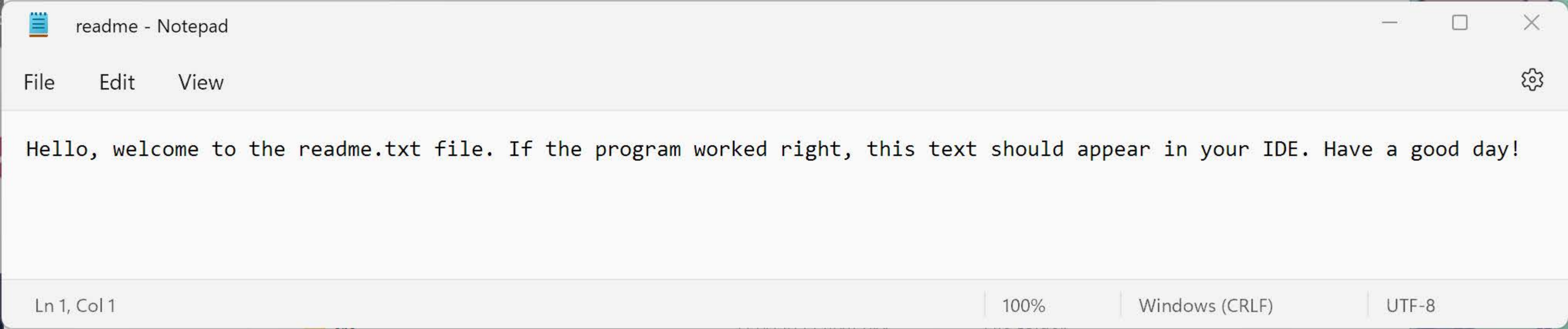
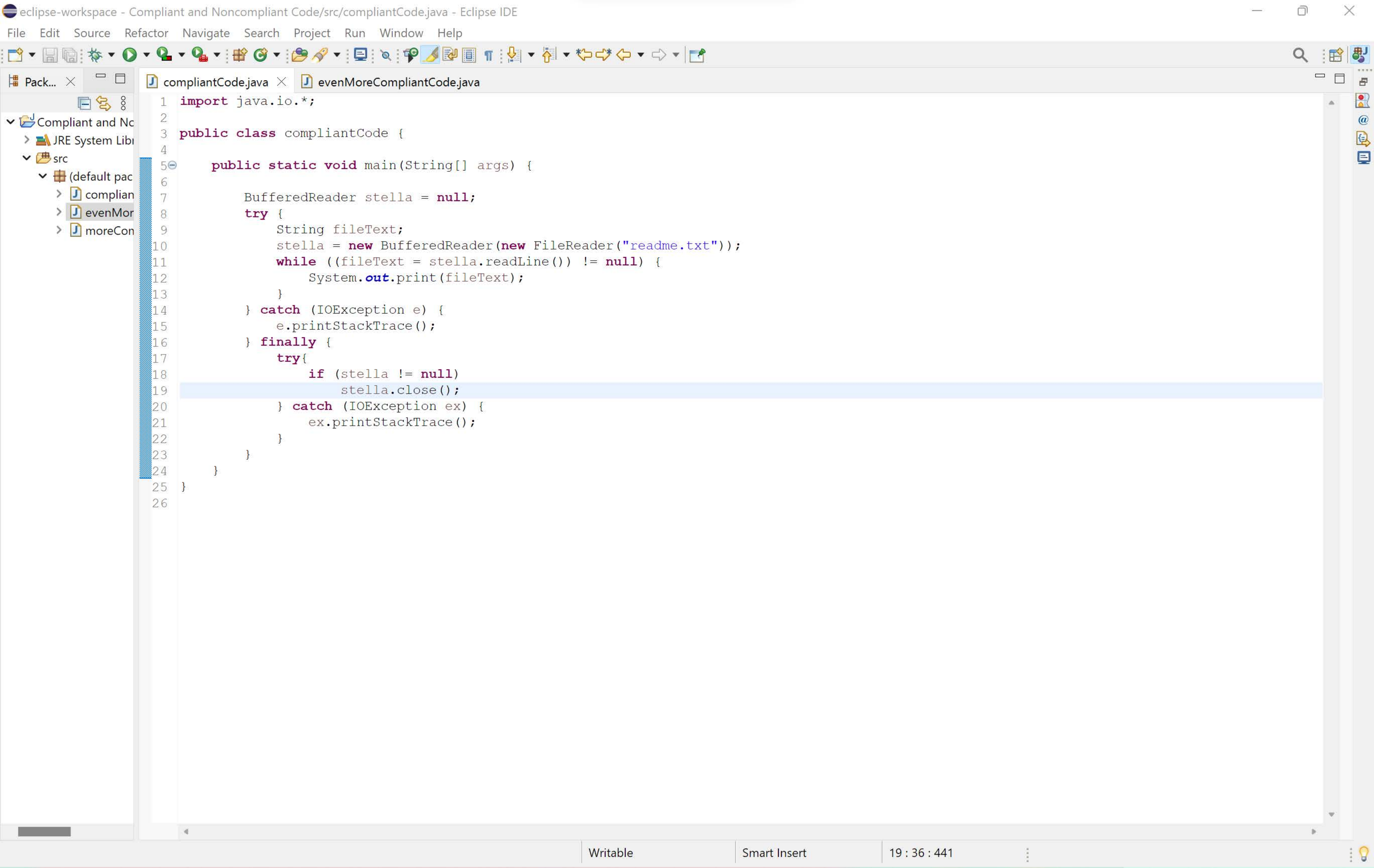


```
Hello, welcome to the readme.txt file. If the program worked right, this text should appear in your IDE. Have a good day!
```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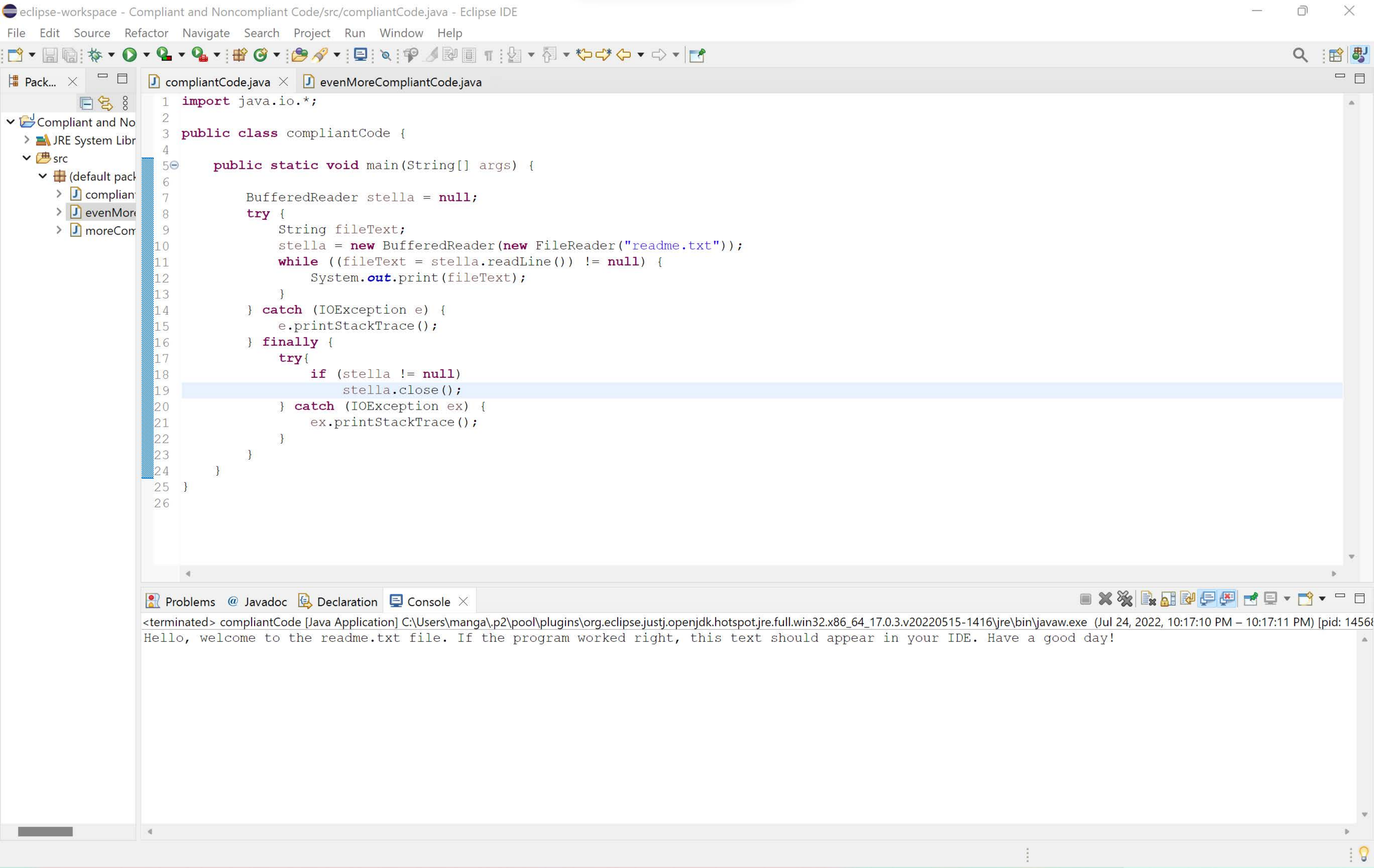
```java
import java.io.*;

public class compliantCode {

    public static void main(String[] args) {

        BufferedReader stella = null;
        try {
            String fileText;
            stella = new BufferedReader(new FileReader("readme.txt"));
            while ((fileText = stella.readLine()) != null) {
                System.out.print(fileText);
            }
        } catch (IOException e) {
            e.printStackTrace();
        } finally {
            try{
                if (stella != null)
                    stella.close();
            } catch (IOException ex) {
                ex.printStackTrace();
            }
        }
    }
}

```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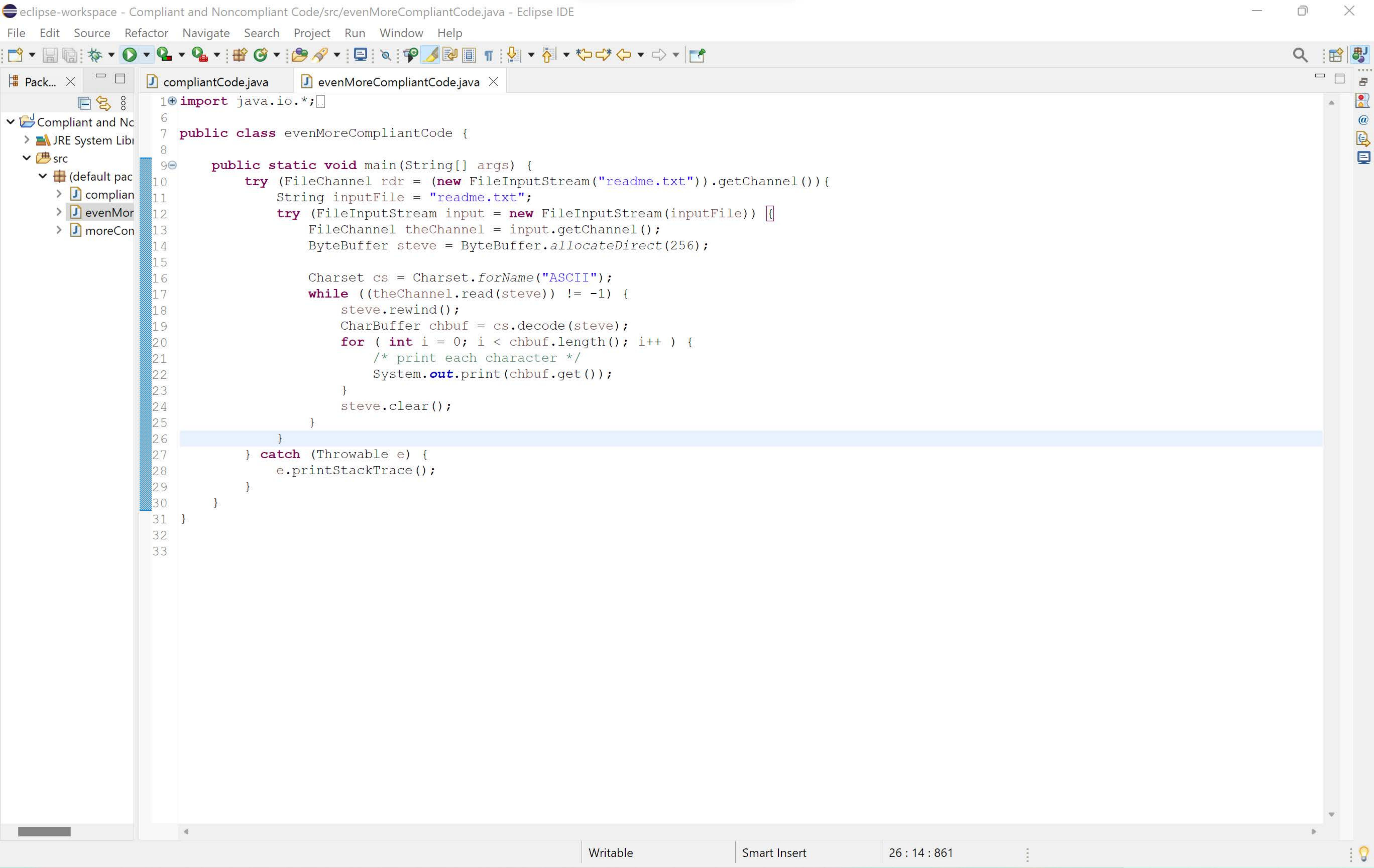
            e.printStackTrace();
        } finally {
            try{
                if (stella != null)
                    stella.close();
            } catch (IOException ex) {
                ex.printStackTrace();
            }
        }
    }
}
```

```
<terminated> compliantCode [Java Application] C:\Users\manga\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.3.v20220515-1416\jre\bin\javaw.exe  (Jul 24, 2022, 10:17:10 PM – 10:17:11 PM) [pid: 1456
Hello, welcome to the readme.txt file. If the program worked right, this text should appear in your IDE. Have a good day!
```


eclipse-workspace - Compliant and Noncompliant Code/src/evenMoreCompliantCode.java - Eclipse IDE
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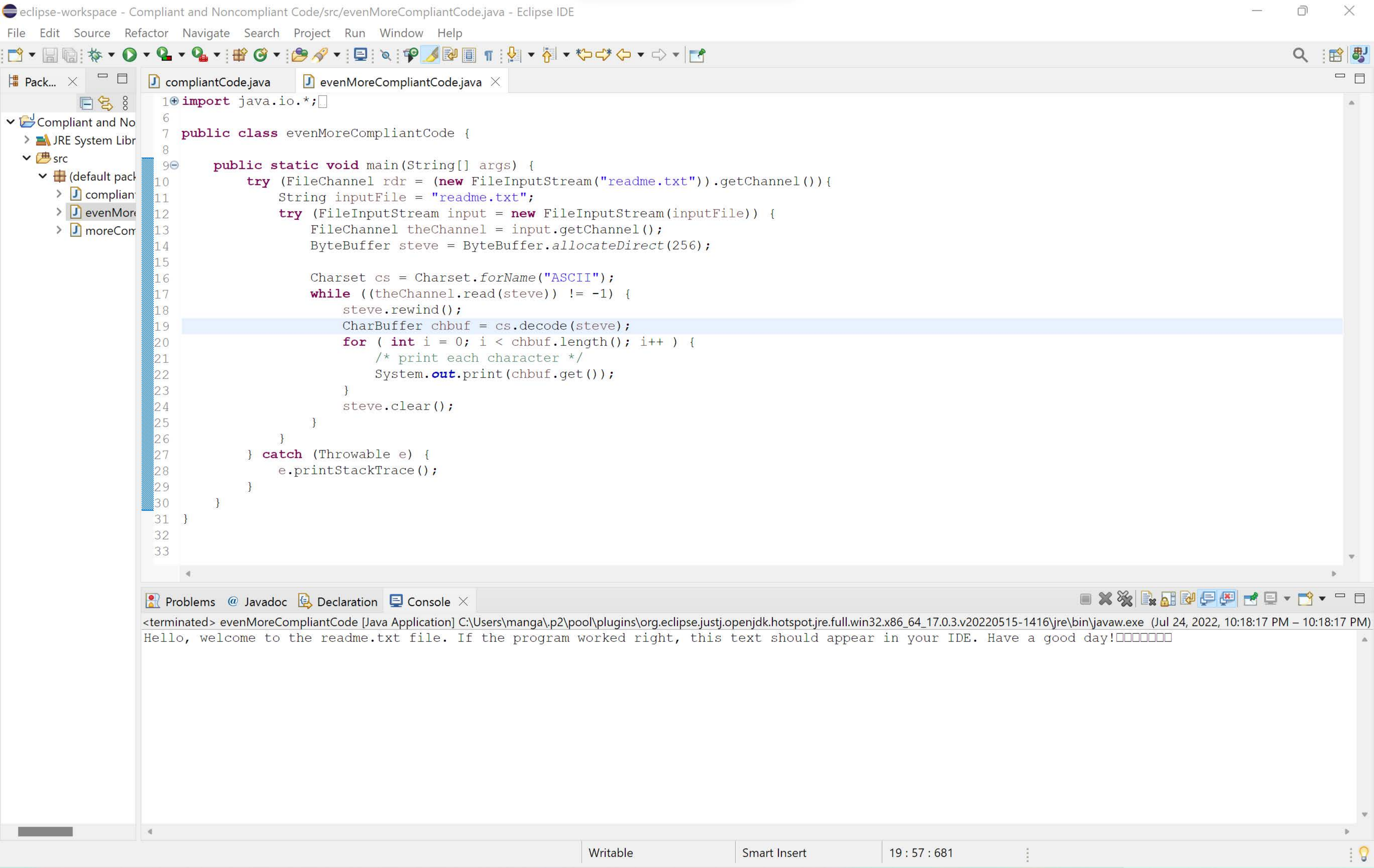
```java
import java.io.*;

public class evenMoreCompliantCode {

    public static void main(String[] args) {
        try (FileChannel rdr = (new FileInputStream("readme.txt")).getChannel()){
            String inputFile = "readme.txt";
            try (FileInputStream input = new FileInputStream(inputFile)) {
                FileChannel theChannel = input.getChannel();
                ByteBuffer steve = ByteBuffer.allocateDirect(256);

                Charset cs = Charset.forName("ASCII");
                while ((theChannel.read(steve)) != -1) {
                    steve.rewind();
                    CharBuffer chbuf = cs.decode(steve);
                    for ( int i = 0; i < chbuf.length(); i++ ) {
                        /* print each character */
                        System.out.print(chbuf.get());
                    }
                    steve.clear();
                }
            }
        } catch (Throwable e) {
            e.printStackTrace();
        }
    }
}
```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evenMoreCompliantCode.java
Problems
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Declaration
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Writable
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19 : 57 : 681

```java
import java.io.*;

public class evenMoreCompliantCode {

    public static void main(String[] args) {
        try (FileChannel rdr = (new FileInputStream("readme.txt")).getChannel()){
            String inputFile = "readme.txt";
            try (FileInputStream input = new FileInputStream(inputFile)) {
                FileChannel theChannel = input.getChannel();
                ByteBuffer steve = ByteBuffer.allocateDirect(256);

                Charset cs = Charset.forName("ASCII");
                while ((theChannel.read(steve)) != -1) {
                    steve.rewind();
                    CharBuffer chbuf = cs.decode(steve);
                    for ( int i = 0; i < chbuf.length(); i++ ) {
                        /* print each character */
                        System.out.print(chbuf.get());
                    }
                    steve.clear();
                }
            }
        } catch (Throwable e) {
            e.printStackTrace();
        }
    }
}
```

```
<terminated> evenMoreCompliantCode [Java Application] C:\Users\manga\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.3.v20220515-1416\jre\bin\javaw.exe (Jul 24, 2022, 10:18:17 PM – 10:18:17 PM)
Hello, welcome to the readme.txt file. If the program worked right, this text should appear in your IDE. Have a good day!□□□□□□□
```

Clarissa Kuter

CSC450 Programming III

Reginald Haseltine

24 July 2022

Salesperson Performance

For the critical thinking assignment due this week, I was given a segment of java code that was from Chapter 1 of the Java Coding Guidelines. The segment is presented as an example of noncompliant code. With this assignment, I am to dive into the factors that make the segment of code noncompliant, and then provide two compliant solutions as an alternative. The two solutions are provided at the start of the PDF document this is included in.

To tackle what makes the example code segment noncompliant, it is important to know what noncompliant means. Noncompliance describes when something fails to act in accordance with a wish or command; as such, noncompliant code is code that violates the established guidelines coders must follow to ensure their code is safe and secure. When looking at the code segment provided for this assignment, the piece that makes the code noncompliant is the fact that it wraps an InputStream-Reader object with a BufferedReader. This action makes it so that sensitive data can be read from a file, and with the BufferedReader.readLine() method, that sensitive data will be returned as a String object that can persist long after the data is needed. To turn the segment into a compliant solution, code must be included to flush the sensitive data after it is no longer needed.

In the first of the compliant solutions I provided, I made use of try and catch statements to ensure that any errors or exceptions thrown by the program are caught and taken care of accordingly. I also included a finally statement to make doubly sure that the reader is closed by the end of the program. This ensures that the reader is not open and accessible after it is no longer needed thus decreasing the errors that can occur and increasing the security of the program.

In the second of the compliant solutions I provided, I followed the solution that the Java Coding Guidelines book recommended, and I made use of a directly allocated NIO to read sensitive data from the file. Afterwards, I ensured that the program cleared the sensitive data after everything was copied and it was no longer needed. By doing so, the data now exists only in the system memory and cannot be cached or buffered in other locations where it should not be.

When building a program, it is important to follow the security guidelines laid out when coding in Java. By doing so, programmers can prevent themselves from falling victim to noncompliant code. However, if a programmer does fall victim to such a scenario, there are always multiple routes they can take to worm themselves out of it. While I provided two compliant solutions to solve the noncompliant example provided with this assignment, there are certainly more solutions that people could have taken.