**1.Implementing the Singleton Pattern**

package singleton;

public class Logger {

private static Logger instance;

private Logger() {

System.out.println("Logger Initialized");

}

public static Logger getInstance() {

if (instance == null) {

instance = new Logger();

}

return instance;

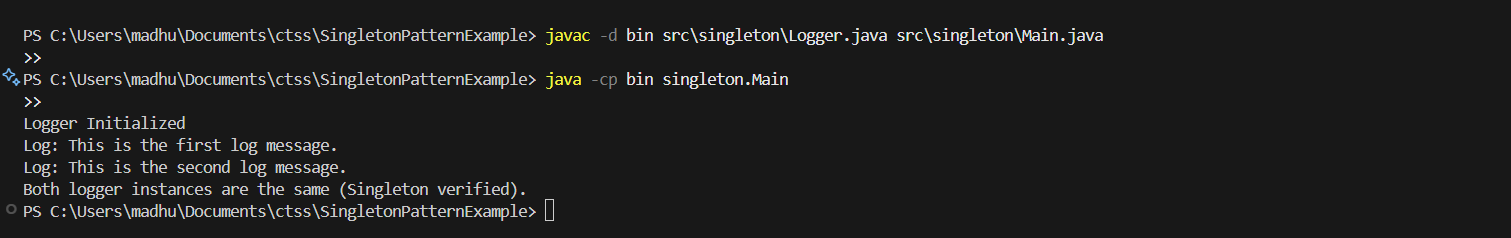
} public void log(String message) {

System.out.println("Log: " + message);

}

}

**OUTPUT:**



**2.Implementing the Factory Method Pattern**

**Dcoument.java**

package factory;

public interface Document {

    void open();

}

**DocumentFactory.java**

package factory;

public abstract class DocumentFactory {

    public abstract Document createDocument();

}

**ExcelDocument.java**

package factory;

public class ExcelDocument implements Document {

    public void open() {

        System.out.println("Opening an Excel document.");

    }

}

**ExcelFactory.java**

package factory;

public class ExcelFactory extends DocumentFactory {

    public Document createDocument() {

        return new ExcelDocument();

    }

}

**Main.java**

package factory;

public class Main {

    public static void main(String[] args) {

        DocumentFactory wordFactory = new WordFactory();

        Document wordDoc = wordFactory.createDocument();

        wordDoc.open();

DocumentFactory pdfFactory = new PdfFactory();

        Document pdfDoc = pdfFactory.createDocument();

        pdfDoc.open();

DocumentFactory excelFactory = new ExcelFactory();

        Document excelDoc = excelFactory.createDocument();

        excelDoc.open();

    }

}

**PdfDocument.java**

package factory;

public class PdfDocument implements Document {

    public void open() {

        System.out.println("Opening a PDF document.");

    }

}

**PdfFactory.java**

package factory;

public class PdfFactory extends DocumentFactory {

    public Document createDocument() {

        return new PdfDocument();

    }

}

**WordDcoument.java**

package factory;

public class WordDocument implements Document {

    public void open() {

        System.out.println("Opening a Word document.");

    }

}

**WordFactroy.java**

package factory;

public class WordFactory extends DocumentFactory {

    public Document createDocument() {

        return new WordDocument();

    }}

**OUTPUT:**

