**Exercise 1: Implementing the Singleton Pattern**

***Logger.java***

package singletonPatternExample;

public class Logger {

private static Logger instance;

private Logger() {}

public static Logger getInstance() {

if (instance == null) {

instance = new Logger();

}

return instance;

}

public void log(String message) {

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

}

}

***Main.java***

package singletonPatternExample;

public class Main {

public static void main(String[] args) {

Logger logger1 = Logger.*getInstance*();

Logger logger2 = Logger.*getInstance*();

logger1.log("This is the first message.");

logger2.log("This is the second message.");

System.***out***.println(logger1 == logger2);

}

}

**Output:**

A computer screen shot of a program

AI-generated content may be incorrect.

**Exercise 2: Implementing the Factory Method Pattern**

***Main.java***

package factoryMethodPatternExample;

public class Main {

public static void main(String[] args) {

DocumentFactory wordFactory = new WordDocumentFactory();

Document word = wordFactory.createDocument();

word.open();

DocumentFactory pdfFactory = new PdfDocumentFactory();

Document pdf = pdfFactory.createDocument();

pdf.open();

DocumentFactory excelFactory = new ExcelDocumentFactory();

Document excel = excelFactory.createDocument();

excel.open();

}

}

***Document.java***

package factoryMethodPatternExample;

public interface Document {

void open();

}

***DocumentFactory.java***

package factoryMethodPatternExample;

public abstract class DocumentFactory {

public abstract Document createDocument();

}

***ExcelDocument.java***

package factoryMethodPatternExample;

public class ExcelDocument implements Document {

public void open() {

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

}

}

***ExcelDocumentFactory.java***

package factoryMethodPatternExample;

public class ExcelDocumentFactory extends DocumentFactory {

public Document createDocument() {

return new ExcelDocument();

}

}

***PdfDocument.java***

package factoryMethodPatternExample;

public class PdfDocument implements Document {

public void open() {

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

}

}

***PdfDocumentFactory.java***

package factoryMethodPatternExample;

public class PdfDocumentFactory extends DocumentFactory {

public Document createDocument() {

return new PdfDocument();

}

}

***WordDocument.java***

package factoryMethodPatternExample;

public class WordDocument implements Document {

public void open() {

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

}

}

***WordDocumentFactory.java***

package factoryMethodPatternExample;

public class WordDocumentFactory extends DocumentFactory {

public Document createDocument() {

return new WordDocument();

}

}

**Output:**

A computer screen shot of a program

AI-generated content may be incorrect.