**Exercise 1: Implementing the Singleton Pattern**

**Code:**

**//Logger.java**

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);

}

}

**//LoggerTest.java**

public class LoggerTest {

public static void main(String[] args) {

Logger logger1 = Logger.getInstance();

Logger logger2 = Logger.getInstance();

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

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

if(logger1 == logger2) {

System.out.println("Both logger1 and logger2 are the same instance.");

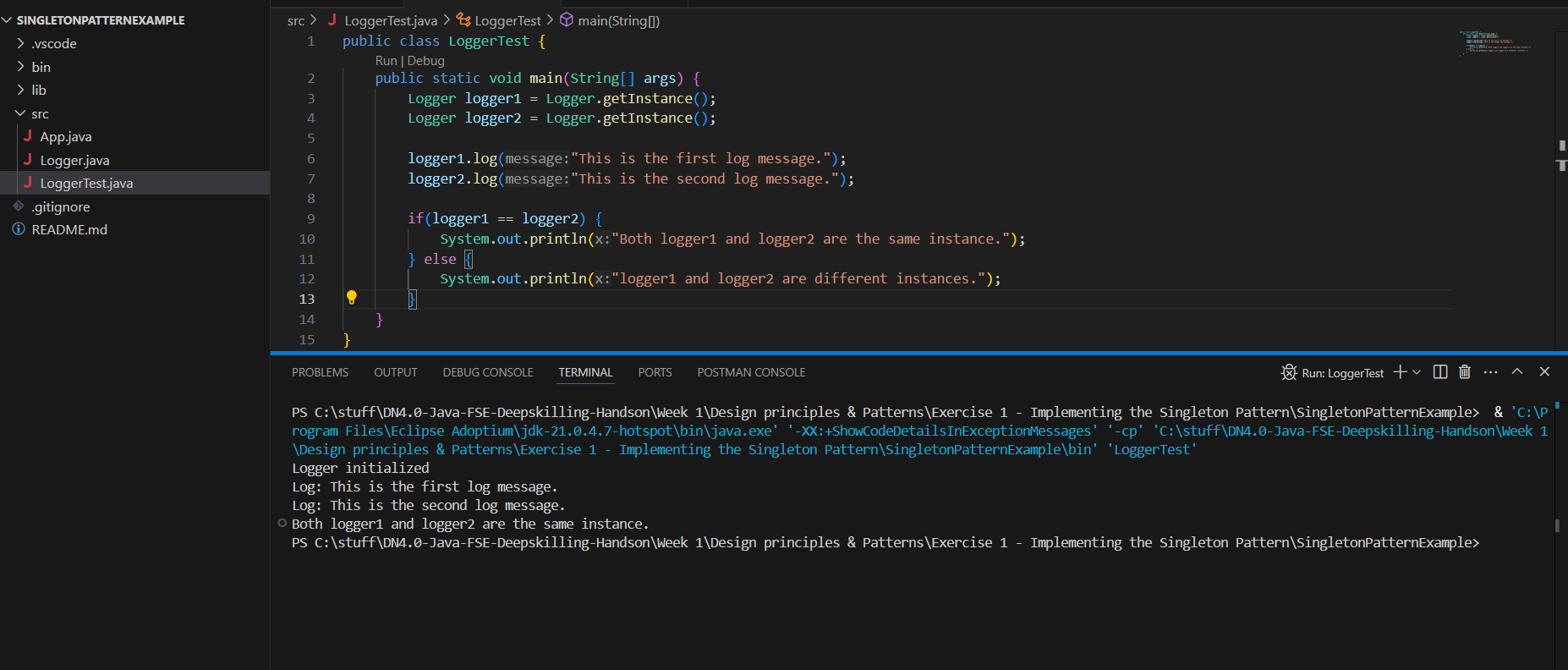
} else {

System.out.println("logger1 and logger2 are different instances.");

}

}

}

**Output:**

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

**Code:**

**//Document.java**

public interface Document {

void open();

}

**// WordDocument.java**

public class WordDocument implements Document {

public void open() {

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

}

}

**// PdfDocument.java**

public class PdfDocument implements Document {

public void open() {

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

}

}

**//ExcelDocument.java**

public class ExcelDocument implements Document {

public void open() {

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

}

}

**//DocumentFactory.java**

public abstract class DocumentFactory {

public abstract Document createDocument();

}

**//WordDocumentFactory.java**

public class WordDocumentFactory extends DocumentFactory {

public Document createDocument() {

return new WordDocument();

}

}

**//PdfDocumentFactory.java**

public class PdfDocumentFactory extends DocumentFactory {

public Document createDocument() {

return new PdfDocument();

}

}

**//ExcelDocumentFactory.java**

public class ExcelDocumentFactory extends DocumentFactory {

public Document createDocument() {

return new ExcelDocument();

}

}

**//App.java**

public class App {

public static void main(String[] args){

DocumentFactory wordFactory = new WordDocumentFactory();

Document wordDoc = wordFactory.createDocument();

wordDoc.open();

DocumentFactory pdfFactory = new PdfDocumentFactory();

Document pdfDoc = pdfFactory.createDocument();

pdfDoc.open();

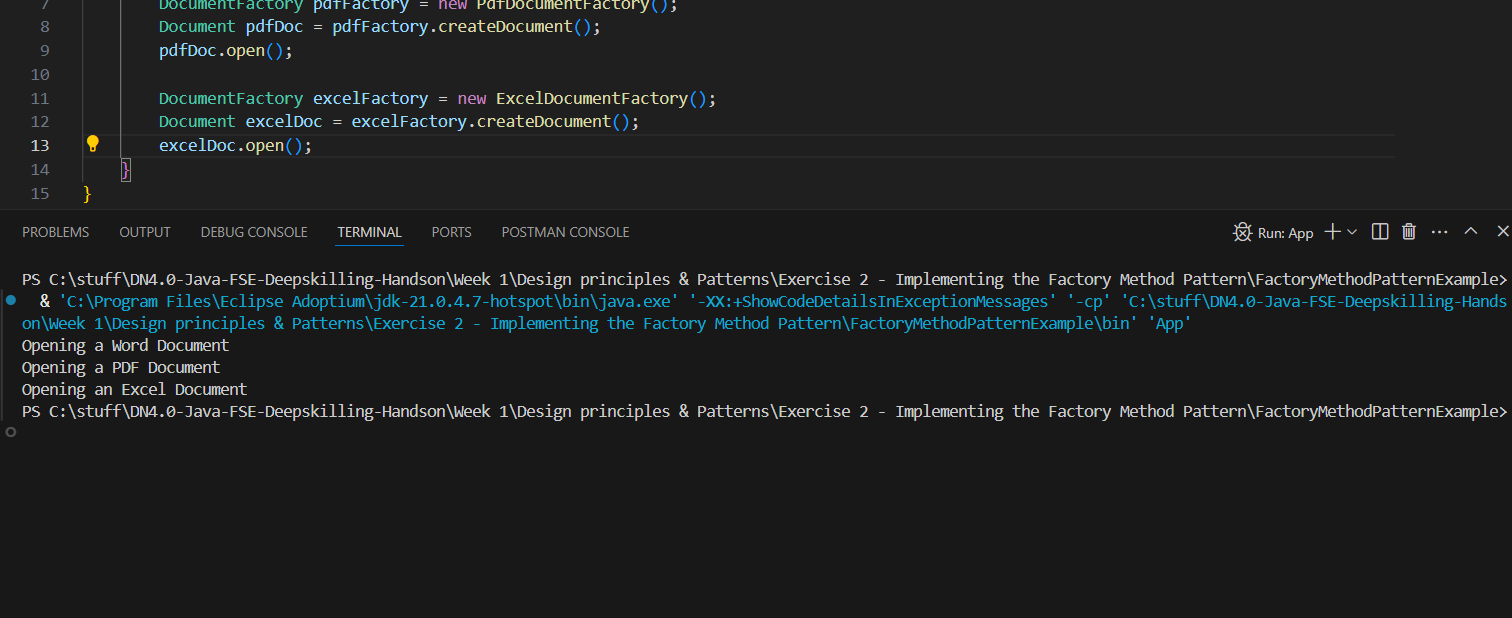
DocumentFactory excelFactory = new ExcelDocumentFactory();

Document excelDoc = excelFactory.createDocument();

excelDoc.open();

}

}

**Output:**