## **WEEK 1 Mandatory Hands On**

## Design Patterns and Principles Question:

Exercise 2: Implementing the Factory Method Pattern

Scenario:

You are developing a document management system that needs to create different types of documents (e.g., Word, PDF, Excel). Use the Factory Method Pattern to achieve this.

Steps:

1. Create a New Java Project:

o Create a new Java project named FactoryMethodPatternExample.

2. Define Document Classes:

o Create interfaces or abstract classes for different document types such as WordDocument, PdfDocument, and ExcelDocument.

3. Create Concrete Document Classes:

o Implement concrete classes for each document type that implements or extends the above interfaces or abstract classes.

4. Implement the Factory Method:

o Create an abstract class DocumentFactory with a method createDocument().

o Create concrete factory classes for each document type that extends DocumentFactory and implements the createDocument() method.

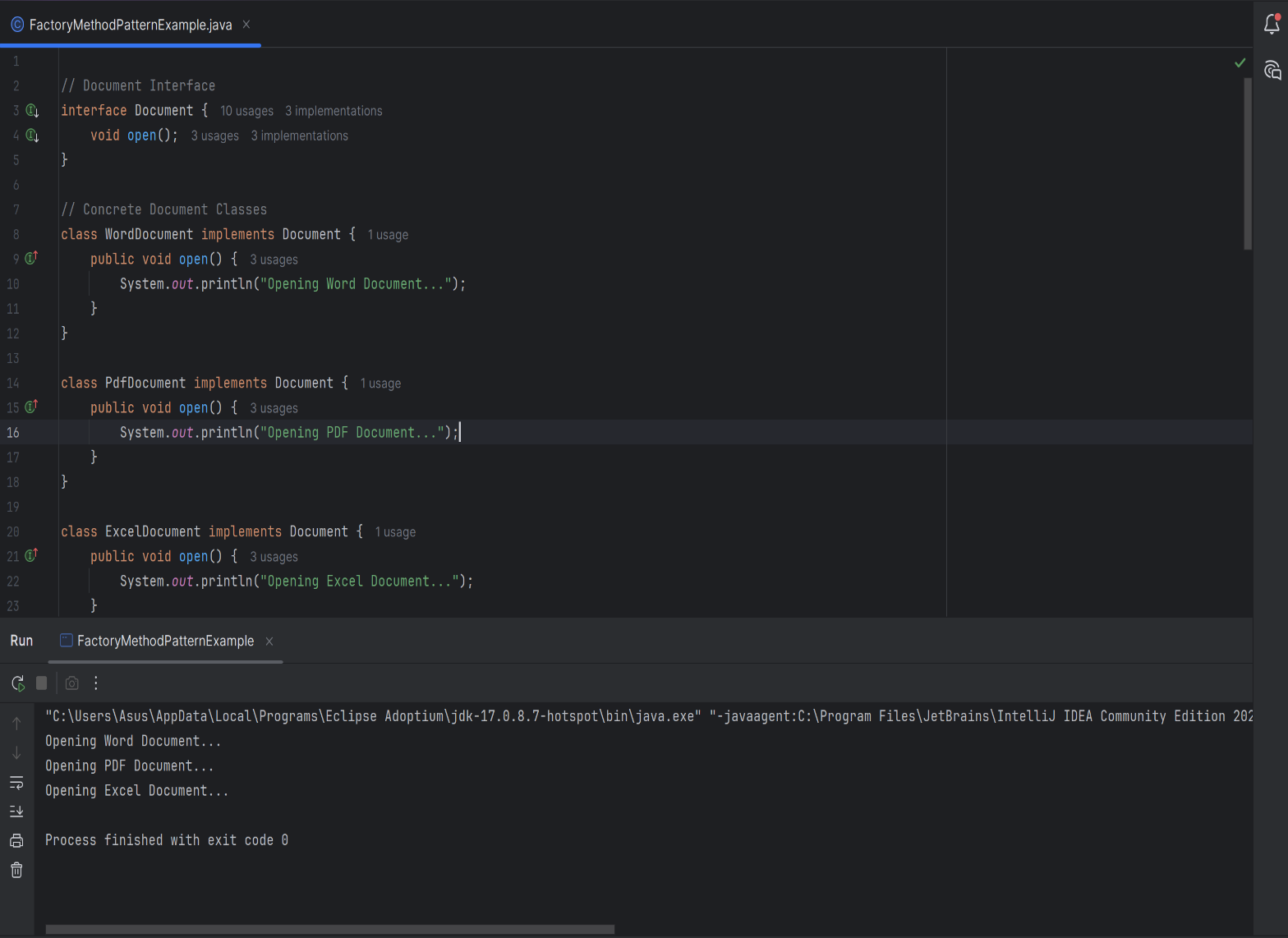
5. Test the Factory Method Implementation:

o Create a test class to demonstrate the creation of different document types using the factory method.

## Solution:

CODE: FactoryMethodPatternExample.java  
  
 **// Document Interface  
interface Document {  
 void open();  
}  
  
// Concrete Document Classes  
class WordDocument implements Document {  
 public void open() {  
 System.*out*.println("Opening Word Document...");  
 }  
}  
  
class PdfDocument implements Document {  
 public void open() {  
 System.*out*.println("Opening PDF Document...");  
 }  
}  
  
class ExcelDocument implements Document {  
 public void open() {  
 System.*out*.println("Opening Excel Document...");  
 }  
}  
  
// Factory Abstract Class  
abstract class DocumentFactory {  
 public abstract Document createDocument();  
}  
  
// Concrete Factories  
class WordDocumentFactory extends DocumentFactory {  
 public Document createDocument() {  
 return new WordDocument();  
 }  
}  
  
class PdfDocumentFactory extends DocumentFactory {  
 public Document createDocument() {  
 return new PdfDocument();  
 }  
}  
  
class ExcelDocumentFactory extends DocumentFactory {  
 public Document createDocument() {  
 return new ExcelDocument();  
 }  
}  
  
// Main Class to Test  
public class FactoryMethodPatternExample {  
 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:

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