**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:**

* + Create a new Java project named **FactoryMethodPatternExample**.

**2.Define Document Classes:**

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

**3.Create Concrete Document Classes:**

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

**4.Implement the Factory Method:**

* + Create an abstract class **DocumentFactory** with a method **createDocument()**.
  + Create concrete factory classes for each document type that extends DocumentFactory and implements the **createDocument()** method.

**5.Test the Factory Method Implementation:**

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

**FactoryMethodPatternExample**

**Document.java**

public interface Document {

void open();

}

**WordDocument.java**

public class WordDocument implements Document {

@Override

public void open() {

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

}

}

**PdfDocument.java**

public class PdfDocument implements Document {

@Override

public void open() {

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

}

}

**ExcelDocument.java**

public class ExcelDocument implements Document {

@Override

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 {

@Override

public Document createDocument() {

return new WordDocument();

}

}

**PdfDocumentFactory.java**

public class PdfDocumentFactory extends DocumentFactory {

@Override

public Document createDocument() {

return new PdfDocument();

}

}

**ExcelDocumentFactory.java**

public class ExcelDocumentFactory extends DocumentFactory {

@Override

public Document createDocument() {

return new ExcelDocument();

}

}

**Main.java**

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();

}

}

**OUTPUT:**

