**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.

**Step-1 : Create the Document interface**

**Document.java**

public interface Document {

void open();

}

**Step-2 : Create Concrete Document Classes**

**WordDocument.java**

public class WordDocument implements Document {

public void open() {

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

}

}

**PdfDocument.java**

public class PdfDocument implements Document {

public void open() {

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

}

}

**ExcelDocument.java**

public class ExcelDocument implements Document {

public void open() {

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

}

}

**Step-3 : Create the Abstract Factory**

**DocumentFactory.java**

public abstract class DocumentFactory {

public abstract Document createDocument();

}

**Step-4:Create Concrete Factory Classes**

**WordFactory.java**

public class WordFactory extends DocumentFactory {

public Document createDocument() {

return new WordDocument();

}

}

**PdfFactory.java**

public class PdfFactory extends DocumentFactory {

public Document createDocument() {

return new PdfDocument();

}

}

**ExcelFactory.java**

public class ExcelFactory extends DocumentFactory {

public Document createDocument() {

return new ExcelDocument();

}

}

**Step-5 : Create the Test Class**

**Main.java**

public class Main {

public static void main(String[] args) {

// Word document

DocumentFactory wordFactory = new WordFactory();

Document wordDoc = wordFactory.createDocument();

wordDoc.open();

// PDF document

DocumentFactory pdfFactory = new PdfFactory();

Document pdfDoc = pdfFactory.createDocument();

pdfDoc.open();

// Excel document

DocumentFactory excelFactory = new ExcelFactory();

Document excelDoc = excelFactory.createDocument();

excelDoc.open();

}

}

**OUTPUT:**

