**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.

**CODE:**

Document.java

public interface Document {

    void open();

    void save();

}

DocumentFactory.java

public abstract class DocumentFactory {

    public abstract Document createDocument();

}

ExcelDocument.java

public class ExcelDocument implements Document {

    @Override

    public void open() {

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

    }

    @Override

    public void save() {

        System.out.println("Saving the Excel Document");

    }

}

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 wordDoc = wordFactory.createDocument();

        wordDoc.open();

        wordDoc.save();

        System.out.println();

        DocumentFactory pdfFactory = new PdfDocumentFactory();

        Document pdfDoc = pdfFactory.createDocument();

        pdfDoc.open();

        pdfDoc.save();

        System.out.println();

        DocumentFactory excelFactory = new ExcelDocumentFactory();

        Document excelDoc = excelFactory.createDocument();

        excelDoc.open();

        excelDoc.save();

    }

}

PdfDocument.java

public class PdfDocument implements Document {

    @Override

    public void open() {

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

    }

    @Override

    public void save() {

        System.out.println("Saving the PDF Document");

    }

}

PdfDocumentFactory.java

public class PdfDocumentFactory extends DocumentFactory {

    @Override

    public Document createDocument() {

        return new PdfDocument();

    }

}

WordDocument.java

public class WordDocument implements Document {

    @Override

    public void open() {

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

    }

    @Override

    public void save() {

        System.out.println("Saving the Word Document");

    }

}

WordDocumentFactory.java

public class WordDocumentFactory extends DocumentFactory {

    @Override

    public Document createDocument() {

        return new WordDocument();

    }

}

**OUTPUT:**

