

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.

//FactoryMethodPatternExample.java

```
public class FactoryMethodPatternExample {

    // Document interface
    interface Document {
        void open();
    }

    // Document classes
    static class WordDocument implements Document {
        public void open() {
            System.out.println("Opening Word
document...");
        }
    }

    static class PdfDocument implements Document {
        public void open() {
            System.out.println("Opening PDF
document...");
        }
    }

    static class ExcelDocument implements Document {
        public void open() {
```

```
        System.out.println("Opening Excel
document...");
    }
}

// Abstract Factory
abstract static class DocumentFactory {
    public abstract Document createDocument();
}

// Concrete Factories
static class WordFactory extends DocumentFactory {
    public Document createDocument() {
        return new WordDocument();
    }
}

static class PdfFactory extends DocumentFactory {
    public Document createDocument() {
        return new PdfDocument();
    }
}

static class ExcelFactory extends DocumentFactory {
    public Document createDocument() {
        return new ExcelDocument();
    }
}

// Main method
public static void main(String[] args) {
    DocumentFactory wordFactory = new WordFactory();
```

```

        Document wordDoc = wordFactory.createDocument();
        wordDoc.open();

        DocumentFactory pdfFactory = new PdfFactory();
        Document pdfDoc = pdfFactory.createDocument();
        pdfDoc.open();

        DocumentFactory excelFactory = new
ExcelFactory();

        Document excelDoc =
excelFactory.createDocument();

        excelDoc.open();
    }
}

```

Output:

```

// Document interface
interface Document {
    void open();
}

// Document classes
static class WordDocument implements Document {
    public void open() {
        System.out.println("Opening Word document...");
    }
}

static class PdfDocument implements Document {
    public void open() {
        System.out.println("Opening PDF document...");
    }
}

static class ExcelDocument implements Document {
    public void open() {
        System.out.println("Opening Excel document...");
    }
}

```

PS C:\Users\TRAINING-16\Desktop\JAVA FSE 2025\Week - 1\Design Patterns and Principles\Exercise-2 Implementing the Factory Method Pattern> javac FactoryMethodPatternExample.java

PS C:\Users\TRAINING-16\Desktop\JAVA FSE 2025\Week - 1\Design Patterns and Principles\Exercise-2 Implementing the Factory Method Pattern> java FactoryMethodPatternExample

Opening Word document...

Opening PDF document...

Opening Excel document...

PS C:\Users\TRAINING-16\Desktop\JAVA FSE 2025\Week - 1\Design Patterns and Principles\Exercise-2 Implementing the Factory Method Pattern>