**Exercise 2: Implementing the Factory Method Pattern**

**Implementation :-**

abstract class Document {

    public abstract void open();

    public abstract void save();

    public abstract void close();

}

class WordDocument extends Document {

    @Override

    public void open() {

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

    }

    @Override

    public void save() {

        System.out.println("Saving Word document to disk...");

    }

    @Override

    public void close() {

        System.out.println("Closing Word document.");

    }

}

class PdfDocument extends Document {

    @Override

    public void open() {

        System.out.println("Launching PDF viewer...");

    }

    @Override

    public void save() {

        System.out.println("Exporting content to PDF format...");

    }

    @Override

    public void close() {

        System.out.println("Shutting down PDF viewer.");

    }

}

class ExcelDocument extends Document {

    @Override

    public void open() {

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

    }

    @Override

    public void save() {

        System.out.println("Saving spreadsheet data...");

    }

    @Override

    public void close() {

        System.out.println("Closing Excel document.");

    }

}

abstract class DocumentFactory {

    public abstract Document createDocument();

}

class WordDocumentFactory extends DocumentFactory {

    @Override

    public Document createDocument() {

        return new WordDocument();

    }

}

class PdfDocumentFactory extends DocumentFactory {

    @Override

    public Document createDocument() {

        return new PdfDocument();

    }

}

class ExcelDocumentFactory extends DocumentFactory {

    @Override

    public Document createDocument() {

        return new ExcelDocument();

    }

}

public class FactoryMethodPatternExample {

    public static void main(String[] args) {

        System.out.println("=== Document Factory Demo ===\n");

        DocumentFactory wordFactory = new WordDocumentFactory();

        Document wordDoc = wordFactory.createDocument();

        wordDoc.open();

        wordDoc.save();

        wordDoc.close();

        System.out.println("\n-----------------------------\n");

        DocumentFactory pdfFactory = new PdfDocumentFactory();

        Document pdfDoc = pdfFactory.createDocument();

        pdfDoc.open();

        pdfDoc.save();

        pdfDoc.close();

        System.out.println("\n-----------------------------\n");

        DocumentFactory excelFactory = new ExcelDocumentFactory();

        Document excelDoc = excelFactory.createDocument();

        excelDoc.open();

        excelDoc.save();

        excelDoc.close();

        System.out.println("\n=== End of Factory Demo ===");

    }

}

**Output :-**

