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

**Define the Document Interface**

**Document.java**

public interface Document {

void open();

}

**Create Concrete Document Classes**

**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.");

}

}

**Implement the Factory Method**

**DocumentFactory.java**

public abstract class DocumentFactory {

public abstract Document createDocument();

}

**Create Concrete Factory Classes**

**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();

}

}

**Test the Factory Method Implementation**

**TestDocumentFactory.java**

public class TestDocumentFactory {

public static void main(String[] args) {

// Create Word document

DocumentFactory wordFactory = new WordDocumentFactory();

Document wordDoc = wordFactory.createDocument();

wordDoc.open();

// Create PDF document

DocumentFactory pdfFactory = new PdfDocumentFactory();

Document pdfDoc = pdfFactory.createDocument();

pdfDoc.open();

// Create Excel document

DocumentFactory excelFactory = new ExcelDocumentFactory();

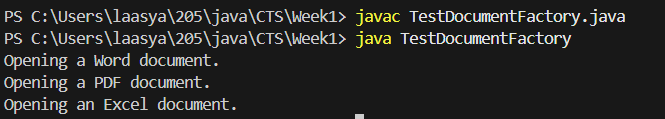
Document excelDoc = excelFactory.createDocument();

excelDoc.open();

}

}

**OUTPUT:**

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