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:

## Step 1: Create a New Java Project

Create a new Java project named FactoryMethodPatternExample.

## Step 2: Define Document Classes

// File: Document.java  
package factory;  
  
public interface Document {  
 void open();  
}

## Step 3: Create Concrete Document Classes

// File: WordDocument.java  
package factory;  
  
public class WordDocument implements Document {  
 public void open() {  
 System.out.println("Opening Word Document");  
 }  
}  
  
// File: PdfDocument.java  
package factory;  
  
public class PdfDocument implements Document {  
 public void open() {  
 System.out.println("Opening PDF Document");  
 }  
}  
  
// File: ExcelDocument.java  
package factory;  
  
public class ExcelDocument implements Document {  
 public void open() {  
 System.out.println("Opening Excel Document");  
 }  
}

## Step 4: Implement the Factory Method

// File: DocumentFactory.java  
package factory;  
  
public abstract class DocumentFactory {  
 public abstract Document createDocument();  
}  
  
// File: WordDocumentFactory.java  
package factory;  
  
public class WordDocumentFactory extends DocumentFactory {  
 public Document createDocument() {  
 return new WordDocument();  
 }  
}  
  
// File: PdfDocumentFactory.java  
package factory;  
  
public class PdfDocumentFactory extends DocumentFactory {  
 public Document createDocument() {  
 return new PdfDocument();  
 }  
}  
  
// File: ExcelDocumentFactory.java  
package factory;  
  
public class ExcelDocumentFactory extends DocumentFactory {  
 public Document createDocument() {  
 return new ExcelDocument();  
 }  
}

## Step 5: Test the Factory Method Implementation

// File: FactoryTest.java  
package factory;  
  
public class FactoryTest {  
 public static void main(String[] args) {  
 DocumentFactory wordFactory = new WordDocumentFactory();  
 Document wordDoc = wordFactory.createDocument();  
 wordDoc.open();  
  
 DocumentFactory pdfFactory = new PdfDocumentFactory();  
 Document pdfDoc = pdfFactory.createDocument();  
 pdfDoc.open();  
  
 DocumentFactory excelFactory = new ExcelDocumentFactory();  
 Document excelDoc = excelFactory.createDocument();  
 excelDoc.open();  
 }  
}