**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.

//file name Document.java

package factory;

public interface Document {

void open();

}

//file name PdfDocument.java

package factory;

public class PdfDocument implements Document {

public void open() {

System.out.println("PDF document is opening ...");

}

}

// file name WordDocument.java

package factory;

public class WordDocument implements Document {

public void open() {

System.out.println("Word document is opening...");

}

}

//file name DocumentFactory.java

package factory;

public abstract class DocumentFactory {

public abstract Document createDocument();

}

//file name WordDocumentFactory.java

package factory;

public class WordDocumentFactory extends DocumentFactory {

public Document createDocument() {

return new WordDocument();

}

}

//file name PdfDocumentFactory.java

package factory;

public class PdfDocumentFactory extends DocumentFactory {

public Document createDocument() {

return new PdfDocument();

}

}

//file name FactoryTest.java

import factory.\*;

public class FactoryTest {

public static void main(String[] args) {

DocumentFactory wordFactory = new WordDocumentFactory();

Document word = wordFactory.createDocument();

word.open();

DocumentFactory pdfFactory = new PdfDocumentFactory();

Document pdf = pdfFactory.createDocument();

pdf.open();

}

}

**Output:**

