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DN-4.0 - Java FSE - Deep Skilling

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:

o 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:

- o 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.

Solution:

Document.java

```
package factory;

public interface Document {
   void open();
}
```

```
WordDocument.java
package factory;
public class WordDocument implements Document {
  public void open() {
    System.out.println("Opening Word document.");
  }
}
PdfDocument.java
package factory;
public class PdfDocument implements Document {
  public void open() {
    System.out.println("Opening PDF document.");
  }
}
ExcelDocument.java
package factory;
public class ExcelDocument implements Document {
  public void open() {
    System.out.println("Opening Excel document.");
  }
}
DocumentFactory.java
package factory;
public abstract class DocumentFactory {
  public abstract Document createDocument();
```

```
}
WordFactory.java
package factory;
public class WordFactory extends DocumentFactory {
  public Document createDocument() {
    return new WordDocument();
  }
}
PdfFactory.java
package factory;
public class PdfFactory extends DocumentFactory {
  public Document createDocument() {
    return new PdfDocument();
  }
}
ExcelFactory.java
package factory;
public class ExcelFactory extends DocumentFactory {
  public Document createDocument() {
    return new ExcelDocument();
  }
}
Main.java (contains main() method)
package factory;
```

```
public class Main {
  public static void main(String[] args) {
    DocumentFactory factory;

  factory = new WordFactory();
  Document word = factory.createDocument();
  word.open();

  factory = new PdfFactory();
  Document pdf = factory.createDocument();
  pdf.open();

  factory = new ExcelFactory();
  Document excel = factory.createDocument();
  excel.open();
}
```

Output:

Problems @ Javadoc □ Declaration □ Console × ① Eclipse IDE for Java Developers 2025-06 Release
<terminated > Main (1) [Java Application] C:\Users\AMOGH\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.ful
Opening Word document.
Opening PDF document.
Opening Excel document.