WEEK 1

Mandatory Hands-On

**SOLID PRINCIPLES AND DESIGN PATTERNS:**

**EX:2 Implementing the Factory method Pattern**

The reason behind the Document management app to be in Factory method is to

* Encapsulate the object creation process/ Abstract the delivery of the system to the user.
* Implicitly follow OCP ( Open/ Close Principle).

**Definition and Implementation of classes using Factory method pattern:**

public interface Document {

void open();

}

public class WordDocument implements Document {

public void open() {

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

}

}

public class PdfDocument implements Document {

public void open() {

System.out.println("Opening a PDF document.");

}

}

public class ExcelDocument implements Document {

public void open() {

System.out.println("Opening an Excel document.");

}

}

public abstract class DocumentFactory {

public abstract Document createDocument();

}

public class WordDocumentFactory extends DocumentFactory {

public Document createDocument() {

return new WordDocument();

}

}

public class PdfDocumentFactory extends DocumentFactory {

public Document createDocument() {

return new PdfDocument();

}

}

public class ExcelDocumentFactory extends DocumentFactory {

public Document createDocument() {

return new ExcelDocument();

}

}

* Interface document created in order to implement the functionality of opening the document, as there can be more number of document types that can be introduced.
* Each class is created for the types of documents to handle particular functionalities of a particular document.(Concrete classes).
* Document factory is introduced to act as the abstraction providing super factory class, followed by factory classes for all types of documents.(Concrete factories).

**Testing the Factory classes:**

public class FactoryMethodTest {

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();

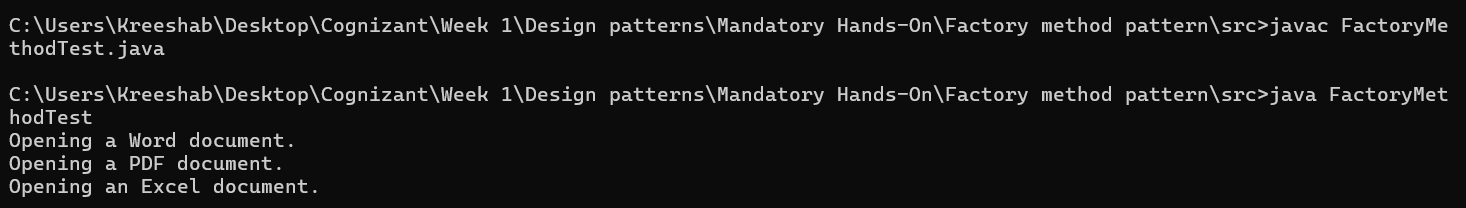
excelDoc.open();

}

}

* Instances for every factory class is created to check the functionalities of the concrete classes created.

**TESTING OUTPUT:**

****