# Factory Method Pattern for Document Management

1. **What is the Factory Method Pattern**

## Basic Idea

The Factory Method Pattern is a way to create objects without saying exactly what type they are. It uses a factory class to make objects, so you can easily add new types later. For a document system, it lets you create Word, PDF, or Excel documents without changing the main code.

# Setting Up the Classes

## Document Interface and Classes

We set up:

* + - A Document interface with an open method that all documents use.
    - Classes WordDocument, PdfDocument, and ExcelDocument that follow the Document interface and say what happens when you open them.

# Implementing the Factory Method

## Factory Classes

The Factory Method Pattern is built with:

* + - An abstract DocumentFactory class with a createDocument method that factories must define.
    - Concrete factories (WordDocumentFactory, PdfDocumentFactory, ExcelDoc- umentFactory) that make specific documents by returning WordDocument, PdfDocument, or ExcelDocument objects.

# Testing the Factory Method

## Testing the System

The DocumentTest class checks the factories:

* + - Creates a factory for each document type (Word, PDF, Excel).
    - Uses each factory’s createDocument to make a document.
    - Calls open on each document to test it. Running DocumentTest shows:

Opening Word document Opening PDF document Opening Excel document

This proves the factories create the right document

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