# Design Patterns:

# Factory:

Code:

Text

Description automatically generated

Text

Description automatically generated  
Location: src/main/java/org/jabref/gui/specialfields/SpecialFieldMenuItemFactory.java

Reasoning:

Due to having optional fields, this implementation of the abstract method implements different specifications of the same object.

**Factory Method** is a creational design pattern that provides an interface for creating objects in a superclass, but allows subclasses to alter the type of objects that will be created.

# Builder:

Code:

Text

Description automatically generated

Text

Description automatically generated

Location: src/main/java/org/jabref/preferences/PreviewPreferences.java

Reasoning:

In this piece of code there are multiple construction methods under same method. This resembles the builder design pattern.

**Builder** is a creational design pattern that lets you construct complex objects step by step. The pattern allows you to produce different types and representations of an object using the same construction code.

# Composite:

Code:Text

Description automatically generated

Location: src/main/java/org/jabref/logic/layout/format/CompositeFormat.java  
  
Reasoning:

The pattern present in this piece of code enables multiple ways to create a same type of object

**Composite** is a structural design pattern that lets you compose objects into tree structures and then work with these structures as if they were individual objects.