AcademiCS Application Framework

Specifications for the Fourth Set of Milestones and Deliverables

The first set of milestones/deliverables is concerned only with the basics of documents and document presentation in the demonstration application called The Big Pixel.

1. Glossary

Brush	A conceptual tool that the user can use to add a big pixel element to a document.
Brush Color	The color of the next big pixel element to be added to a document.
Brush Size	The size of the next square big pixel element to be added to a document.

2. Engineering Design

The relationships between the various classes that must be implemented for the fourth set of milestones/deliverables is illustrated in the UML class diagram (that is available as an SVG file). In addition to the specifications in that diagram, the classes/interfaces must comply with the following specifications.

2.1 The `Close` Class

The `Close` class is an encapsulation of an action that closes a document. The parameter `D` denotes the class of the document.

It must listen to `DOCUMENT_ACTIVATED`, `DOCUMENT_CLOSED`, and `DOCUMENT_EDITED` property change events in order to enforce the appropriate work flow. The `propertyChange()` method must enforce this work flow.

2.2 The `New` Class

The `New` class is an encapsulation of an action that creates a new document. The parameter `D` denotes the class of the document and the parameter `F` denotes the class of the factory that knows how to produce a document of type `D`. Note that ths "source" in `EditableFactory` can be of any class since this class only uses the `createDefaultProduct()` method.

It must listen to `DOCUMENT_ACTIVATED`, `DOCUMENT_CLOSED`, and `DOCUMENT_EDITED` property change events in order to enforce the appropriate work flow. The `propertyChange()` method must enforce this work flow.

2.3 The `DelegatingPrintable` Class

A `DelegatingPrintable` is a `Printable` that delegates to a `Component` for the rendering. That is, the after scaling the `Graphics2D` object appropriately, the `print()` method in the `DelegatingPrintable` class invokes the `paint()` method in the delegate.

2.4 The `ComponentPrinter` Class

The `ComponentPrinter` class is a utility class that uses a `PrinterJob` object to print a `DelegatingPrintable`.

2.5 The `PrintImage` Class

The `PrintImage` class is an encapsulation of an action that prints a `Component` that displays a document.

The `actionPerformed()` method must attempt to print the `Component` using a `ComponentPrinter`. If the print process fails, it must present the user with a message dialog containing the `ERROR_PRINT` message.

2.6 The `BigPixelEditor` Class

The `BigPixelEditor` class from the earlier set of deliverables/milestons must be modified for this set of deliverables/milestones.

In response to `mouseClicked()` messages it must determine if a `BigPixelElement` with the current brush size is small enough to be added to the current document (with the upper-left corner of the element at the cell the user clicked in). If it is small enough, it must be added (with the current color). Otherwise, it must not do anything. This method must make use of the `GridConverter` class to make this determination.

It must fire a `DOCUMENT_EDITED` property change event whenever a BiPixelElement is added to the document.

The `propertyChange()` method must now also respond to `DOCUMENT_CLOSED` events.

The `setDocumentManager()` method must now also ensure that the `DocumentManager` listens to `DOCUMENT_CLOSED` events appropriately.

2.7 The `SetBrushSize` Class

The `SetBrushSize` class is an encapsulation of an action that sets the brush size of a `BigPixelEditor`. There are 9 possible brush sizes, from 1 through 9.

2.8 The `SetColor` Class

The `SetColor` class is an encapsulation of an action that sets the brush color of a `BigPixelEditor`.

2.9 The `ShowGrid` Class

The `ShowGrid` class is an encapsulation of an action that sets the grid visibility of a `BigPixelEditor`.