Due Date

This assignment is due by 11:59 PM, February 20.

Assignment

This week you’ll extend timeline events to give users the chance to associate an image with each event. You’ll also make each item in the timeline view display its date as well as its title, and its image, if it has one. You’ll solve the ‘out of room’ problem of too many items by putting the timeline view in a scroll view, and adjusting its size as needed. You’ll add cut/copy/paste and delete support, and basic document printing.

There are a number of parts to this assignment. Here’s a rough outline of what you’ll need to do to complete the assignment successfully:

1. Display the date of each timeline event in the timeline item box.
2. Add support for each timeline event to have an image.
   2.1. Update timeline event class to add instance variable, accessor methods, and archiving support for the image.
   2.2. Update the timeline view and timeline item to make a timeline item larger to accommodate drawing the image. (Items with an image should be larger than items without one.)
   2.3. Update the data source protocol as needed to retrieve the image.
   2.4. Ensure undo works for setting an image
   2.5. Add an “Event” menu with a menu item “Select Image…” that brings up an open panel and lets the user select an image for the selected item in the active window’s document.
3. Put the timeline view in a scroll view, and adjust the size of the timeline view as needed to include all items. Reduce the size of the timeline view as items are removed or change size - but be sure to keep the timeline view size no smaller than the content size of the enclosing scroll view.
4. When an event is selected, the user should be able to use the menu items Cut, Copy, and Delete to — obviously — cut, copy, and delete the current selection. The user should also be able to use the menu item Paste to paste a previously cut or copied event into the document. To support this, you’ll need to implement the cut:, copy:, paste:, and delete: methods in your document subclass, along with validateMenuItem:.
5. In addition to putting your own custom pasteboard type on the pasteboard, also provide a string representation of an event.
6. Add printing - the active document should print its timeline view when the Print menu is selected.

Testing

Make sure the following work in your application (these are the things we will test to determine your grade).

1. Your project should build without errors or warnings.
2. Your project should run without crashing.

3. Each timeline item should display the date. When the user edits the date in the table view, the timeline view should update accordingly.

4. There should be an “Event” menu in the application with one menu item “Select Image….” This menu item should only be enabled when there is a selected timeline event in the active document. When selected, an open panel should be presented to the user, allowing them to select only image files.

5. When a user selects an image for a timeline event, the timeline view should update so that the corresponding item displays the image. Saving a document should also save the image information. You should be able to undo/redo setting an image.

6. As the number or size of items changes, the timeline view should grow or shrink to include all timeline items. The timeline view should never be smaller than the content size of its enclosing scroll view.

7. When resizing the window, the scroll view containing the timeline view should resize, the table view should stay the same size.

8. The Cut, Copy, and Delete menu items under the Edit menu should only be enabled when there is a selected event in the active document. The Paste menu item should only be enabled if there are types on the pasteboard that can be pasted into the document.

9. Edit→Delete should remove the current event. After delete, you can either clear the selection or select a different event.

10. Edit→Copy should put the selected event on the pasteboard as archived data. It should also provide a string representation of the event (the title and date are fine).

11. Edit→Cut should be the same as a copy followed by a delete.

12. Edit→Paste should add the event on the pasteboard to the current document, and make it the selected event. It is not necessary for the pasted event to replace the currently selected event.

13. Verify that you can paste events copied or cut from one document into another. Pasted events should have the same information as they did when cut/copied.

14. You should be able to undo and redo Cut, Copy, Paste, and Delete operations. Ensure that the undo menu items properly reflect the action.

15. The Print… command should print the contents of the active document’s TimelineView.

16. All previous features of the application should continue to work.

Hints

Look at the posted sample binary for expected resize behavior when resizing the window. Even though your timeline view is now in a scroll view, the autoresize ‘struts and springs’ you set in Interface Builder are still very handy - they can make sure that as the scroll view changes size due to a window resize, that the document view within changes size to match automatically.

Troubleshooting

If you implemented your timeline view to have a flipped coordinate system, images will seem to draw upside-down. Apply a transform just before drawing the image, and remove the transform just after drawing the image. See lecture slides for details.
**Extra Credit**

Keep in mind that extra credit only applies if the required behavior outlined above is working. Don't spend time on extra credit until you've got the basics down.

- Æsthetics matter: a particularly attractive, innovative, or clever design of the interface is always appreciated. (If you want consideration for extra credit in this case, you must let us know when you submit your project.)

- Include the rating of a timeline event in your drawing of a timeline item. You can set up an NSLevelIndicatorCell in a timeline item to do the drawing. Hint: take a look at the inherited NSCell method -drawWithFrame:inView:.

- Add a category to an event, and allow the user to set it in the table view. In the timeline view change the background color of each timeline item to reflect its category. Hint: in InterfaceBuilder you can configure a column in the table view to use a NSPopUpButtonCell to select the category.

- Allow pasting of an image into the selected event. If there is a selected event and an image type on the pasteboard, enable the Paste menu. When the menu is selected in this case, pull the image data off of the pasteboard, create an image and set it for that timeline event. The action should be undoable and the view should update immediately.

- Any of the extra credit from Personal Timeline I or II is fair game for this assignment (assuming you didn't already submit it previously — no double dipping!).