The JCommon Class Library

Version 0.7.0

Reference Guide

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Contents

1 Introduction

1.1 Overview

JCommon is a free class library containing miscellaneous utility classes written in Java. It is used in several projects, including JFreeChart and JFreeReport.

The official home page for JCommon is:

`http://www.object-refinery.com/jcommon/index.html`

JCommon should compile and run on any implementation of the Java 2 platform. You can use JCommon in your own projects, subject to the terms of the GNU Lesser General Public Licence (see the Appendix for details).

1.2 Acknowledgements

Thanks to the following people who have contributed to JCommon: Anthony Boulestreau, Jeremy Bowman, J. David Eisenberg, Paul English, Hans-Jurgen Greiner, Achilleus Mantzios, Thomas Meier, Aaron Metzger, Krzysztof Paz, Nabuo Tamemasa, Mark Watson, Matthew Wright, Hari, and Sam (oldman).

1.3 Comments and Suggestions

If you have any comments or suggestions regarding the JCommon Class Library, or this document, please post a message to the JCommon forum (preferred) or send an e-mail to: `david.gilbert@object-refinery.com`.

2 Packages

2.1 Overview

The table below lists the packages in the JCommon Class Library:

Package:	Description:
com.jrefinery.date	Date related classes.
com.jrefinery.io	I/O related classes.
com.jrefinery.layout	Custom layout managers.
com.jrefinery.resources	Localised resources.
com.jrefinery.ui	Useful user interface classes.
com.jrefinery.ui.about	Classes for displaying information about applications.
com.jrefinery.ui.about.resources	Localised resources.
com.keypoint	PNG encoder.

In the sections that follow, you will find reference information for the individual classes that make up these packages. Additional information can be found in the Javadoc-generated HTML documentation for JCommon.

3 Package: com.jrefinery.date

This package contains classes that relate to processing dates.

3.1 AnnualDateRule

3.1.1 Overview

An *annual date rule* is a function that returns a date when given a year as an argument. This abstract base class defines the standard behaviour for all annual date rules.

> `public SerialDate getDate(int yyyy);`
> Returns the date for the specified year. Note that it is acceptable for this method to return `null`.

There are several known subclasses of `AnnualDateRule`:

- `DayAndMonthRule` - generates a date that falls on a specific day and month every year;
- `DayOfWeekInMonthRule` - for example, the third Wednesday in September every year;
- `EasterSundayRule` - an algorithm for calculating the date of Easter Sunday for a given year;
- `RelativeDayOfWeekRule` - a day-of-the-week relative to a subrule (for example, the Friday preceding Easter Sunday).

See Also
SerialDate

3.2 DayAndMonthRule

3.2.1 Overview

An annual date rule that returns the same day and month for every year (for example, 25 December).

3.2.2 Constructors

The standard constructor is defined as follows:

> `public DayAndMonthRule(int dayOfMonth, int month);`
> The `dayOfMonth` parameter should be in the range 1 to 31 and the `month` parameter in the range 1 to 12 (you can use the constants `SerialDate.JANUARY`, `SerialDate.FEBRUARY`...).

There is also a default constructor which returns a `DayAndMonthRule` for 1 January.

See Also
AnnualDateRule

3.3 DayOfWeekInMonthRule

3.3.1 Overview

An annual date rule based on when a specific day of the week falls within a month—for example, the "third Wednesday in September". You can specify any day of the week along with the count specifier `FIRST_WEEK_IN_MONTH`, `SECOND_WEEK_IN_MONTH`, `THIRD_WEEK_IN_MONTH`, `FOURTH_WEEK_IN_MONTH` or `LAST_WEEK_IN_MONTH`.

See Also
`AnnualDateRule`

3.4 EasterSundayRule

3.4.1 Overview

An annual date rule that returns the date of Easter Sunday for any given year. I obtained the algorithm from the Calendar FAQ at:

`http://www.tondering.dk/claus/calendar.html`.

It is based on an algorithm by Oudin (1940), quoted in "Explanatory Supplement to the Astronomical Almanac", P. Kenneth Seidelmann, editor.

See Also
`AnnualDateRule`

3.5 MonthConstants

3.5.1 Overview

Useful constants representing the months January through to December.

3.6 RelativeDayOfWeekRule

3.6.1 Overview

An annual date rule calculated by finding the date that falls on a certain day-of-the-week preceding, following or nearest to the date produced by another annual date rule. For example, this date rule can return "the Monday following Easter Sunday", or "the Friday nearest to 22 January".

3.6.2 Constructor

The constructor is defined as follows:

```
public DayOfWeekAnnualDateRule(AnnualDateRule reference, int dayOfWeek,
int relative);
```

The `dayOfWeek` parameter can be specified using `SerialDate.MONDAY`, `SerialDate.TUESDAY` and so on. The `relative` parameter is one of: `SerialDate.PRECEDING`, `SerialDate.NEAREST` and `SerialDate.FOLLOWING`.

See Also
AnnualDateRule

3.7 SerialDate

3.7.1 Overview

An abstract class for representing dates. A subclass (`SpreadsheetDate`) has been implemented. I use this class when the precision of `java.util.Date` gets in the way, as it sometimes does.

See Also
SerialDateUtilities, SpreadsheetDate.

3.8 SerialDateUtilities

3.8.1 Overview

A collection of utility methods for dealing with dates. Most of the methods are static. The non-static methods assume that you have created a single instance of `SerialDateUtilities`.

3.9 SpreadsheetDate

3.9.1 Overview

Represents a date using an integer, in a very similar way to the date encoding used in several spreadsheets including Microsoft Excel and Lotus 123. Implements the `SerialDate` interface. This class supports dates in the range 1 January 1900 to 31 December 9999.

For those interested in alternatives to Java's `Date` and `Calendar` classes, I would recommend taking a look at the `BigDate` class from Canadian Mind Products:

```
http://www.mindprod.com
```

It costs US$10, including source code (which you can evaluate prior to purchase).

See Also
SerialDate

4 Package: com.jrefinery.io

This package is for classes related to input/output functions.

4.1 FileUtilities

4.1.1 Overview

A class containing utility methods relating to files.

4.1.2 Methods

To find a file on the classpath:

```
public static File findFileOnClassPath(String name);
```
Locates a file by name at any point on the classpath.

5 Package: com.jrefinery.layout

This package contains some custom layout managers.

5.1 CenterLayout

5.1.1 Overview

Specialised layout manager that places a single component in the center of its parent.

5.2 FormatLayout

5.2.1 Overview

A flexible layout manager that formats components in rows.

5.3 LCBLayout

5.3.1 Overview

An earlier (and much simpler) version of `FormatLayout`.

6 Package: com.jrefinery.resources

This package contains localised resources for the JCommon Class Library.

6.1 JCommonResources

6.1.1 Overview

Localised resources for the JCommon Class Library.

7 Package: com.jrefinery.ui

This package contains classes and interfaces that are used to create user interfaces. Please note that some of the classes are "stop-gap" solutions put together for the purpose of creating demonstration applications only—however, it is my intention to replace these, over time, with more robust code.

7.1 ApplicationFrame

7.1.1 Overview

A useful base class for creating simple demo application.

7.2 BevelArrowIcon

7.2.1 Overview

An icon that draws an arrow that points up or down. The purpose of this class is to show the sort order of a column in a `JTable`, by drawing the arrow icon next to the column header.

7.2.2 Notes

This class is based on code by Nabuo Tamemasa (version 1.0, 26 February 1999) that was posted on:

```
http://www.codeguru.com
```

No contact information was provided by the author.

See Also
`SortedTableModel`

7.3 DateChooserPanel

An incomplete implementation of a control that allows the user to select a date from a calendar-style panel.

7.4 Drawable

7.4.1 Overview

A simple interface for an object that can draw itself (or something) on a `Graphics2D`.

7.5 ExtensionFileFilter

A simple file filter that can be added to a `JFileChooser`—the files are filtered on the basis of a single extension.

7.6 FontChooserDialog

A dialog that allows the user to select a font. This class extends `StandardDialog`.

See Also
`FontChooserPanel`

7.7 FontChooserPanel

A panel containing the user interface for the `FontChooserDialog` class.

See Also
`FontChooserDialog`

7.8 FontDisplayField

A field for displaying a description of a font. This class extends `JTextField`.

7.9 InsetsChooserPanel

7.9.1 Overview

A panel for editing insets.

7.10 InsetsTextField

7.10.1 Overview

A text field for editing one item of an `Insets` object.

7.11 IntegerDocument

7.11.1 Overview

A document type for entering integers in a text field.

7.12 L1R1ButtonPanel

7.12.1 Overview

A panel that contains a single button on the left and a single button on the right. As the panel is resized, the default layout manager takes care of positioning the buttons.

See Also
`L1R2ButtonPanel`

7.13 L1R2ButtonPanel

7.13.1 Overview

A panel that contains a single button on the left and two buttons on the right. Nested panels and layout managers take care of positioning the buttons as the panel resizes.

See Also
L1R1ButtonPanel

7.14 L1R3ButtonPanel

7.14.1 Overview

A panel that contains a single button on the left and three buttons on the right. Nested panels and layout managers take care of positioning the buttons as the panel resizes.

7.15 NumberCellRenderer

7.15.1 Overview

A `TableCellRenderer` that formats numbers in a `JTable` according to the conventions of the default locale.

7.16 PaintSample

7.16.1 Overview

A small graphical user interface item that displays a sample of a `Paint` object.

See Also
StrokeSample

7.17 RefineryUtilities

7.17.1 Overview

A container for a number of useful static methods relating to Swing components.

7.17.2 Methods

To center a frame or window on the screen:

```
public static void centerFrameOnScreen(Window frame);
```
Centers the frame on the screen.

To position a frame or window on the screen:

```
public static void positionFrameOnScreen(Window frame, double horizontalPercent,
double verticalPercent);
```
Positions the frame on the screen at a relative position (where 0.5, 0.5 is the center of the screen).

To position a frame or window randomly:

`public static void positionFrameRandomly(Window frame);`
Positions the frame randomly on the screen, but always so that the entire frame is visible.

To center a dialog relative to its parent window:

`public static void centerDialogInParent(Dialog dialog);`
Centers the dialog relative to its parent.

To create a panel containing a table:

`public static JPanel createTablePanel(TableModel model);`
Returns a `JPanel` that contains a table.

7.18 SerialDateChooserPanel

7.18.1 Overview

Not yet documented.

7.19 Size2D

7.19.1 Overview

Represents the dimensions of an object.

7.19.2 Notes

Initially I just used `Dimension2D`, but it turns out that there is a bug in the implementation of that class that renders it useless (refer to Bug ID 4189446 on the Java Developer Connection). This class is used as a work-around.

7.20 SortableTable

7.20.1 Overview

An extension of `javax.swing.JTable` that uses a `SortableTableModel` and supports sorting on any column (unless prohibited by the table model).

See Also
`SortableTableModel`

7.21 SortableTableHeaderListener

7.21.1 Overview

Handles mouse interaction with the header of a `JTable` that is based on a `SortableTableModel`. The idea is to trigger a sort when the user clicks on a table column header.

7.21.2 Notes

This class is adapted from code by Nobuo Tamemasa (version 1.0, 26 February 1999) posted on:

```
http://www.codeguru.com
```

No contact information was provided by the author.

See Also
BevelArrowIcon, SortableTableModel.

7.22 SortableTableModel

7.22.1 Overview

An abstract base class for table models that can be sorted on particular columns.

See Also
SortableTableHeaderListener

7.23 SortButtonRenderer

7.23.1 Overview

A table cell renderer used for drawing the headers of table columns that are sorted into ascending or descending order.

See Also
SortableTableModel

7.24 StandardDialog

7.24.1 Overview

The base class for a standard dialog.

7.24.2 Notes

Although Swing provides standard dialogs through the `JOptionPane` class, I've decided to implement my own so that I have greater control over the buttons, borders and other user interface items.

7.25 StrokeChooserPanel

7.25.1 Overview

A panel that allows the user to select a particular `Stroke` instance.

7.25.2 Constructors

To create a new instance:

`public StrokeChooserPanel(StrokeSample current, StrokeSample[] available);`
Creates a new panel for the specified stroke.

7.25.3 Notes

This class was hacked together for the demonstration application in JFreeChart. A more robust implementation is required.

See Also
StrokeSample

7.26 StrokeSample

7.26.1 Overview

A panel that displays a sample line drawn using a particular `Stroke`.

7.26.2 Constructors

To create a new instance:

`public StrokeSample(Stroke stroke);`
Creates a new sample panel for the specified stroke.

7.26.3 Notes

This class was hacked together for the demonstration application in JFreeChart. A more robust implementation is required.

See Also
PaintSample

7.27 WizardDialog

7.27.1 Overview

A dialog that can be used to present *wizard* sequences.

7.27.2 Notes

This implementation is incomplete and should not be used.

See Also
`WizardPanel`.

7.28 WizardPanel

7.28.1 Overview

A panel that can be used to present *wizard* sequences.

7.28.2 Notes

This implementation is incomplete and should not be used.

See Also

WizardDialog

8 Package: com.jrefinery.ui.about

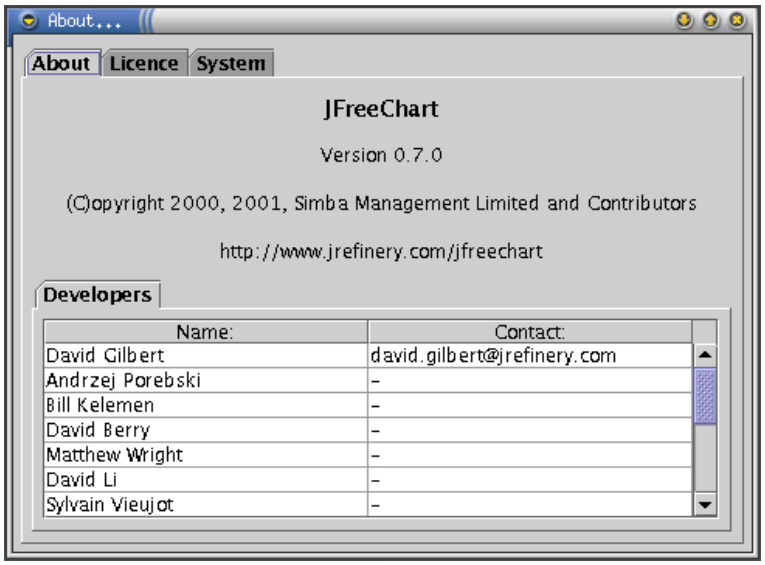
Classes for generating "About" information for an application.

8.1 AboutFrame

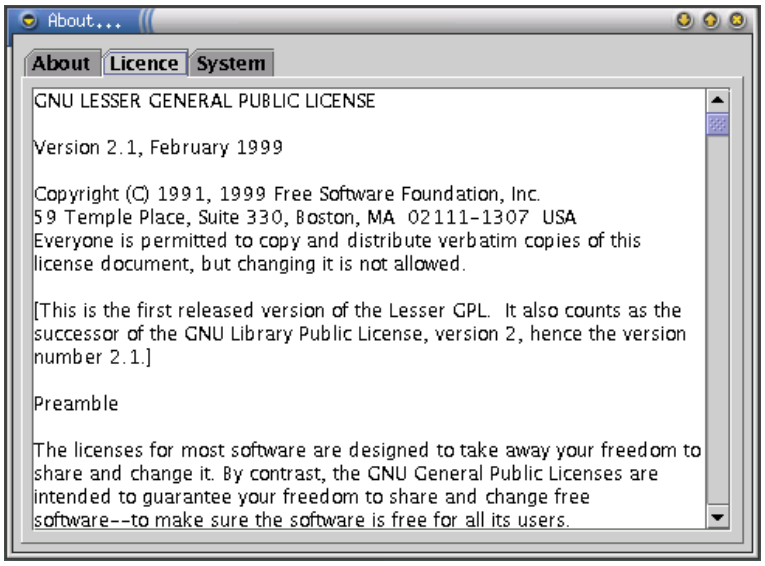
8.1.1 Overview

A utility class for displaying a frame containing information about an application.

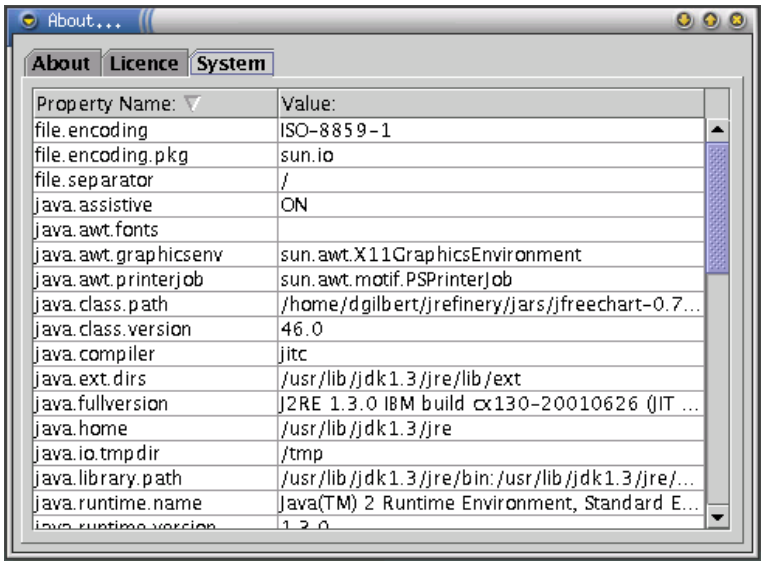
The first tab shows the application name, version, copyright and a list of developers. Here is an example from the JFreeChart demonstration application:



On the second tab in the frame, a licence agreement is displayed. For convenience, the `Licence` class contains the text of the GNU General Public Licence (GPL) and the GNU Lesser General Public Licence (LGPL).



The final tab shows the properties of the current Java Virtual Machine:



This can be useful information for bug reporting.

8.1.2 Constructors

The default constructor:

`public AboutFrame(String title, String application, String version, String info, String copyright, String licence, java.util.List contributors);`
Creates a new frame for displaying information about an application.

See Also
Licences

8.2 AboutPanel

8.2.1 Overview

Not yet documented.

8.3 Contributor

8.3.1 Overview

A simple class representing a contributor to a software project. Used in the `AboutFrame` class.

8.3.2 Constructors

The default constructor:

```
public Contributor(String name, String email);
```
Creates a new contributor.

8.3.3 Methods

To get the name of the contributor:

```
public String getName();
```
Returns the name of the contributor.

To get the e-mail address of the contributor:

```
public String getEmail();
```
Returns the e-mail address of the contributor.

8.3.4 Notes

The `AboutPanel` class uses a `JTable` to display a list of contributors. The `ContributorsTableModel` class is used to populate the table.

See Also
`ContributorsTableModel`

8.4 ContributorsPanel

8.4.1 Overview

Not yet documented.

8.5 ContributorsTableModel

8.5.1 Overview

Not yet documented.

8.6 Library

8.6.1 Overview

Not yet documented.

8.7 LibraryPanel

8.7.1 Overview

Not yet documented.

8.8 LibraryTableModel

8.8.1 Overview

Not yet documented.

8.9 Licences

8.9.1 Overview

A utility class that provides access to the full text of the GNU General Public Licence (GPL) and the GNU Lesser General Public Licence. These can be displayed in an `AboutFrame`.

8.9.2 Notes

Other licences may be added in the future.

See Also
`AboutFrame`

8.10 ProjectInfo

8.10.1 Overview

Not yet documented.

8.11 SystemProperties

8.11.1 Overview

A utility class that provides access to the system properties.

8.11.2 Methods

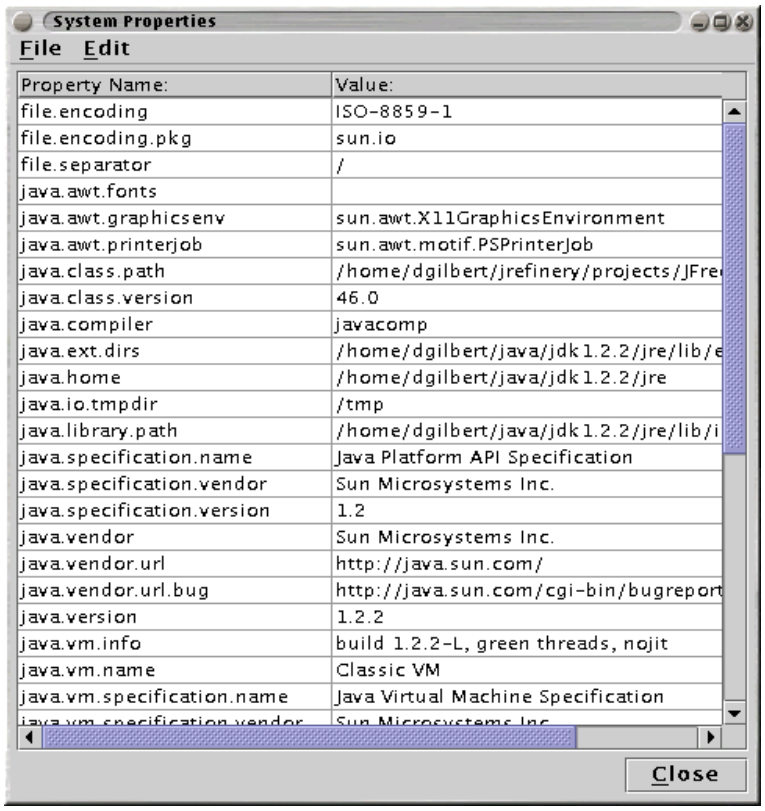
To get a table containing the system properties:

```
public static SortableTable createSystemPropertiesTable();
```
Returns a table containing the system properties.

8.12 SystemPropertiesFrame

8.12.1 Overview

A frame that is preconfigured to display the properties of the current Java Virtual Machine. For example:



8.12.2 Constructors

The default constructor:

> `public SystemPropertiesFrame(boolean menu);`
> Creates a new frame displaying the system properties. The `menu` argument controls whether or not a menu is provided to allow the user to copy the system properties to the clipboard.

8.12.3 Notes

Now that the `AboutFrame` class includes a tab showing the system properties, this class is less likely to be used.

See Also

SystemPropertiesPanel

8.13 SystemPropertiesPanel

8.13.1 Overview

A panel containing a `JTable` within a `JScrollPane`, preconfigured to show the properties of the current Java Virtual Machine.

8.13.2 Constructors

The default constructor:

`public SystemPropertiesPanel();`
Creates a new panel displaying the system properties.

8.13.3 Methods

A single method provides the ability to copy the system properties to the clipboard:

`public void copySystemPropertiesToClipboard();`
Copies the system properties to the clipboard, in tab-delimited format.

See Also
SystemPropertiesTableModel

8.14 SystemPropertiesTableModel

8.14.1 Overview

A table model that contains the properties of the current Java Virtual Machine.

8.14.2 Constructors

The default constructor:

`public SystemPropertiesTableModel();`
Creates a new table model for displaying all the properties of the current Java Virtual Machine.

8.14.3 Notes

This class extends the `SortableTableModel` class to allow sorting on property names.

In the same source file, two additional classes are defined: `SystemProperty` and `SystemPropertyComparator`.

See Also
SystemPropertiesPanel

9 Package: com.keypoint

9.1 PNGEncoder

9.1.1 Overview

Encodes images in PNG format. This class has been copied into the JCommon class library for convenience only. The original author (J. David Eisenberg) maintains the following web-site for the PNGEncoder:

`http://catcode.com`

A JUnit Tests

A.1 Overview

The JCommon source code now includes some automated tests utilising the JUnit testing framework. You can run these tests by invoking the JUnit test runner on the following class:

```
com.jrefinery.JCommonTestSuite
```

For more information about JUnit, refer to:

```
http://www.junit.org/
```

The tests are not comprehensive, but additional tests will be added in the future.

B The GNU Lesser General Public Licence

B.1 Introduction

JFreeChart is licensed under the terms of the GNU Lesser General Public Licence (LGPL). The full text of this licence is reproduced in this appendix. You should read and understand this licence before using JCommon in your own projects.

If you are not familiar with the idea of *free software* and/or *open source software*, you can find out more at the following web-sites:

Organisation:	**Description:**
The Free Software Foundation	`http://www.fsf.org`
The Open Source Initiative	`http://www.opensource.org`

Please send e-mail to `david.gilbert@object-refinery.com` if you have any questions about the licensing of JCommon.

B.2 The Licence

The following licence has been used for the distribution of the JCommon class library:

GNU LESSER GENERAL PUBLIC LICENSE

Version 2.1, February 1999

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[This is the first released version of the Lesser GPL. It also counts as the successor of the GNU Library Public License, version 2, hence the version number 2.1.]

Preamble

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"Source code" for a work means the preferred form of the work for making modifications to

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(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

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