JFREECHART REFERENCED APIS

In this chapter, we will discuss about some important packages, classes and methods from JFreeChart library. These packages, classes and methods are the most frequently used while creating a variety of charts using JFreeChart library.

ChartFactory Class

ChartFactory is an abstract class under the **org.jfree.chart** package. It provides a collection of utility methods for generating standard charts. Following is a list of few of the important methods :

Class Constructor

S.N.	Description
1	**ChartFactory** Default constructor of ChartFactory class.

Class Methods

S.N.	Methods & Description
1	**createPieChart***java. lang. Stringtitle, PieDatasetdataset, booleanlegend, booleantooltips, booleanurls* This method creates a pie chart with default settings. It returns JfreeChart type object.
2	**createPieChart3D***java. lang. Stringtitle, PieDatasetdataset, booleanlegend, booleantooltips, booleanurls* This method creates a 3D pie chart using the specified dataset.
3	**createBarChart** *java. lang. Stringtitle, java. lang. StringcategoryAxisLabel, java. lang. StringvalueAxisLabel, CategoryDatasetdataset, PlotOrientationorientation, booleanlegend, booleantooltips, booleanurls* The argument java.lang.String categoryAxisLabel is the label for values placed on X-axis. The argument java.lang.String valueAxisLabel is the label for values placed on Y-axis. This method creates a bar chart.
4	**createBarChart3D** *java. lang. Stringtitle, java. lang. StringcategoryAxisLabel, java. lang. StringvalueAxisLabel, CategoryDatasetdataset, PlotOrientationorientation, booleanlegend, booleantooltips, booleanurls* This Method Creates a bar chart with a 3D effect. It returns JfreeChart type object.
5	**createLineChart** *java. lang. Stringtitle, java. lang. StringcategoryAxisLabel, java. lang. StringvalueAxisLabel, CategoryDatasetdataset, PlotOrientationorientation, booleanlegend, booleantooltips, booleanurls* This method creates a line chart with default settings.
6	**createLineChart3D** *java. lang. Stringtitle, java. lang. StringcategoryAxisLabel, java. lang. StringvalueAxisLabel, CategoryDatasetdataset, PlotOrientationorientation, booleanlegend, booleantooltips, booleanurls* This method creates a line chart with 3D effect.
7	**createXYLineChart** *java. lang. Stringtitle, java. lang. StringxAxisLabel, java. lang. StringyAxisLabel, XYDatasetdataset, PlotOrientationorientation, booleanlegend, booleantooltips, booleanurls* This method creates a line chart based on XYDataset with default settings.

ChartFrame Class

ChartFrame class under the **org.jfree.chart** package, provides all frame related functions and utilities. ChartFrame class inherits functionalities from parent classes such as Frame, Window, Container, Component classes.

Class Constructor

S.N.	Constructor and Description
1	**ChartFrame** *java. lang. FrameString, JfreeChartchart* It constructs a frame.
2	**Chart Frame** *java. lang. FrameString, JfreeChartchart, booleanscrollpane* It constructs a frame.

Class Method

S.N.	Method and Description
1	**getChartPanel** This method returns the chart panel for a frame.

ChartPanel Class

ChartPanel class from the **org.jfree.chart** package is used as a swing GUI component for displaying JfreeChart object.

Class Constructor

S.N.	Constructor and Description
1	**ChartPanel***JFreeChartchart* This constructor constructs a panel that displays the specified chart.
2	**ChartPanel***JFreeChartchart, booleanuseBuffer* This constructor constructs a panel containing a chart.
3	**ChartPanel***JFreeChartchart, booleanproperties, booleansave, booleanprint, booleanzoom, booleantooltips* This constructor constructs a JFreeChart panel.

Class Method

S.N.	Method and Description
1	**setPreferredSize***java. awt. Dimension* This method is used to set the frame size using java.awt. Dimension class object as an argument. This method is taken from javax.swing.JComponent.

ChartUtilities Class

CharUtilites class from the **org.jfree.chart** package provides a collection of utility methods of JFreeCharts including methods for converting charts into image file format such as PNG, JPEG and creating HTML image maps.

Class Constructor

S.N.	Constructor and Description
1	**ChartUtilities** This is a default constructor Of a class

Class Method

S.N.	Method and Description
1	**saveChartAsPNG***java. io. Filefile, JfreeChartchart, intwidth, intheight* This method converts and saves a chart to the specified file in PNG format.
2	**saveChartAsJPEG***java. io. Filefile, JfreeChartchart, intwidth, intheight* This method converts and saves a chart to the specified file in JPEG format.

JFreeChart Class

JFreeChart class is the core class under the **org.jfree.chart** package. This class provides JFreeChart method to create bar charts, line charts, pie charts and xy plots including time series data.

Class Constructor

S.N.	Constructor and Description
1	**JfreeChart***Plotplot* This constructor creates a new chart based on the supplied plot.
2	**JfreeChart***java. lang. Stringtitle, java. awt. FonttitleFont, Plotplot, booleancreateLegend* This constructor creates a new chart with the given title and plot.
3	**JfreeChart***java. lang. Stringtitle, Plotplot* This constructor creates a new chart with the given title and plot.

Class Method

S.N.	Method and Description
1	**getXYPlot** This method Returns the plot chart as **XYPlot**. Using XYPolt we can do some utility operations on xy charts.

PiePlot Class

This class is part of **org.jfree.chart.plot** package and extends Plot class from the same package. This class provides methods to create Pie Plots.

Class Constructor

S.N.	Constructor and Description
1	**PiePlot** It creates a new plot.
2	**PiePlot***PieDatasetdataset* It creates a plot that draws a pie chart for the specified dataset.

Class Method

S.N.	Method and Description
1	**setStartAngle***doubleangle* This Method sets the starting angle and sends a PlotChangeEvent to all registered listeners

PiePlot3D Class

PiePlot3D class is a subclass of PiePlot class under the same package. Hence this class has the same features as PiePlot class, except it is used to create 3D plots.

Class Constructor

S.N.	Constructor and Description
1	**PiePlot3D** This constructor creates a new instance with no dataset.
2	**PiePlot3D***PieDatasetdataset* This constructor creates a pie chart with a three dimensional effect using a specified dataset.

Class Method

S.N.	Method and Description
1	**setForegroundAlpha***floatalpha* It sets the alpha-transparency for the plot and sends a PlotChangeEvent to all registered listeners. This is taken from one of the parent Plot classes.
2	**setInteriorGap***doublepercent* It sets the interior gap and sends a PlotChangeEvent to all registered listeners. This controls the space between the edges of the pie plot and the plot area itself *i. e.* , *theregionwherethesectionlabelsappear*. This method is taken from the parent class PiePlot.

PlotOrientation Class

This is a serialized class available in **org.jfree.chart.plot** package and it is used to show the orientation of a 2D plot. The orientation can either be **vertical** or **horizontal**. It sets the orientation of Y-axis. A conventional plot has a vertical Y- axis.

Field summary

S.N.	Type	Field & Description
1	PlotOrientation	**HORIZONTAL** For a plot where the range axis$Y-axis$ is horizontal.
2	PlotOrientation	**VERTICAL** For a plot where the range axis$Y-axis$ is vertical.This the default orientation.

Class Method

S.N.	Method and Description
1	**isHorizontal** This method returns true if this orientation is HORIZONTAL, and false otherwise.
2	**isVertical** This Method returns true if this orientation is VERTICAL, and false otherwise.

XYPlot Class

This is a general class available in **org.jfree.chart.plot** package and it is used for plotting data in the form of x, y pairs. This plot can use data from any other class that implements the XYDataSet Interface. XYPlot makes use of a XYItemRenderer to draw each point on the plot.

Class Constructor

S.N.	Constructor and Description
1	**XYPlot** This contructor creates a new XYPlot instance with no dataset, no axes and no renderer.
2	**XYPlot(XYDataset** dataset, **ValueAxis** domainAxis, **ValueAxis** rangeAxis, **XYItemRenderer** renderer) This constructor creates a new plot with the specified dataset, axis and renderer.

Class Method

S.N.	Method and Description
1	**setRenderer(XYItemRenderer** renderer) This method sets the renderer for the primary dataset and sends a change event to all registered listeners.

NumberAxis Class

This class is available in **org.jfree.chart.axis** package and it can access the numerical data of any axis. When we set the range of any axis to default, it fits according to the range of the data. But using NumberAxis, class we can set the lower margin and upper margin of domain and range axes.

Class Constructor

S.N.	Constructor and Description
1	**NumberAxis** This is a default Constructor of NumberAxis.
2	**NumberAxis***java. lang. Stringlabel* The constructor NumberAxis uses default values where necessary.

Class Method

S.N.	Method and Description
1	**setLowerMargin***doublemargin* It sets the lower margin for the axis *asapercentageoftheaxisrange* and sends an **AxisChangeEvent** to all registered listeners. This method is taken from parent class of the class ValueAxis.
2	**setUpperMargin***doublemargin* It sets the upper margin for the axis *asapercentageoftheaxisrange* and sends an **AxisChangeEvent** to all registered listeners. This method is also present in ValueAxis Class.

XYLineAndShapeRenderer Class

This is the class is available under **org.jfree.chart.renderer.xy** package which takes care of connecting data points with lines and draws shapes at each data point. This renderer class is designed for use with the **XYPlot** class.

Class Constructor

S.N.	Constructor and Description
1	**XYLineAndShapeRenderer** It creates a new renderer with both lines and shapes visible.
2	**XYLineAndShapeRenderer** *booleanlines, booleanshapes* It creates a new renderer with specific property.

Class Method

S.N.	Method and Description
1	**setSeriesPaint***intseries, java. awt. Paintpaint* This method sets the paint used for a series and sends a **RendererChangeEvent** to all registered listeners. This method is taken from AbstratRenderer abstract class from renderer package in JFreeChart API.
2	**setSeriesStroke***intseries, java. awt. Strokestroke* This method Sets the stroke used for a series and sends a **RendererChangeEvent** to all registered listeners. This method is taken from AbstratRenderer abstract class which is super class of this package.

XYItemRenderer general datasets

This is an interface for rendering the format of a single *x, y* item on a XYPlot. The package is **org.Jfree.data.general**, which has classes and interfaces to define different types of datasets to construct charts.

PieDataset

This is an interface used as a general purpose dataset, where values are associated with keys. As the name suggests, you can use this dataset to supply data for pie charts.This interface extends KeyedValues and DataSet interfaces. All the methods used for this interface are taken from KeyedValues, Values and Dataset interfaces.

DefaultPieDataset Class

This a Default implementation class of a PieDataset interface.

Class Constructor

S.N.	Constructor and Description
1	**DefaultPieDataset** This constructor creates a new dataset, initially empty.
2	**DefaultPieDataset***KeyedValuesdata* It creates a new dataset by copying data from a **KeyedValues** instance.

Class Method

S.N.	Method and Description
1	**setValue***java. lang. Comparablekey, doublevalue* It sets the data value for a key and sends a **DatasetChangeEvent** to all registered listeners.
2	**setValue***java. lang. Comparablekey, java. lang. Numbervalue* It sets the data value for a key and sends a **DatasetChangeEvent** to all registered listeners.

SeriesException Class

This is an exception class. It raises an exception occurred in the time series of data in the dataset. Exceptions are raised on the occurance of duplicate or invalid data. The time series must not be applied with duplicates and the format must be valid.

DefaultCategoryDataset

This is a default implementation class of CategoryDataset interface.

Class Constructor

S.N.	Constructor and Description
1	**DefaultCategoryDataset** This constructor creates new empty dataset.

Class Method

S.N.	Method and Description
1	**addValue***doublevalue, java. lang. ComparablerowKey, java. lang. ComparablecolumnKey* This method adds a value to the table using comparable keys.
2	**addValue***java. lang. Numbervalue, java. lang. ComparablerowKey, java. lang. ComparablecolumnKey* This method adds a value to the table.
3	**setValue***doublevalue, java. lang. ComparablerowKey, java. lang. ComparablecolumnKey* This method adds or updates a value in the table and sends a **DatasetChangeEvent** to all registered listeners.
4	**setValue***java. lang. Numbervalue, java. lang. ComparablerowKey, java. lang. ComparablecolumnKey* This

method adds or updates a value in the table and sends a **DatasetChangeEvent** to all registered listeners.

Refer JFreeChart API for more information on various other methods and fields.

Series Datasets

The series dataset is used by XY charts. The package is **org.Jfree.data.xy** , which contains classes and interfaces belonging to xy charts. The core interface is XYDataset.

XYDataset

This is an interface through which data in the form of *x, y* items can be accessed. As the name suggests, you can use this dataset to serve XY chart. Some of the methods in this interface are taken from SeriesDateset interface.

XYZDataset

This is an interface through which data in the form of *x, y, z* items can be accessed. As the name suggests, you can use this dataset to serve XYZ chart. Some of the methods in this interface are taken from SeriesDateset.

XYSeries

This is a class, which represents a sequence of zero or more data items in the form *x, y*. By default, the items in the series are sorted into ascending order by x-value, and duplicate x-values are permitted. Both the sorting and duplicate defaults can be changed in the constructor. Y-values can be denoted as null to represent missing values.

Class Constructor

S.N.	Constructor and Description
1	**XYSeries***java. lang. Comparablekey* This constructor creates a new empty series.
2	**XYSeries***java. lang. Comparablekey, booleanautoSort* It constructs a new empty series, with the auto-sort flag set as requested, and duplicate values are allowed.
3	**XYSeries***java. lang. Comparablekey, booleanautoSort, booleanallowDuplicateXValues* It constructs a new xy-series that contains no data.

Class Method

S.N.	Method and Description
1	**add***doublex, doubley* This method adds data item into the series.

The above method is used in the tutorial example. If you want to learn the remaining methods and fields, please refer JFreeChart API.

XYSeriesCollection

XYSeriesCollection class has parent classes like AbstractIntervelDataset, AbstractXYDatset, AbstractSeriesDataset and AbstractDataset. Some of the methods in this class belong to parent classes of this class.

Class Constructor

S.N.	Constructor and Description
1	**XYSeriesCollection** It constructs an empty dataset.
2	**XYSeriesCollection***XYSeriesxyseries* It constructs a dataset and populates it with a single series.

Class Method

S.N.	Method and Description
1	**addSeries***XYSeriesseries* This method adds a series to the collection and sends a **DatasetChangeEvent** to all registered listeners.

Refer JFreeChart API for the remaining methods and fields.

Default XYZDataset :

DefaultXYZDataset class have parent classes like AbstractIntervelDataset, AbstractXYDatset, AbstractSeriesDataset, AbstractDataset and AbstractXYZDataset. some of the methods in this class belong to parent classes of this class.

class constructor

S.N.	Constructor and Description
1	**DefaultXYZDataset** It constructs an empty dataset.

Class Method

S.N.	Method and Description
1	**addSeries***java. lang. ComparableseriesKey, double[][]data* This method adds a series to the collection and sends a **DatasetChangeEvent** to all registered listeners.

Please refer JFreeChart API for the remaining methods and fields.

Time Series in JFreeCharts

The package is **org.jfree.data.time**. This package contains classes and interfaces which are used for time related data.

TimeSeries :

This class represents a sequence of data items in the form of period values, where period is some instance of RegularTimePeriod abstract class such as Time, Day, Hour, Minute and Second classes.

Class Constructor

S.N.	Constructor and Description
1	**TimeSeries***java. lang. Comparablename* It creates new empty series.
2	**TimeSeries***java. lang. Comarablename, java. lang. Stringdomain, java. lang. Strinrange* It creates new time series that contains no data.

Class Method

S.N.	Method and Description
1	**add***RegularTimePeriodperiod, doublevalue* This method adds a new data item to the series.

Refer JFreeChart API for the remaining methods and fields.

TimeSeriesCollection :

This is a class used as a collection of time series objects. This class implements the XYDataset interface, as well as it extends IntervelXYDataset interface. This makes it convenient to collect series data objects.

Class Constructor

S.N.	Constructor and Description
1	**TimeSeriesCollection** It constructs an empty dataset, tied to the default time zone.
2	**TimeSeriesCollection(TimeSeries** series) It constructs a dataset containing a single series *morecanbeadded*, tied to the default time zone.
3	**TimeSeriesCollection(TimeSeries** series, java.util.TimeZone zone) It constructs a dataset containing a single series *morecanbeadded*, tied to a specific time zone.
4	**TimeSeriesCollection***java. util. TimeZonezone* It constructs an empty dataset, tied to a specific time zone.

Class Method

S.N.	Method and Description
1	**addSeries(TimeSeries** series) This method adds a series to the collection and sends a DatasetChangeEvent to all registered listeners.

Please refer JFreeChart API for the remaining methods and fields.

Second :

This class represents a second in a particular day. This class is immutable, which is a requirement for all RegularTimePeriod subclass.

Class Constructor

S.N.	Constructor and Description
1	**Second** It constructs a new Second, based on the system date/time.
2	**Second***java. util. Datetime* It constructs a new instance from the specified date/time and the default time zone.
3	**Second***java. util. Datetime, java. util. TimeZonezone, java. util. Localelocale* It creates a new second based on the supplied time and time zone.
4	**Second***intsecond, intminute, inthour, intday, intmonth, intyear* It creates a new second.
5	**Second***intsecond, Minuteminute* It constructs a new Second.

Class Method

S.N.	Method and Description
1	**getSecond** It returns the second within the minute.
2	**next** It returns the second following the present second.

Please refer JFreeChart API for the remaining methods and fields.

Frames in JFreeCharts :

The package is **org.jfree.ui.** This is the package belongs to JCommons API of JFreeChart. It contains utility classes used for creating frames for pre-configured charts.

ApplicationFrame :

This is a base class for creating the main frame for simple applications. The frame listens for window closing events, and responds by shutting down the JVM. This is fine for small demo applications. For enterprise applications, you need to use something more robust. The main core methods in this class are taken from Component, Container, Window, Frame and Jframe classes.

Class Constructor

S.N.	Constructor and Description
1	**ApplicationFrame***java. lang. Stringtitle* It creates an application frame with the string title.

This class helps to create AWT Frames. This is the reason for why we use this class as super class in this tutorial examples.

The methods which are taken form parent classes are used for opening a frame, closing a frame, changing the size, changing the background or foreground color and listeners.

RefineryUtilities :

This is a class collection of utility methods relating to user interface.

Class Method

S.N.	Method and Description
1	**centerFrameOnScreen***java. awt. Windowframe* It positions the specified frame in the middle of the screen.

The above method is used in the tutorial example. Refer JFreeChart API for remaining methods and fields.