

How-To Create JFreeChart Bubble Chart

This chapter demonstrates how you can use JFreeChart to create **Bubble Chart** from a given set of business data. A bubble chart displays information in three-dimensional way. A bubble is plotted at the place where (x, y) coordinate intersect. The size of the bubble is considered as range or quantity of X and Y axis.

Business Data

Let us consider different persons along with their age, weight, and work capacities. The work capacity can be treated as number of hours that is plotted as bubbles in the chart.

		WEIGHT						
		30	40	50	60	70	80	
AGE	10	4						WORK
	20		5					
	30			10				
	40				8			
	50					9		
	60						6	
	70							

AWT Based Application

Following is the code to create Bubble Chart from the above given information. This code helps you to embed a Bubble chart in any AWT based application.

```
import java.awt.Color;  
import java.awt.Dimension;
```

```

import javax.swing.JPanel;

import org.jfree.chart.*;
import org.jfree.chart.axis.NumberAxis;
import org.jfree.chart.plot.PlotOrientation;
import org.jfree.chart.plot.XYPlot;
import org.jfree.chart.renderer.xy.XYItemRenderer;
import org.jfree.data.xy.DefaultXYZDataset;
import org.jfree.data.xy.XYZDataset;
import org.jfree.ui.ApplicationFrame;
import org.jfree.ui.RefineryUtilities;

public class BubbleChart_AWT extends ApplicationFrame {

    public BubbleChart_AWT( String s ) {
        super( s );
        JPanel jpanel = createDemoPanel( );
        jpanel.setPreferredSize( new Dimension( 560 , 370 ) );
        setContentPane( jpanel );
    }

    private static JFreeChart createChart( XYZDataset xyzdataset ) {
        JFreeChart jfreechart = ChartFactory.createBubbleChart(
            "AGE vs WEIGHT vs WORK",
            "Weight",
            "AGE",
            xyzdataset,
            PlotOrientation.HORIZONTAL,
            true, true, false);

        XYPlot xyplot = ( XYPlot )jfreechart.getPlot( );
        xyplot.setForegroundAlpha( 0.65F );
        XYItemRenderer xyitemrenderer = xyplot.getRenderer( );
        xyitemrenderer.setSeriesPaint( 0 , Color.blue );
        NumberAxis numberaxis = ( NumberAxis )xyplot.getDomainAxis(
);
        numberaxis.setLowerMargin( 0.2 );
        numberaxis.setUpperMargin( 0.5 );
        NumberAxis numberaxis1 = ( NumberAxis )xyplot.getRangeAxis(
);
        numberaxis1.setLowerMargin( 0.8 );
        numberaxis1.setUpperMargin( 0.9 );

        return jfreechart;
    }

    public static XYZDataset createDataset( ) {

```

```

        DefaultXYZDataset defaultxyzdataset = new
DefaultXYZDataset();
        double ad[ ] = { 30 , 40 , 50 , 60 , 70 , 80 };
        double ad1[ ] = { 10 , 20 , 30 , 40 , 50 , 60 };
        double ad2[ ] = { 4 , 5 , 10 , 8 , 9 , 6 };
        double ad3[][] = { ad , ad1 , ad2 };
        defaultxyzdataset.addSeries( "Series 1" , ad3 );

        return defaultxyzdataset;
    }

    public static JPanel createDemoPanel( ) {
        JFreeChart jfreechart = createChart( createDataset( ) );
        ChartPanel chartpanel = new ChartPanel( jfreechart );

        chartpanel.setDomainZoomable( true );
        chartpanel.setRangeZoomable( true );

        return chartpanel;
    }

    public static void main( String args[ ] ) {
        BubbleChart_AWT bubblechart = new BubbleChart_AWT( "Bubble
Chart_frame" );
        bubblechart.pack( );
        RefineryUtilities.centerFrameOnScreen( bubblechart );
        bubblechart.setVisible( true );
    }
}

```

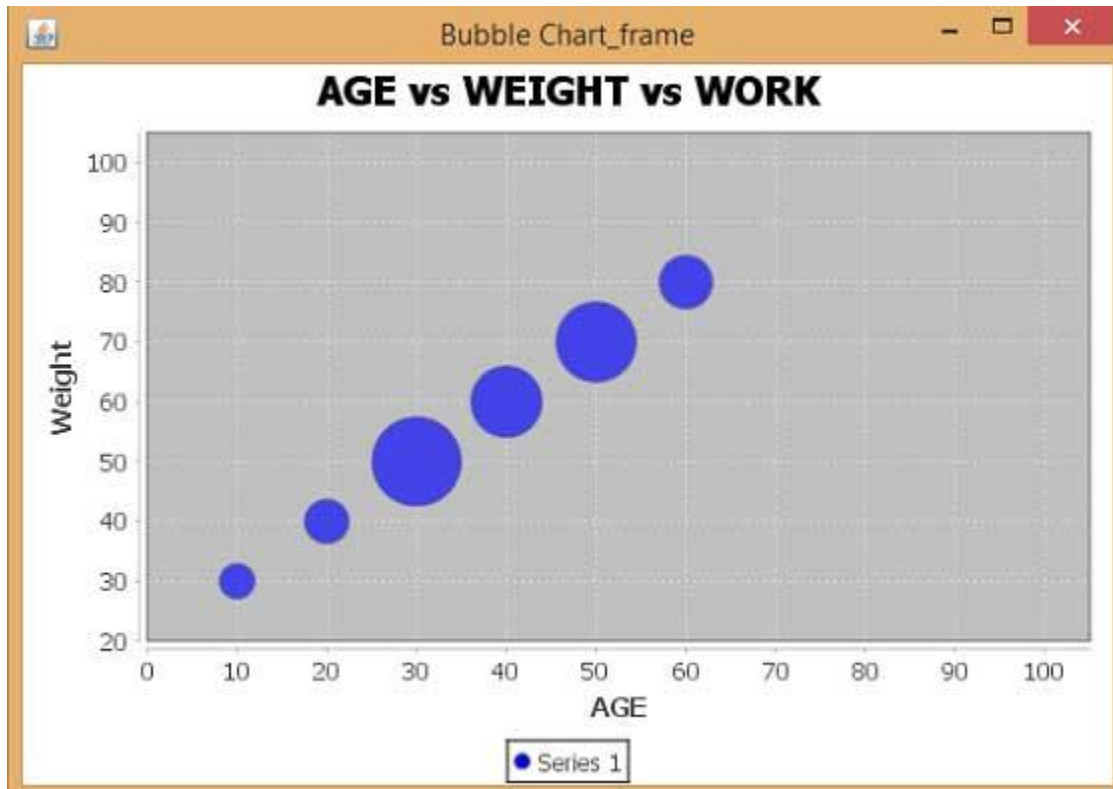
Let us keep the above Java code in **BubbleChart_AWT.java** file, and then compile and run it from the command prompted as –

```

$javac BubbleChart_AWT.java
$java BubbleChart_AW

```

If everything is fine, it will compile and run to generate the following Bubble Graph –



JPEG Image Creation

Let us re-write the above example to generate a JPEG image from a command line.

```
import java.io.*;

import java.awt.Color;

import org.jfree.chart.*;
import org.jfree.chart.axis.NumberAxis;
import org.jfree.chart.plot.PlotOrientation;
import org.jfree.chart.plot.XYPlot;
import org.jfree.chart.renderer.xy.XYItemRenderer;
import org.jfree.data.xy.DefaultXYZDataset;
import org.jfree.chart.ChartUtilities;

public class BubbleChart_image {

    public static void main( String args[ ] )throws Exception {
        DefaultXYZDataset defaultxyzdataset = new DefaultXYZDataset(
);
        double ad[ ] = { 30 , 40 , 50 , 60 , 70 , 80 };
        double ad1[ ] = { 10 , 20 , 30 , 40 , 50 , 60 };
        double ad2[ ] = { 4 , 5 , 10 , 8 , 9 , 6 };
        double ad3[ ][ ] = { ad , ad1 , ad2 };
    }
}
```

```

defaultxyzdataset.addSeries( "Series 1" , ad3 );

JFreeChart jfreechart = ChartFactory.createBubbleChart(
    "AGE vs WEIGHT vs WORK",
    "Weight",
    "AGE",
    defaultxyzdataset,
    PlotOrientation.HORIZONTAL,
    true, true, false);

XYPlot xyplot = ( XYPlot )jfreechart.getPlot( );
xyplot.setForegroundAlpha( 0.65F );
XYItemRenderer xyitemrenderer = xyplot.getRenderer( );
xyitemrenderer.setSeriesPaint( 0 , Color.blue );
NumberAxis numberaxis = ( NumberAxis )xyplot.getDomainAxis(
);
numberaxis.setLowerMargin( 0.2 );
numberaxis.setUpperMargin( 0.5 );
NumberAxis numberaxis1 = ( NumberAxis )xyplot.getRangeAxis(
);
numberaxis1.setLowerMargin( 0.8 );
numberaxis1.setUpperMargin( 0.9 );

int width = 560; /* Width of the image */
int height = 370; /* Height of the image */
File bubbleChart = new File("BubbleChart.jpeg");

ChartUtilities.saveChartAsJPEG(bubbleChart, jfreechart, width, height)
;
}
}

```

Let us keep the above Java code in **BubbleChart_image.java** file, and then compile and run it from the command prompted as –

```

$javac BubbleChart_image.java
$java BubbleChart_image

```

If everything is fine, it will compile and run to create a JPEG image file named **BubbleChart.jpeg** in your current directory.

Courtesy: https://www.tutorialspoint.com/jfreechart/jfreechart_bubble_chart.htm

Modified: 2021.10.04.7.15.AM

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