Create Your First Print-Quality Reports

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Introduction to Pentaho Report Designer

Pentaho Report Designer is a sophisticated report creation tool that you can use standalone, or as part of the larger Pentaho Business Analytics distribution. It enables professionals to create highly detailed reports based on adequately prepared data from virtually any data source. The purpose of this document is to provide instructions for creating a simple Report Designer report.

This section contains walk-throughs for creating content in Report Designer. You must have Pentaho's sample database installed and available in order to follow the tutorials. Sample data is installed by default with Report Designer, though you or your system administrator may have removed it prior to production deployment. If it's been removed, you can simply reinstall Report Designer to get it back.

Creating a Report Using Report Designer

Follow the instructions below to begin creating your report:

1. Start the Report Designer. Go to **Start** > **Programs** > **Pentaho Enterprise Edition** > **Design Tools** > **Report Designer.**
   The Report Designer home page appears.

2. Click **New Report** in the **Welcome** dialog box.
   The design workspace appears.

   > **Note:** If you'd like to change the size of the layout bands to give yourself more area to work in without changing the dimensions of the published report, you can click and drag the percentage number in the upper left corner of the workspace. By default it says 100%, but if you click and drag it diagonally toward the upper left or lower right corners, the view will zoom in or out. If you want to reset the view to 100%, double-click the upper left corner where the percentage shows.

3. In the right pane, click the **Data** tab.

4. For the purpose of this exercise, right-click **Data Sets** and choose **JDBC**. Alternatively, you can click the yellow database icon to display the JDBC dialog box.
   The **JDBC Data Source** dialog box appears.

5. Under **Connections**, select **SampleData (Memory)**.

6. Next to **Available Queries** click ⊕ (Add).

   **Query 1** appears under **Available Queries**. Notice that the edit icon ✎ is enabled.
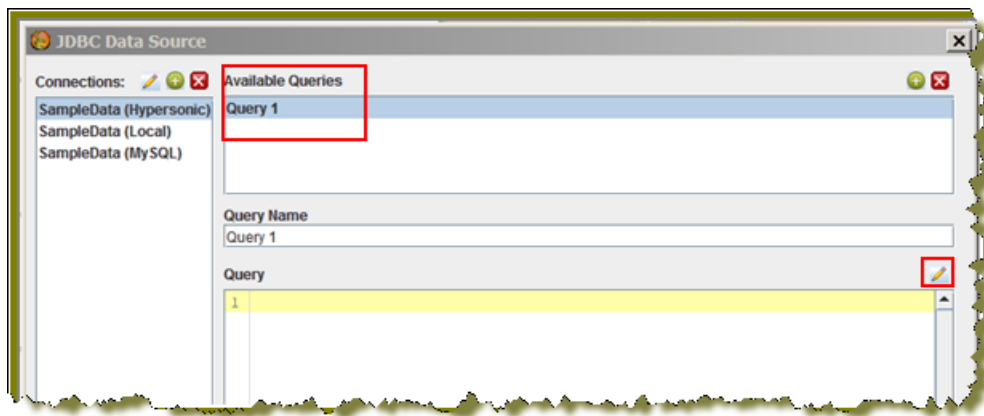
7. Click ✎ (Edit).
   The **SQL Query Designer** window opens. The SQL Query Designer provides you with a graphical environment that allows you to work with the data even if you don't understand SQL, the standard programming language for retrieving content from databases.

8. Double-click **ORDERFACT** so that the table appears in the workspace as shown in the image above.

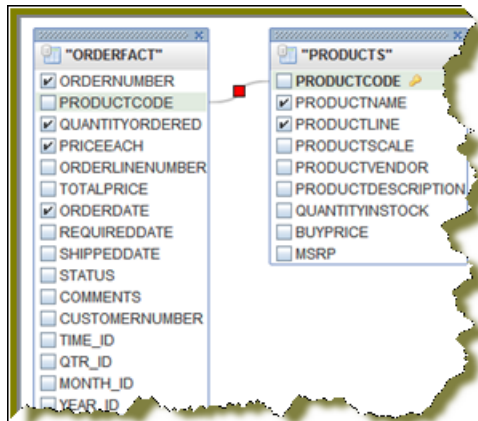9. In the SQL Query Designer workspace, right-click **"ORDERFACT"** and choose **deselect all**.
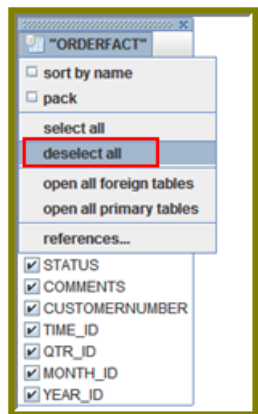
10. Now, select the following fields in the **ORDERFACT** table: **ORDERNUMBER**, **QUANTITYORDERED**, **PRICEEACH**, and **ORDERDATE**.
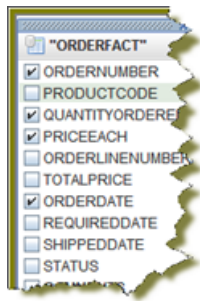
11. Double-click **PRODUCTS** so that the table appears in the workspace.

    Notice that there is a line that joins the **ORDERFACT** and **PRODUCTS** tables together.

12. Deselect all PRODUCTS table fields, except for **PRODUCTNAME** and **PRODUCTLINE**.


13. For the purpose of this exercise, click the **Syntax** tab in the lower left portion of the SQL Query Designer workspace to display a simple SQL statement associated with the tables. Notice that **PRODUCTCODE** is the common field between the **ORDERFACT** and **PRODUCTS** tables.
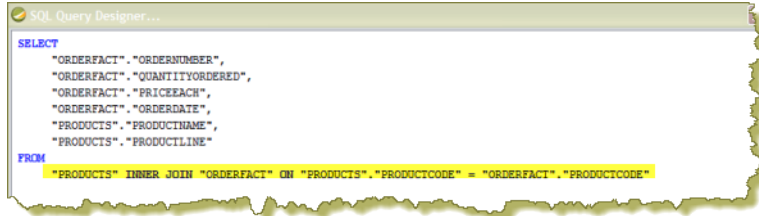
14. Click **OK** in the syntax window to return to the JDBC Data Source dialog box. Notice that the SQL statement appears on the right under **Query**.

15. In the **JDBC Data Source** dialog box, click **OK** to return to the **Design** page.

    Notice that the fields associated with your tables are listed under **Query 1**. You are now ready to start *designing your report*.
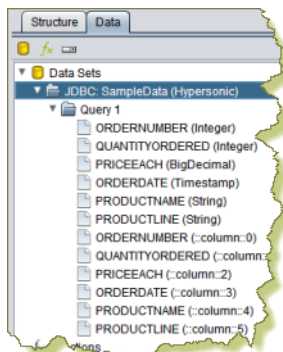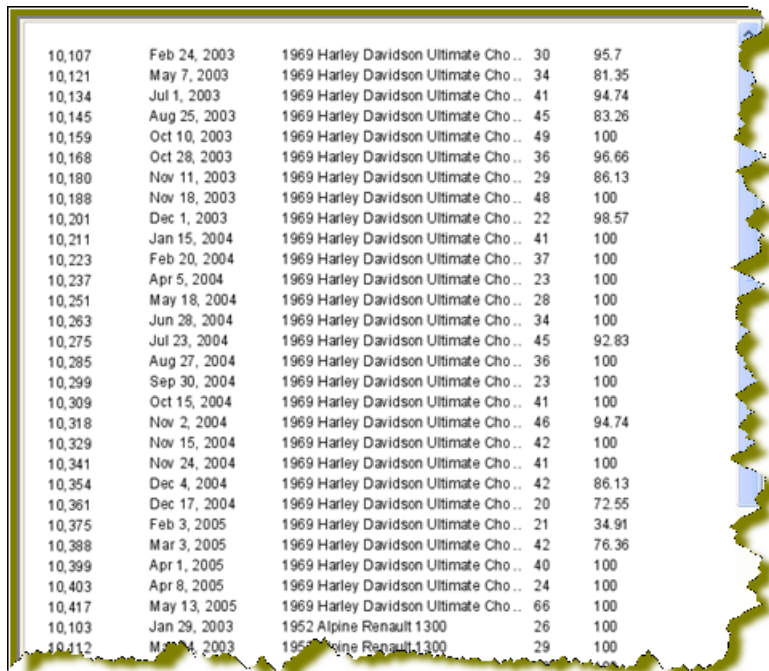
Designing Your Report

This exercise walks you through the process of designing the look-and-feel of your report.

1. Under the **View** item in the Report Designer menu bar, click **Element Alignment Hints** and **Snap to Elements** to enable them. These options help you to align the elements of your report.

2. In the **Design** page, under **Query 1**, click and drag the **ORDERNUMBER** field into the **Details** band. Make sure that the top line of the field name and the top line of the Details band match up.

3. Place the **ORDERDATE**, **PRODUCTNAME**, **QUANTITYORDERED**, and **PRICEEACH** fields into the Details Band. Take care not to overlap the fields or your report will not display correctly.

4. Use the resizing handles to make the **PRODUCTNAME** field larger and the **QUANTITYORDERED** field smaller as shown in the example below:
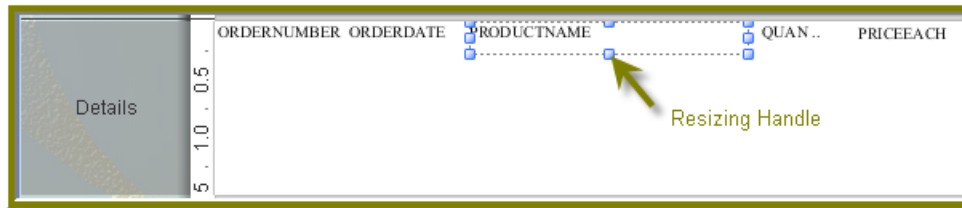
5.
   You have created your first report. Click ⬤ (Preview) to examine your report. Click ✏ (Edit) to return to the workspace view.

   👉 **Tip:** You can also click ⬤ (Preview) on the left side of your workspace or select it from the **View** menu option to preview a report. Click ✏ (Edit) to return to the workspace view.


But, wait... There's a problem. Without headers, report users will have a hard time understanding its content. You must continue refining your report, see *refining your report*.

Adding a Chart to Your Report

So far you've seen a small subset of features associated with Report Designer. In this exercise, you will add a chart to your report.

1. Click **File** > **Open** and find the report you just saved. Click **OK**.

2. In the **palette**, click and drag a 🔘 **Chart** into the **Report Footer** band.

3. Use the resizing handles to center and stretch the chart. You can also adjust the width of the band.
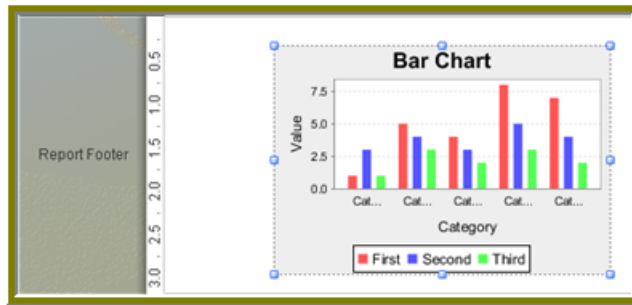

4. Double-click the sample chart.

5. The type of chart most appropriate for your report is a pie chart. In the top portion of the Edit Chart dialog box, select the **pie chart** icon.

> **Note:** Notice that the pie chart properties that define its look-and-feel are listed in the left pane of the Edit Chart dialog box. Properties associated with the data in the chart are listed in the right pane.

6. Go to the **Title** properties; net to the **chart-title** property, type **Product Pie Chart**.

7. Under **Common**, click the down arrow next to **value-column** click the ellipsis [...] to open the **Edit Array** dialog box.

The value-column specifies the actual values (measures) you want to chart. In this instance, you want to chart the quantity ordered.
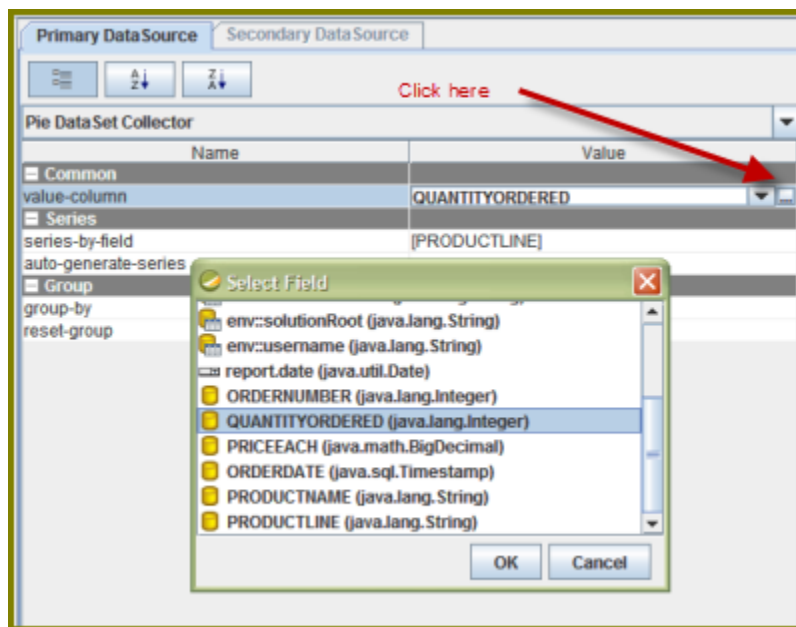

8. Click in the blank field to expose the drop-down arrow.

9. Select **QUANTITYORDERED** from the list and click **OK**.

10. Click **OK** to exit the Edit Chart dialog box.

11. Under **Series** click the ellipsis [...] next to **series-by-field** to open the **Edit Array** dialog box.

The series-by-field specifies the field you are charting. In this instance you are charting by product line. Series are usually placed in the chart legend.
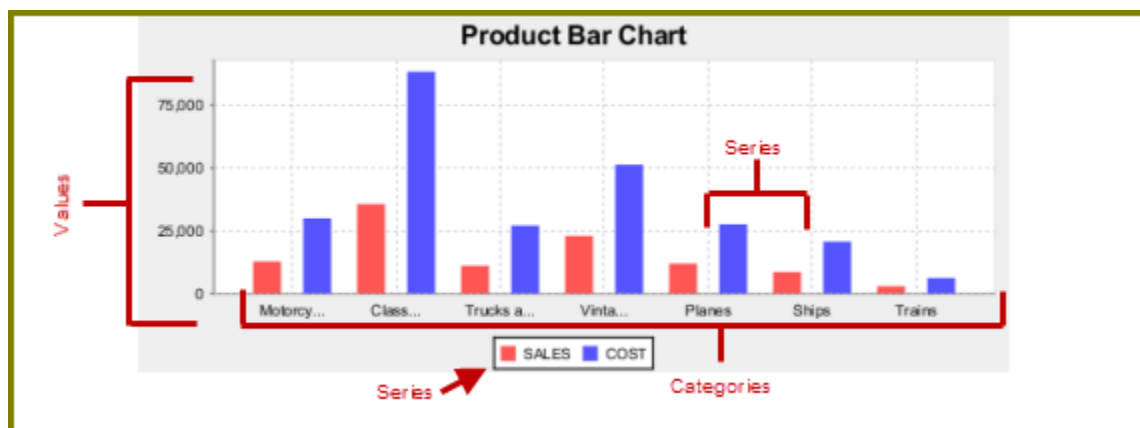
12. Click ⊕(Add).

13. Click in the blank field to expose the drop-down arrow.

14. Select **PRODUCTLINE** from the list and click **OK**.

15. Click **OK** to exit the Edit Chart dialog box.

16. Click 👁 (Preview) to display your report.

17. When the report displays, click the double arrows to go to the last page.
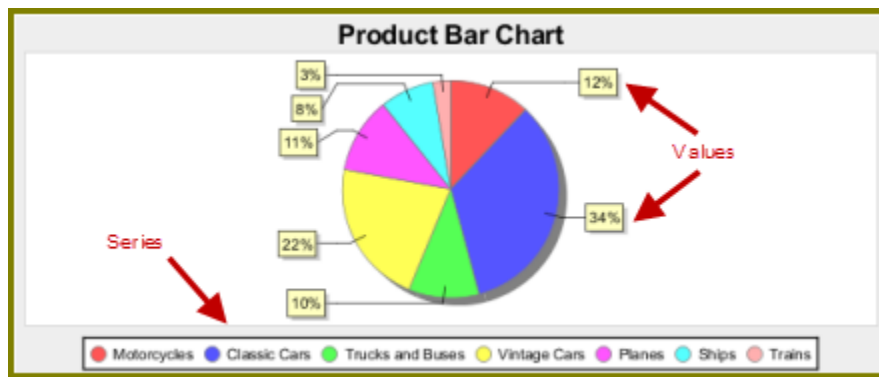
The chart you created appears on the last page of the report. If you want to display a bar or line chart instead, use the chart settings below. You have to add the **series-by-value** setting manually in the **Edit Array** dialog box. Click ➕ (Add) and type **SALES**; click ➕ (Add) and type **COST**. Run the report to display the bar chart.

18. Save your report. You are now ready to *add a parameter to your report*.

Adding Parameters to Your Report

When you set parameters, users are prompted for a value or values when they run the report. The ability to provide parameters is an important part of creating a report.

1. In the Report Designer, click **File** > **Open** to select the report you created.

2. In the menubar go to **Data** > **Add Parameter**. Alternatively, you can click 🖼 (Master Report Parameter) under the **Data Tab** in the Report Designer workspace.
   The **Add Parameter** dialog box appears.

3. In the Add Parameter dialog box, type **enter_prodline** in the **Name** text field.

4. Type **Select Line** in the **Label** text field.

5. Next to **Display Type**, select **Drop Down** so users can select a product line.

6. Click ✏ (Edit) to add a query that supplies the values, (motorcycles, cars, ships, and so on), from which users of the report must choose.

   👉 **Note:** Click on **JDBC (SampleData - Memory)** under **Data Sources** if the Edit icon is disabled.

The JDBC Data Sources dialog box appears.

7. Under **Connections**, select **SampleData (Memory)**.

8. Next to **Available Queries** click ● (Add).
   A new query placeholder is added to the list (Query 2).

9. In the Query Name text field, type **prodlineList**.

10. Enter your SQL query in the **Query** box.

   You can copy and paste the required lines, (shown below) directly into the SQL statement or you can use the alternate steps in the table below.

   Important: Make sure to use curly brackets, (not parentheses), before and after **{**enter_prodline**}** or the report will not display correctly.

   ```
   SELECT DISTINCT "PRODUCTS"."PRODUCTLINE"
                          FROM "PRODUCTS"
   ```


   By entering these lines, report users see a prompt when they open the report in the Pentaho User Console that allows them to enter a product line. That way, they can examine orders by product line. If you do not add the lines, the report displays orders for all product lines.

   Alternatively, you can use the **SQL Query Designer** to build your query:

Step	Description
1	In the JDBC Data Source dialog box, click 🖉 (the Edit icon on the right).
2	In the SQL Query Designer, select the **PRODUCTS** table on the left.
3	On the right, click **PRODUCTS** and choose **Deselect All**.
4	Right-click **SELECT** on the left and choose **Distinct**.
5	On the right, select **PRODUCTLINE** and click **Preview**. The product line list appears. Click **Close**.
6	Click **OK** to exit the SQL Query Designer and go to Step 11.

11. Click **OK** to exit **Data Source** dialog box.

12. In the **Add Parameter** dialog box, under Data Sources, double-click **JDBC SampleData (Memory)** and select **prodlineList**.

13. Next to **Value Type**, select **String**.

14. Type a default value, for example, "Motorcycles," in the **Default Value** text box. (Optional)
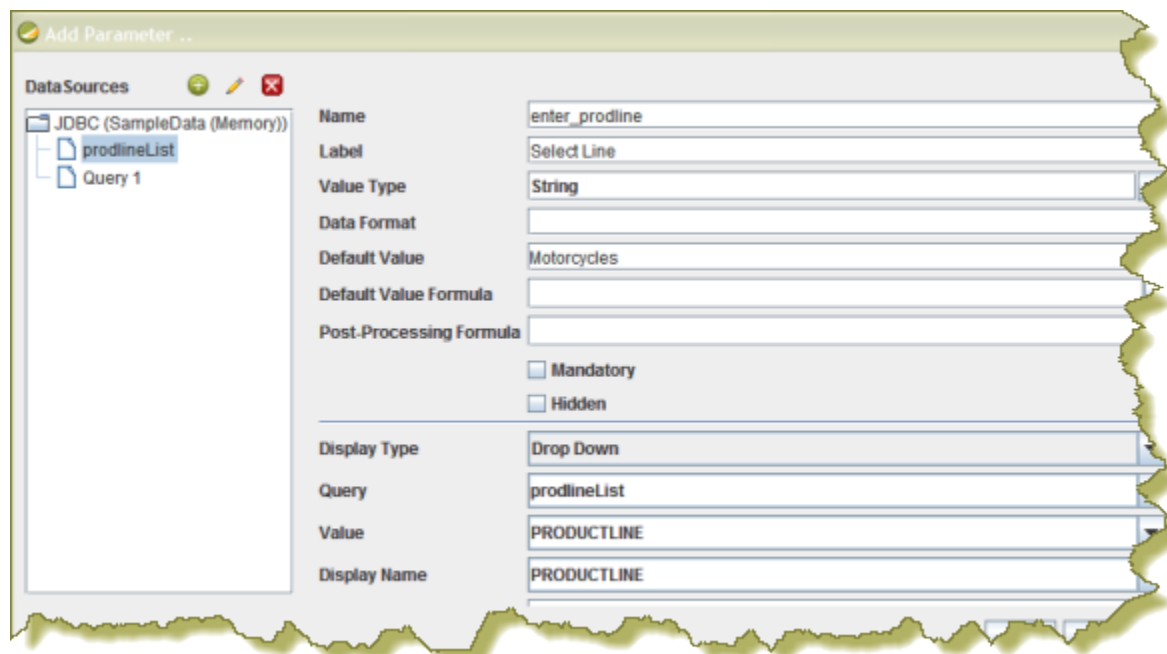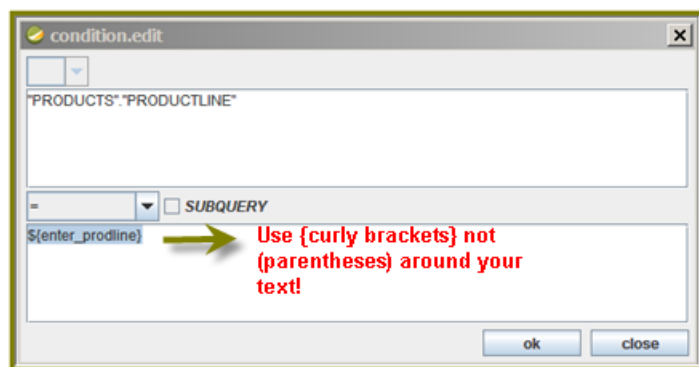
15. Click **OK** to exit the **Add Parameter** dialog box.

16. Now that you've created a product line parameter, you must map it back to your query (Query 1). Under **Data**, double-click **Query 1**.
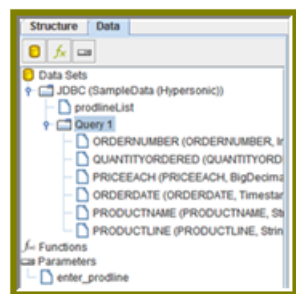
17. Right-click **PRODUCTLINE** and select **add where condition**.
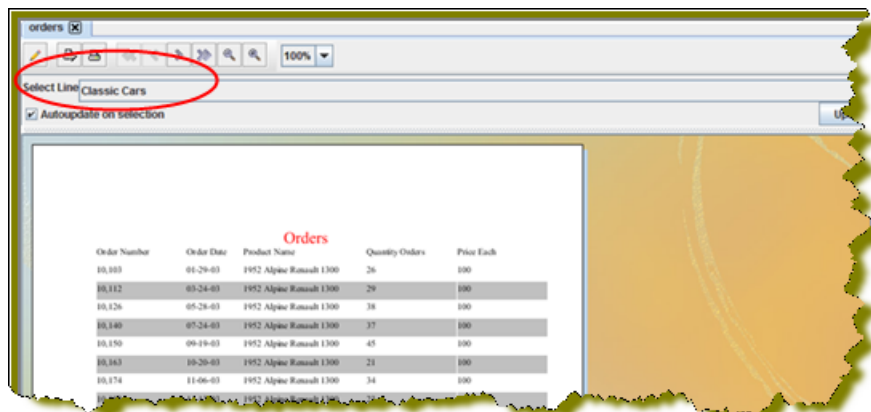The **condition.edit** dialog box appears.

18. Type ${enter_prodline} in the edit area and click **OK**.

19. Click **OK** to exit the /SQL Query Designer.

20. Click **OK** to exit the Data Source dialog box.

21. Click 👁 (Preview).

You should see your product line drop-down list.

22. You are now ready to *publish your report*.

Publishing Your Report

You have created and formatted a simple report, added a chart, and now you are ready to share the report with your users.

1. In the Report Designer, click **File** > **Open** to open the report you just created.

2. Click **File** > **Publish**. Alternatively, click .

   If you have not saved the report, a warning message reminds you to save it. The **Login** dialog box appears, pre-populated with credentials valid for the evaluation. Make sure that the Server URL is set to `http://localhost:8080/pentaho/`.
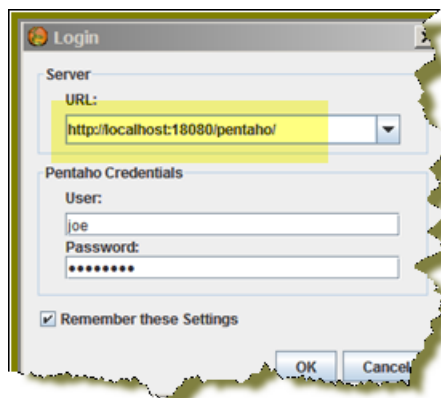
3. Click **OK**.
   The **Publish to Server** dialog box appears.

4. In the Publish to Server dialog box, type in a report name and description into the appropriate fields.

5. Under **Location**, save the report in the `.../steel-wheels/reports` folder.

6. Select **html** as the **Output Type** and click **OK**.
   A success message appears.

7. Click **Yes** to go directly to the User Console to view the report you just published.

   If you want to access the report later, log into the BA Server by going to **http:// localhost:8080** in your Web browser, then navigate to the **Reporting Examples** directory in the **Solution Browser**. You should see your published report in the list. If not, click **Tools** > **Refresh Repository**.

8. Log in as **Admin**. The default admin password is **password**.

9. Your report displays in the User Console.
   You now have a report that users can view at any time.

▼ Report Parameters

Product Line
Classic Cars

Output Type
HTML

View Report ☑ Auto-Submit

|◄ ◄ Page 8 of 31 ► ►|

Order Report

Order No.	Order Date	Product Name	Quan.	Price Each
10,253	Jun-01-2004	1970 Plymouth Hemi Cuda	25	90.17
10,266	Jul-06-2004	1970 Plymouth Hemi Cuda	35	76.61
10,276	Aug-02-2004	1970 Plymouth Hemi Cuda	38	83.79
10,287	Aug-30-2004	1970 Plymouth Hemi Cuda	41	69.43
10,300	Oct-04-2003	1970 Plymouth Hemi Cuda	22	76.61
10,310	Oct-16-2004	1970 Plymouth Hemi Cuda	49	81.4
10,320	Nov-03-2004	1970 Plymouth Hemi Cuda	38	73.42
10,329	Nov-15-2004	1970 Plymouth Hemi Cuda	33	100
10,34	Nov-24-2004	1970 Plymouth Hemi Cuda	36	9

10. In the User Console select your product line parameter from the drop-down list. Accept the default under **Output Type**.

Refining Your Report

You have created a report in the previous exercise but now you need to make the report more descriptive so that users can understand the content in the report. Follow these instructions to refine your report.

1.
Click ✏ (Edit) to return to the Design page.

2. Click and drag a Ab (Label) from the tools palette into the middle of the **Page Header** band. Notice how Report Designer keeps track of the report structure (shown below).
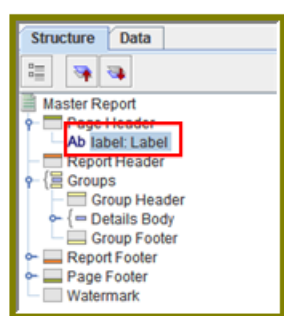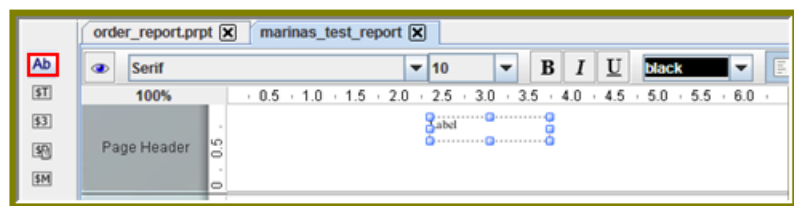

3. Click inside the **Label** item and type **Order Report**

4. Double-click inside the Order Report label to select the text, then in the toolbar, select a larger font size (18 point) and apply boldface.
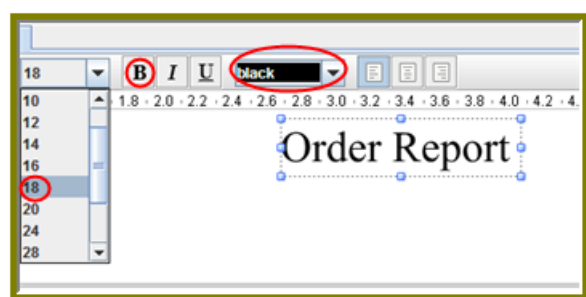
The changes are applied to the text; however, now that the text is bigger you may not see all of it, so use your resizing handles and enlarge the label until you can see all of the text. Alternatively, you can stretch the resizing handles all the way to each edge of the workspace and click the align center icon in the toolbar so that the text is automatically placed in the center of the report page.

5. With the **Order Report** label still selected, click down arrow of the font color icon in the toolbar. Select a color for your label.
The font color changes. This page header will appear on every page of your report.

6. Now, you must create column headers. On the right side of your workspace, click **Structure** -> **Details Header**.

7. In the lower right section of your workspace, click **Attributes**.

8. Under **common**, change the **Value** of the **hide-on-canvas** option to **False**.
Notice that the **Details Header** pane appears in your workspace.

9.
In the toolbar, click ▣ (Select Objects).
Notice that the icon changes to a cross hair as you move into the workspace.

10. Move your mouse to the far right of the **Details** pane. Now, drag your mouse to the far left over all your column objects to select them. You may have to move the mouse under the headings to make them easier to select.
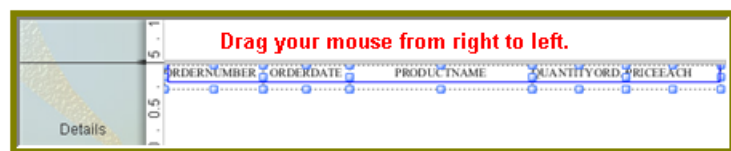
11. Click <**CTRL+C**> to copy your objects and <**CTRL+V**> to paste them into the **Details Header** pane.

> **Note:** Alternatively, you can choose **Copy** from the right-click menu.

12. Under **Format** in the Report Designer menubar, select **Morph**.
The column objects are changed to labels.

13. Type the correct heading names for each of your columns: **Order No.**, **Order Date**, **Product Name**, **Quan.**, and **Price Each**.
Your headers will align correctly over your columns.

14. Click (Preview) to display your report.

The report looks good but you may want to make it even easier to read by applying some banding.

15. In the toolbar, go to **Format** -> **Row Banding**.

16. In the **Row Banding** dialog box, choose **Yellow** from the drop-down list next to **Visible Color** and click **OK**.

17. Click (Preview) to display your report.

18. In the menubar, go to **File** -> **Save** to save your report in the **...\report-designer\samples** folder. Type **Orders** in the **File Name** text box.

> **Note:** See *More about Row Banding, Data Formatting, and Alignment* for additional information about refining your report.

More about Row Banding, Data Formatting, and Alignment

Row Banding

By creating a row band element, you can select the *specific* fields in your report that will display a row band. For example, you may want to emphasize specific fields and not others on a line. You can give your row band element any name you choose. In the example below, the row band element is called **row-band-element**.

After you create your element, go back to the report and select the columns (fields) whose data will always be displayed with a row band. You must also type row-band-element in the **name** field under **Attributes**. is In the example below, the data associated with each of the columns in the report will display a row band. Notice the banding in the report preview.
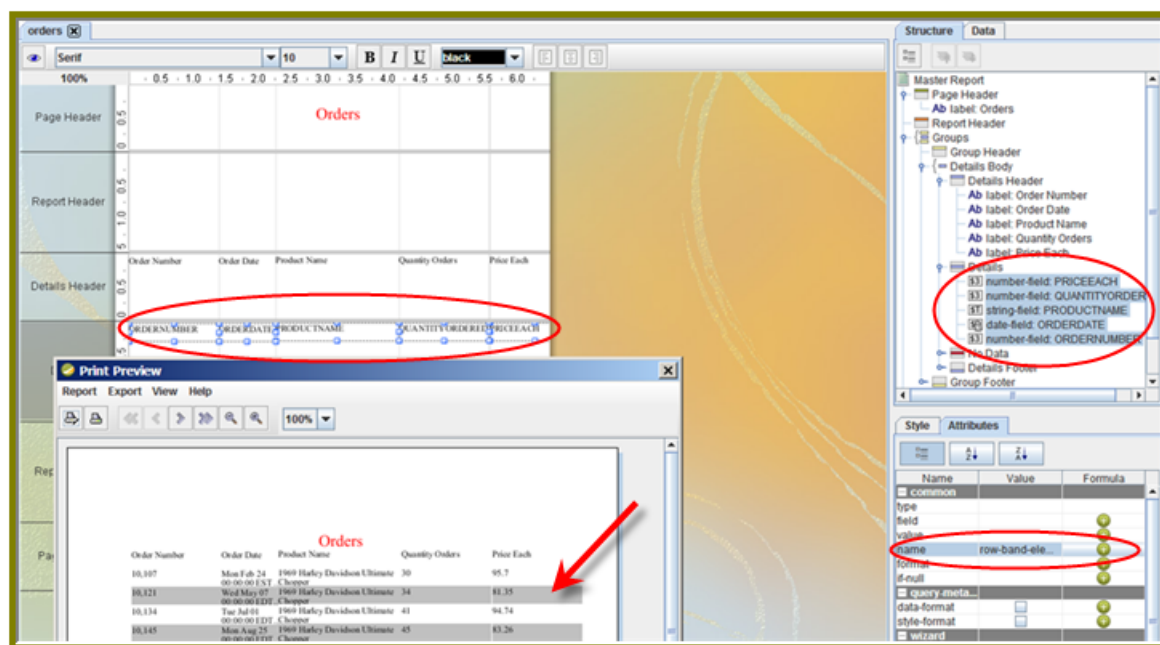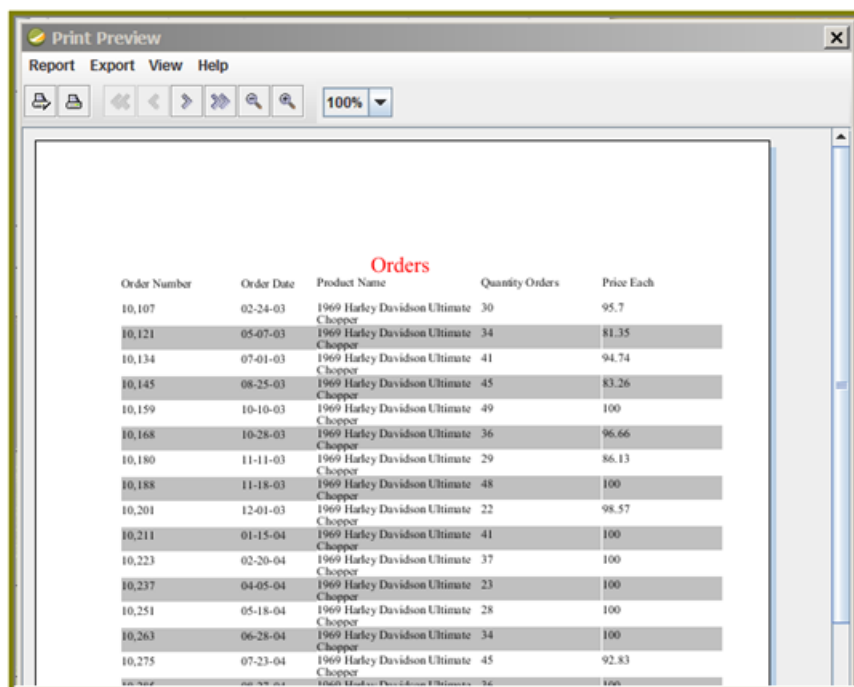
Data Formatting

Report Designer uses default formats for dates and numbers. You can change how dates and numbers display by selecting the object (field) and selecting the appropriate value for the format from the drop-down list next to **format** (under **Attributes**). In the example below, the dates associated with the **Order Date** field will display as **MM-dd-yy**.
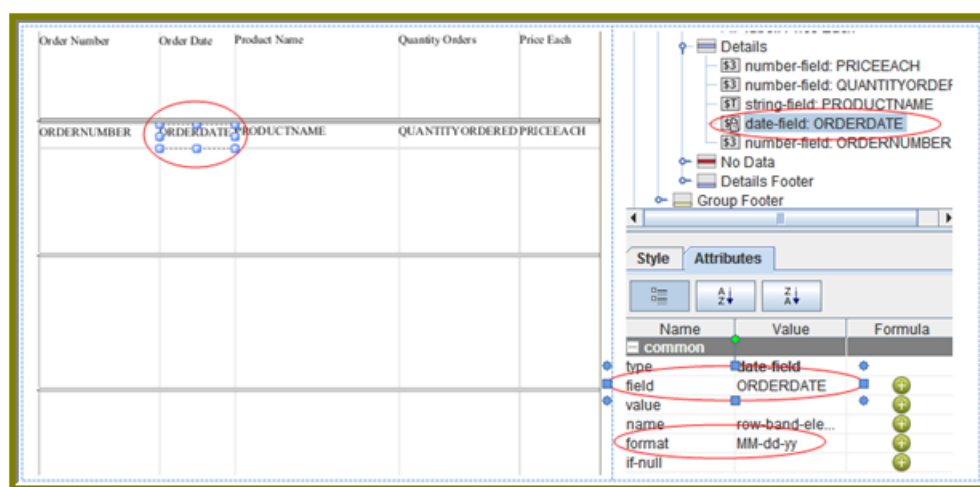
When you preview the report, notice that it displays in a cleaner format:

Note: You can type a value for your own format if you know the correct JavaScript string nomenclature.

Alignment

To align multiple objects press <**SHIFT+ CLICK**> to select each object. Then, choose an alignment option from the **Format** menu. Alternatively, you can click (Select Objects) and drag your mouse over the objects you want to select and then choose an alignment option.

In the example below, the selected objects will be aligned in the middle of the band.
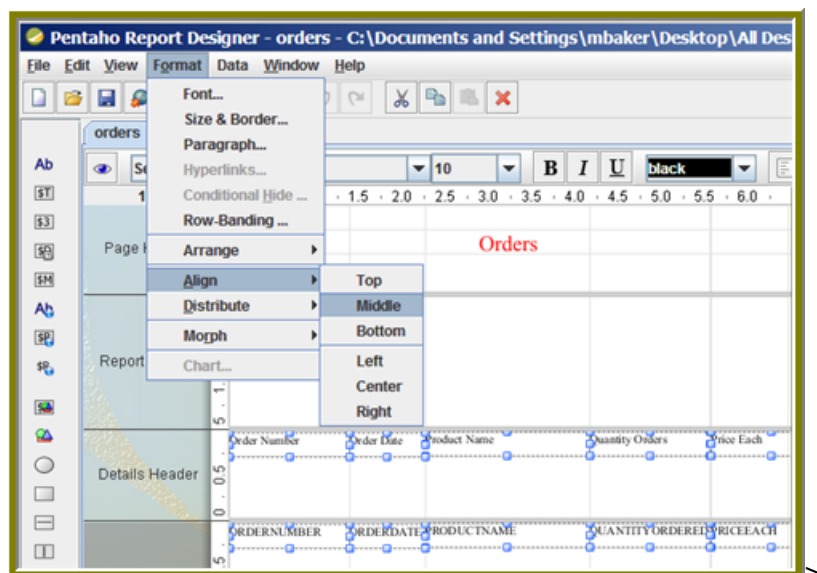
Further Reading

This document was designed to quickly demonstrate basic Pentaho Report Designer features. See the *Design Print-Quality Reports* section of *Build Full-Featured Solutions* on the Pentaho Infocenter for more about Report Designer features and functions, from adding a data source to working with conditional formatting and formulas.