

DEVELOPING REPORTS WITH ORACLE REPORTS 6I

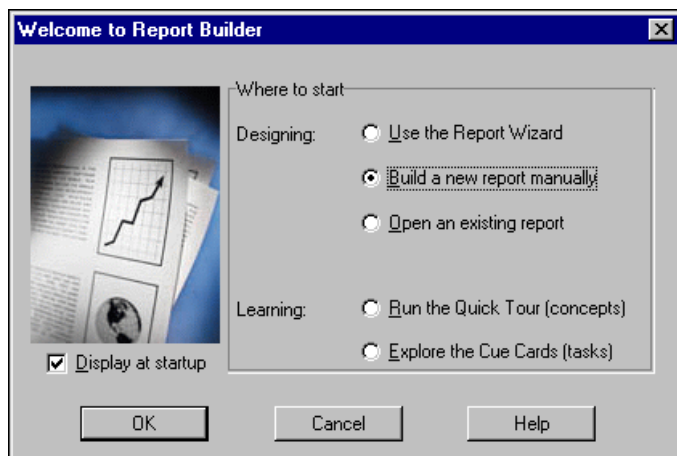
Elizabeth Boss, Boss Consulting Services, Inc.

ABSTRACT

Oracle Reports 6i is a Graphical User Interface (GUI) tool that is used to create reports based on data stored in Oracle database tables. The purpose of a report is to display database information in a meaningful manner for end-users. Oracle Reports 6i provides the capability to generate reports that will run either client-server or from an Internet browser. Oracle Corporation has created a design interface that remains relatively consistent throughout all of its development tools. Once the developer has worked with one of the Oracle Developer tools, learning to use the other development tools has a reduced learning curve due to the consistency of the design environment.

CREATING A REPORT

When the Report Builder product is invoked, the Welcome window is displayed allowing developers to select design and learning options. There is also an option allowing developers to decide if they would like to continue to see this window during new report development. Many developers will find that building reports manually will be faster than using the Reports Wizards. To create a report manually, select the **Build a new report manually** radio button in the Welcome window.



The following steps are required to build an Oracle Report:

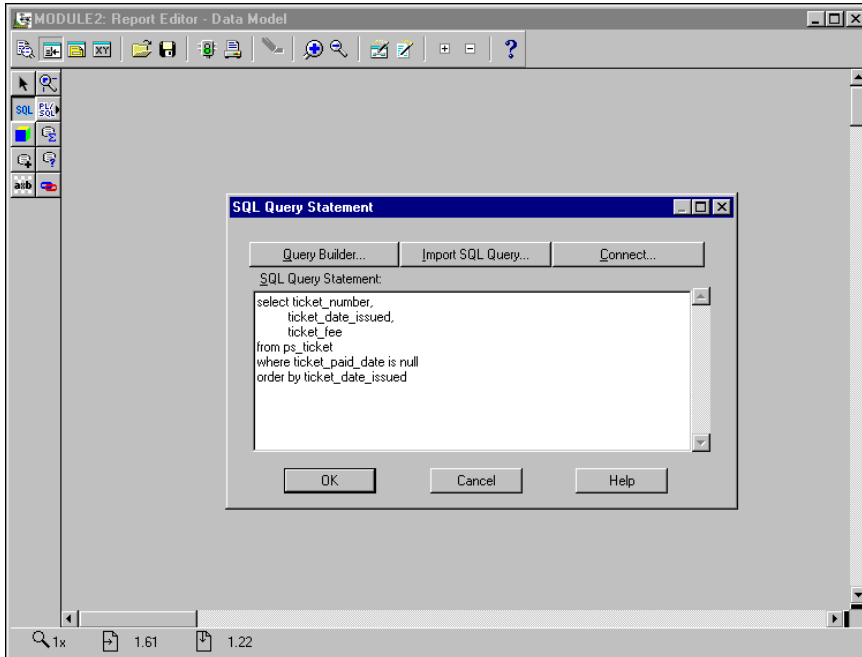
1. Create a new report module.
2. Create a new data model.
3. Create the query object in the data model.
4. Create a layout model for the report.
5. Save and run the report.

Many objects are created when creating an Oracle Report. Oracle has default names for all objects that are created, and uses a naming convention that indicates what type of object is created and a sequence number. Maintenance of a report will be much easier if the developer supplies more meaningful names than the default names created by Oracle Reports. The naming conventions used in this paper will provide a descriptive object name and object type. For instance, a query object that retrieved parking ticket information would be named Q_TICKET or TICKET_QUERY.

THE DATA MODEL

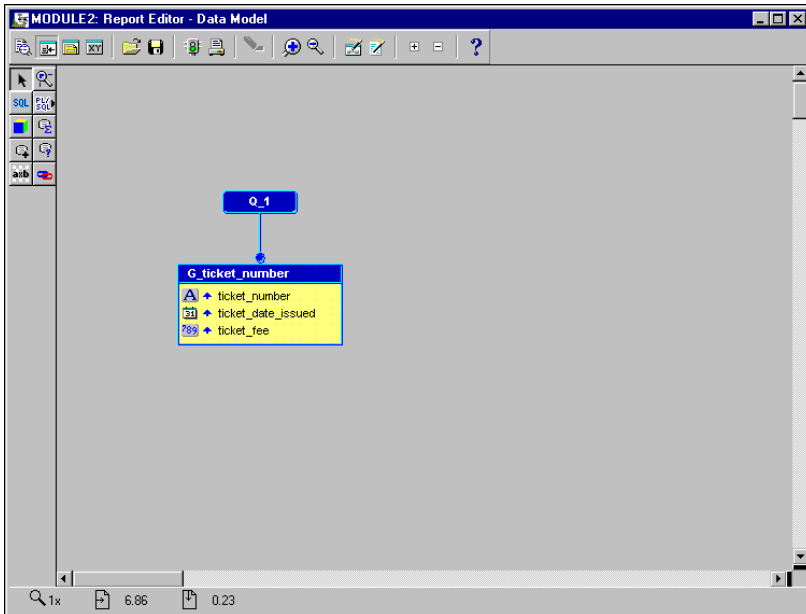
The first step in creating a report is to create a Data Model. The Data Model Editor provides a window where the data model objects can be created. The Data Model Editor is invoked by double-clicking on the Data Model icon in the Object Navigator or selecting Tools/Report Editor from the main menu.

The Data Model Editor has a tool palette, toolbar, main menu, and drawing area. The Data Model Editor is used to define the queries, groups, and computed columns that will be included in the report. The data model displays the columns that are selected from the database tables in one or more groups. The columns appear in the report as fields.



The first object that needs to be created in the Data Model is the query object. To create a query object, click on the Query icon in the tool palette. The SQL Query Statement window will automatically be displayed. Type in any valid query statement, including table joins, subqueries, and the set operators. Click on the **OK** button to validate the query and close the SQL Query Statement window.

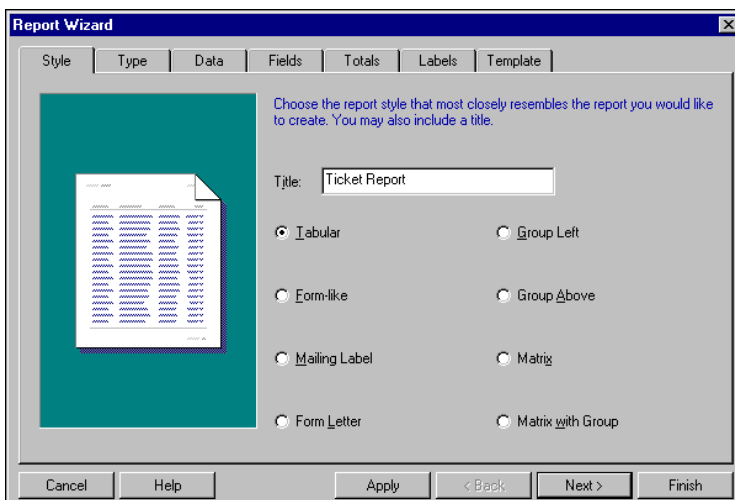
The Data Model Editor and the Object Navigator are updated immediately upon creation of the new query. The Data Model Editor now contains two objects: a query object and a group object.



Note the default name of the query is Q_1. The default name of the group is G_ticket_number. The name of the group is defined by the first column listed in the query prefixed by G_. It is recommended to develop and adhere to naming standards for both queries and groups. The query can be modified at any time by double-clicking on the query object in the Data Model Editor. The group and query names can be modified by invoking the appropriate property palette. To invoke the property palette for an object, right-mouse click on the object and select Tools/Property Palette from the pop-up window. In the property palette, modify the *Name* property supplying a meaningful name for the object.

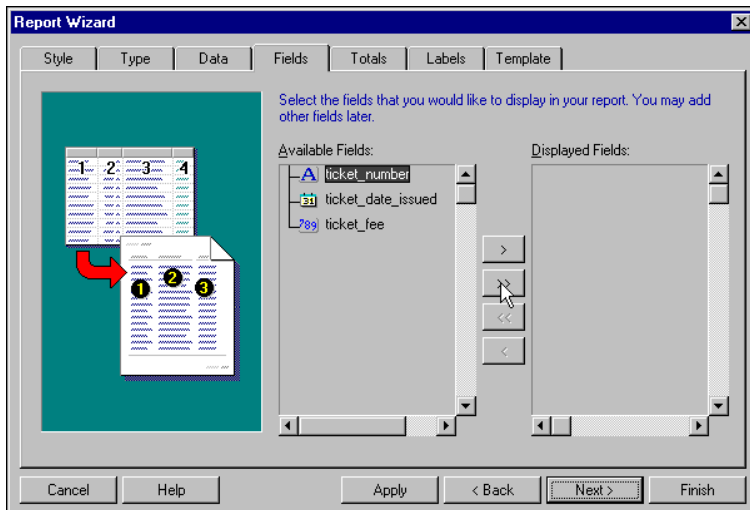
THE LAYOUT MODEL

After the data model has been created, the next step in developing a report is to create a layout for the report. To create the report layout, select Tools/Report Wizard from the main menu or click on the Report Wizard button in the button palette. The Report Wizard will guide you through the creation of the report layout.



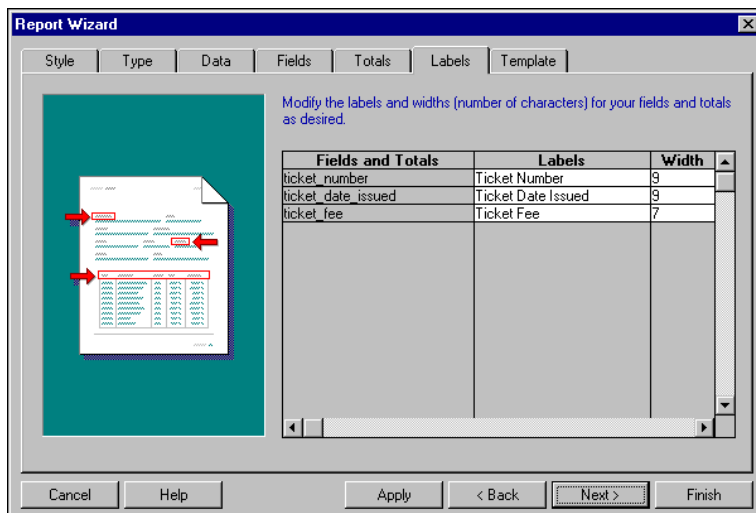
The Style tab allows the developer to specify the positioning of fields and labels on the report and the report title. The Title will be displayed at the top of every page of the report. A style of Tabular prints the labels above the fields. The Form-like style prints the labels on the left-hand side of the fields. The Mailing Label style is used to create address labels. The Form Letter style allows text and data fields to be intermixed. The Group Left and Group Above styles are used when two or more groups are included in the report and determine positioning of the parent group columns. The Matrix style creates a report that displays data as the column and row headings, and allows a data value to be placed at the intersection of a row and column. The Matrix with Group style uses a matrix report that includes a group.

The Data tab contains the query that was created earlier. There is no need to go to this window unless the query needs to be modified. The Report Wizard is re-entrant, allowing any of the layout specifications to be changed later.

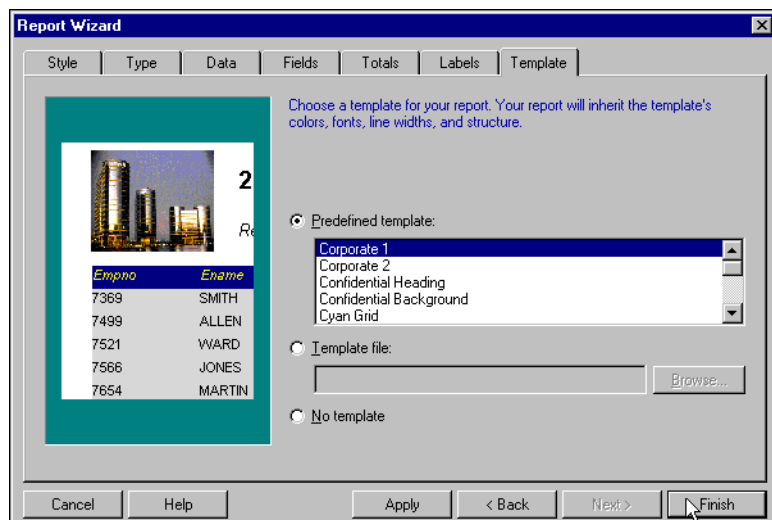


The Fields tab allows columns to be selected that should be included in the report as fields. To select a column, highlight the column in the Available Fields box and then click on the single greater than sign (>) button. The column will be transferred to the Displayed Fields box. To select all columns, click on the double greater than (>>) button. All columns will be transferred to the Displayed Fields box. To deselect a column, highlight the column in the Displayed Fields window and then click on the single less than (<) sign.

The Totals tab is used to add computational columns to a report. This report will not contain any computations.



The Labels tab provides a window where the column labels and display widths for the fields can be modified. When a field is modified, an asterisk is placed beside the field name.

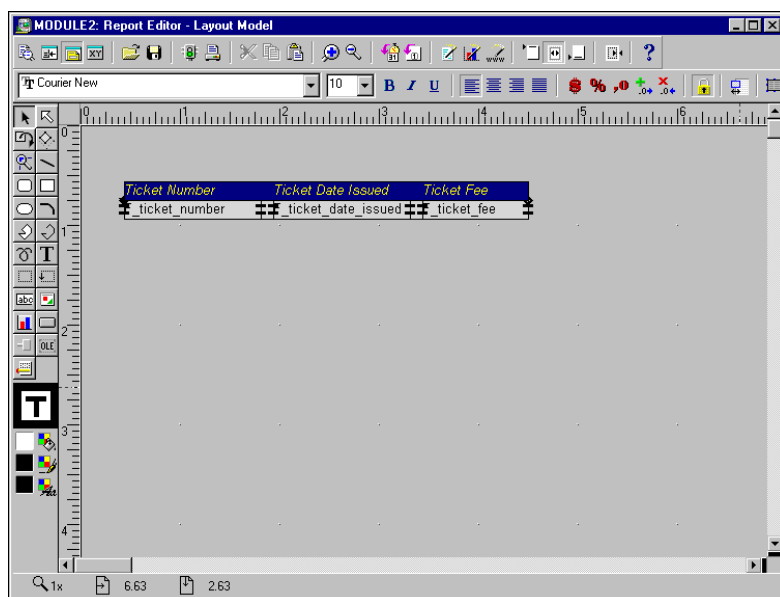


The Template tab is used to identify the template associated with the report. Oracle Report Builder includes several predefined templates that the developer may select from. The **Predefined template** radio button should be selected if the report should use a template supplied with the Report Builder product. Select the desired template from the list of predefined templates. The **Template file** radio button is used when the report will use a template that has been previously defined and stored as an operating system file. A standard Windows Open window will be displayed allowing the developer to choose the appropriate template file. The **No template** radio button is selected when the report will not be based on a template. This provides a basic report with column names as labels (unless the labels have been changed in the Labels tab).

When all changes required changes have been made to the Report Wizard tabs, click on the **Finish** button to complete creation of the report layout. The report will be executed and the Live Previewer will be displayed. The Live Previewer displays data from the database and allows modification to the appearance of the report.

UPDATED LAYOUT EDITOR

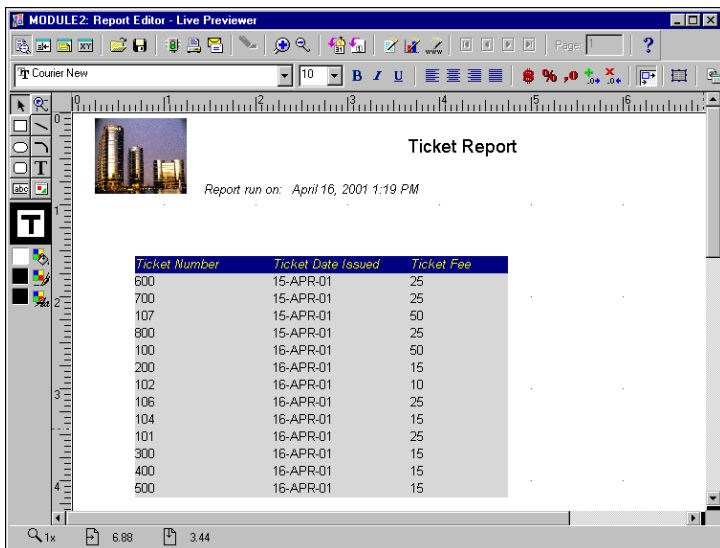
To display the updated Layout Model, double-click on the Layout Model object in the object navigator or from the Data Model Editor window, click on the Layout Model button.



The Layout Model is automatically updated to include the new fields, labels, and frames based on the fields selected in the Fields window of the Report Wizard.

SAVING AND RUNNING THE REPORT

Up to this point, all changes made to the report have only been saved in memory. If the Report Builder tool is closed without saving changes, all changes would be lost. To save the report, click on the Save icon in the tool palette or select File/Save from the main menu. Because this is the first time the report has been saved, the Save window is displayed, allowing the developer to determine the storage location of the report. The default extension for a report is .RDF – Report Definition File. The Report Definition File (RDF) is the source code for the report. The RDF is the source file used for maintenance. The code that is distributed and executed by users is the .REP file or the executable code. To create a .REP file verify that the correct report is open and active in the Report Builder product. Select File/Administration/Compile Report from the main menu or press CTRL+T. Specify the file name as well as the directory.



The report can be executed from within the Report Builder product by clicking on the Run icon in the tool palette. You may also select Program/Run Report from the main menu. During report formatting, a status window is displayed indicating that work is in progress.

Changes to the appearance of the report can be made in the Live Previewer window. In this report, dollar signs, decimal places, and trailing zeros are added on the ticket_fee field using the appropriate tools in the tool palette.

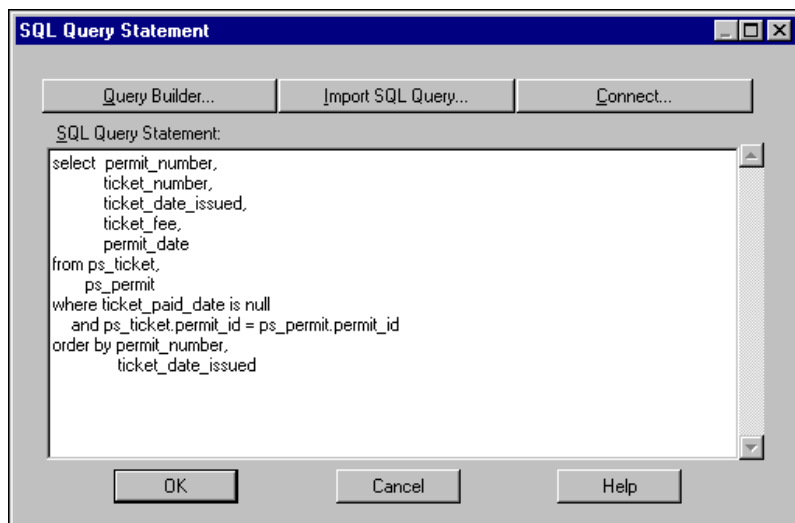
MULTIPLE GROUP REPORTS

Multiple groups can be created for a single report, thus causing the report to print database information at different frequencies. A break report is created by pulling a repeated column out of the original group, and placing it in a new group.

TO CREATE A BREAK REPORT

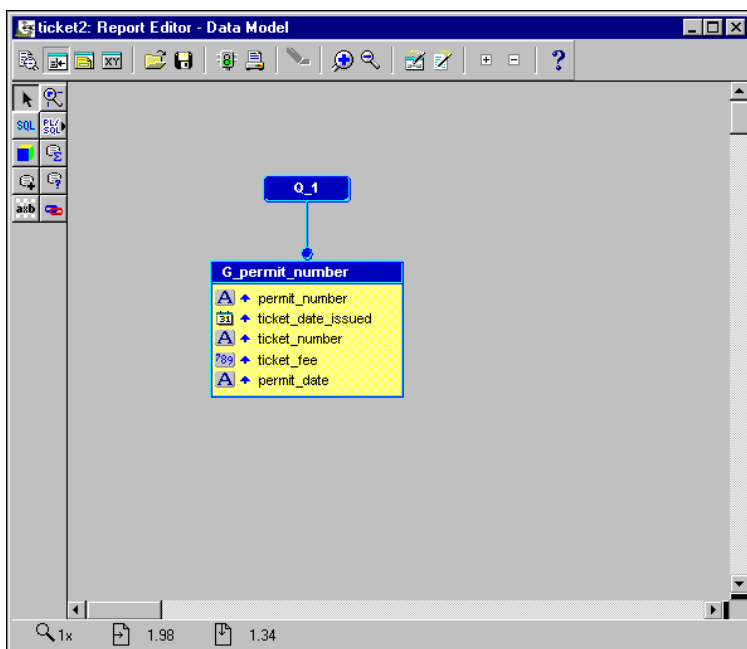
1. Create a new report module by selecting File/New/Report or by pressing Ctrl+N.
2. In the New Report window, select Build a new report manually. The Data Model window will be displayed.
3. Click on the SQL icon to invoke the SQL Query Statement window.
4. Enter the select statement.

- Click OK to validate the query and close the SQL Query Statement window.



ORIGINAL DATA MODEL

The original data model has a single group, because only one query has been created. To modify the query properties right mouse click on the query object in the data model editor and then select Property Palette from the menu. Type a new object name in the Name property. To modify the group properties double-click on the group object in the object navigator. Change the object name in the Name property.



To create the layout model for the report click on the Report Wizard icon in the tool palette of the data model editor window. In the Style window, enter the report name in the Title field and select the Tabular radio button. In the Fields window, single click on the double greater than sign (>>) button to include all columns as displayed report fields. In the Template window, select the No Template radio button. Click on the Finish button to complete creation of the layout model for the report.

After the layout model has been created successfully using the Report Wizard, the report is executed and data displayed in the Live Previewer window.

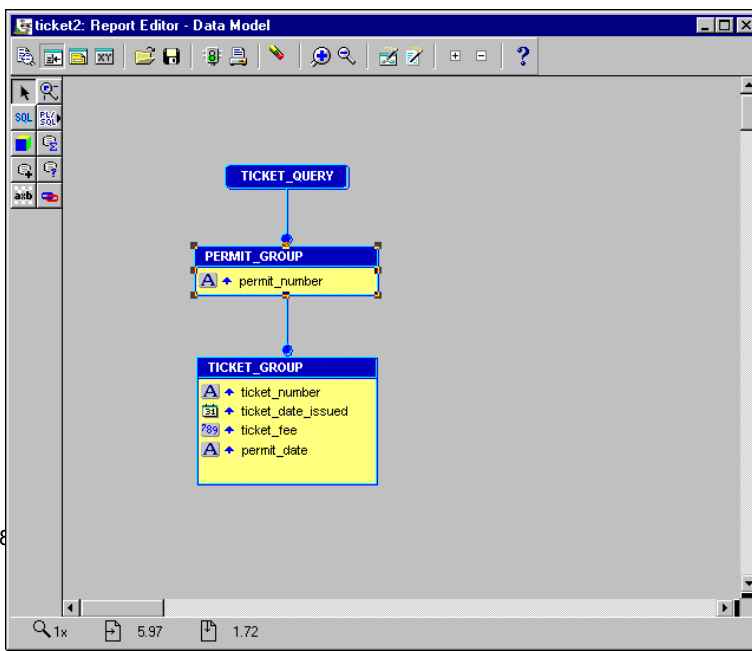
Permit Number	Ticket Number	Ticket Date Issued	Ticket Fee	Permit Date
1000	600	15-APR-01	25	2001
1000	100	16-APR-01	50	2001
1000	300	16-APR-01	15	2001
1012	101	16-APR-01	25	2001
1013	107	15-APR-01	50	2001
1016	102	16-APR-01	10	2001
1018	106	16-APR-01	25	2001
2000	700	15-APR-01	25	2001
2000	200	16-APR-01	15	2001
2000	400	16-APR-01	15	2001
3000	800	15-APR-01	25	2001
4000	500	16-APR-01	15	2001
5000	104	16-APR-01	15	2001

The original, single group report would display the invoice information as shown below. With the single group report, the customer id is repeated for each invoice that a customer has.

The redundant data can be removed by creating a break report. The break report suppresses printing of the duplicate value for the break column. This is very similar to the SQL*Plus BREAK command which suppresses duplicates of the BREAK column.

CREATING THE BREAK GROUP

The break group is created by dragging the break column out of the original group, and dropping it under the query object (but above the original group). To change the break group name invoke the **Group Property Palette** window for the new break group by double-clicking on the new group. Supply a meaningful name for the break group.



To create the layout model click on the Report Wizard icon in the tool palette of the data model editor. In the Style window, select the Group Above radio button. In the Groups window, ensure that the cust_id field is selected as the Group Fields field. This will cause the break on the cust_id field. Click on the Finish button to complete creation of the break report layout model.

The break report contains more frames than the simple single group report. Each group has its own main group frame. Group frames begin with an “M.” The main group frame for the detail group may be deleted, as it is an unnecessary frame. Each group has a repeating frame. Repeating frames begin with an “R.” The down arrow on the side of the frame indicates the repeat direction.

Each group has a header frame. In the slide example, the labels are all being printed at the same frequency, and therefore only a single frame is required. Unnecessary header frames may be deleted. A report with fewer frames runs quicker than a report with many frames. Deleting unnecessary frames improves performance of a report.

SAMPLE BREAK REPORT

To save and run the report select File/Save from the main menu. To execute the report, select Program/Run Report from the main menu. The report is displayed in the Live Previewer window.

Tickets by Permit				
Permit Number: 1000				
Ticket Number	Ticket Date Issued	Ticket Fee	Permit Date	
600	15-APR-01	25	2001	
100	16-APR-01	50	2001	
300	16-APR-01	15	2001	
Permit Number: 1012				
Ticket Number	Ticket Date Issued	Ticket Fee	Permit Date	
101	16-APR-01	25	2001	
Permit Number: 1013				
Ticket Number	Ticket Date Issued	Ticket Fee	Permit Date	
107	15-APR-01	50	2001	
Permit Number: 1016				
Ticket Number	Ticket Date Issued	Ticket Fee	Permit Date	
102	16-APR-01	10	2001	
Permit Number: 1018				
Ticket Number	Ticket Date Issued	Ticket Fee	Permit Date	
106	16-APR-01	25	2001	

MULTIPLE QUERY REPORT

Another manner in which a report can contain multiple groups is by creating multiple queries in the data model.

To create an multiple query report with independent groups:

1. Create a new report.
2. Invoke the data model editor.
3. Create the first query.
4. Enter the SQL SELECT statement.
5. Modify the group properties to change the name.
6. Create the second query.

7. Enter the SQL SELECT statement.
8. Modify the group properties to change the name.
9. Create the default layout.
10. Save and run the report.

CREATING THE QUERIES

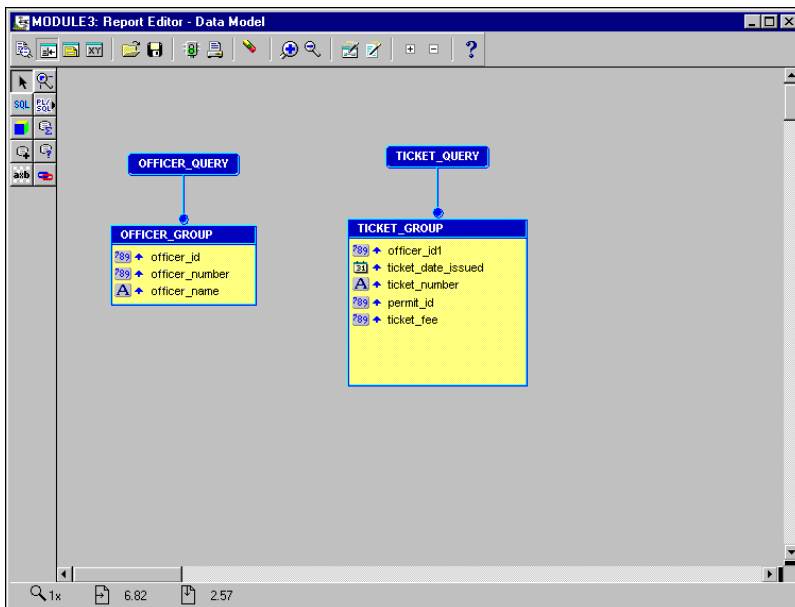
To create the first query: in the data model editor, use the query icon from the tool palette to create the query object. Double click on the query object to display the query property palette window. Enter the SQL SELECT statement; click OK to validate and close the window. The query object name and group object name may be changed in their respective property palette windows as previously discussed.

To create the second query: in the data model editor, use the query icon from the tool palette to create the query object on the right side of the first query object. Double click on the query object to display the query properties window. Enter the SQL SELECT statement; click OK to validate and close the window. The query object name and group object name may be changed in their respective property palette windows as previously discussed.

ORIGINAL DATA MODEL

The data model now shows two queries and two groups. The groups are not related in any manner, and will require to distinct main group frames.

The data for the query that is left most in the layout model will be displayed first. Once all data from the first query has been displayed, the data from the second query will be displayed.



To create the layout model for the report: click on the Report Wizard icon in the tool palette. In the Style window, enter the report title in the Title field and select the Tabular radio button. In the Groups window, select both groups and click on the Down button to cause them to have a print direction of down.

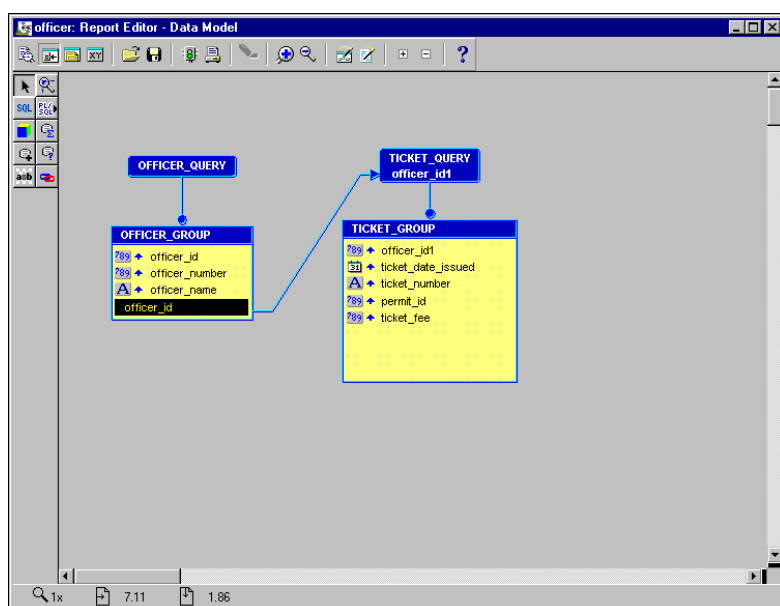
In the Fields single click on the double greater than sign (>>) button to cause all columns to be displayed as fields on the report. In the Template window, select the No Template radio button. Click on the Finish button to complete creation of the layout model for the independent groups report.

The same frames (with different names) are created for the invoice group. The frames (shown on the slide graphic) are created for the independent groups. Because the groups are independent, completely separate frames are created for each group. Each group has a header frame, a main group frame, and a repeating frame.

CREATING DEPENDENT GROUPS

The two groups created for the previously can be related in a master-detail manner using the link tool. The link tool is used to draw a line between the common columns that would be used to join the tables in an SQL statement.

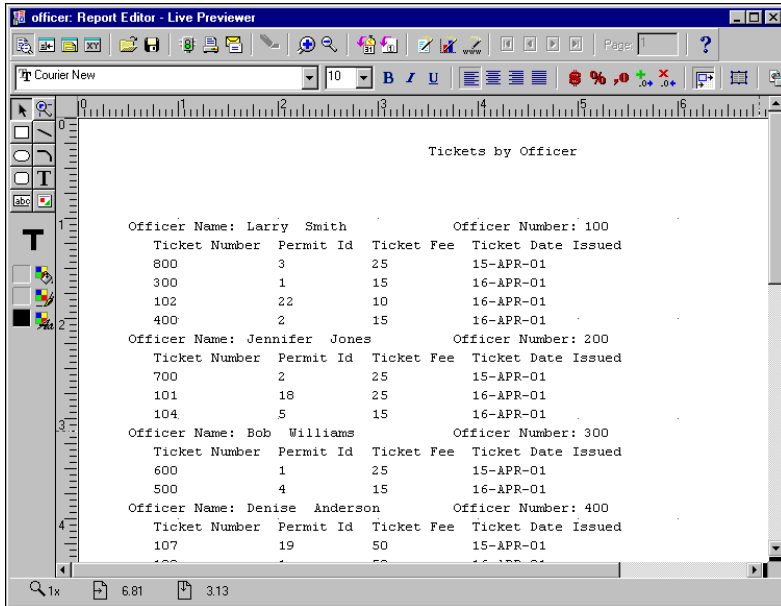
To create dependent groups: click on the link icon in the tool palette. Click on the common column from the master group and continue holding the left mouse button down. Draw a line to the matching column in the detail group. Release the left mouse button when the cursor is on top of the matching column. The link tool draws a line between the common columns.



To create the layout model: click on the Report Wizard icon in the tool palette of the data model editor window. In the Style window, enter the report title in the Title field and select the Group Above radio button. In the Fields window, deselect the cust_id field by highlighting it in the Displayed Fields list and then clicking on the single less than sign (<) button. Click on the Finish button to complete creation of the master-detail layout model.

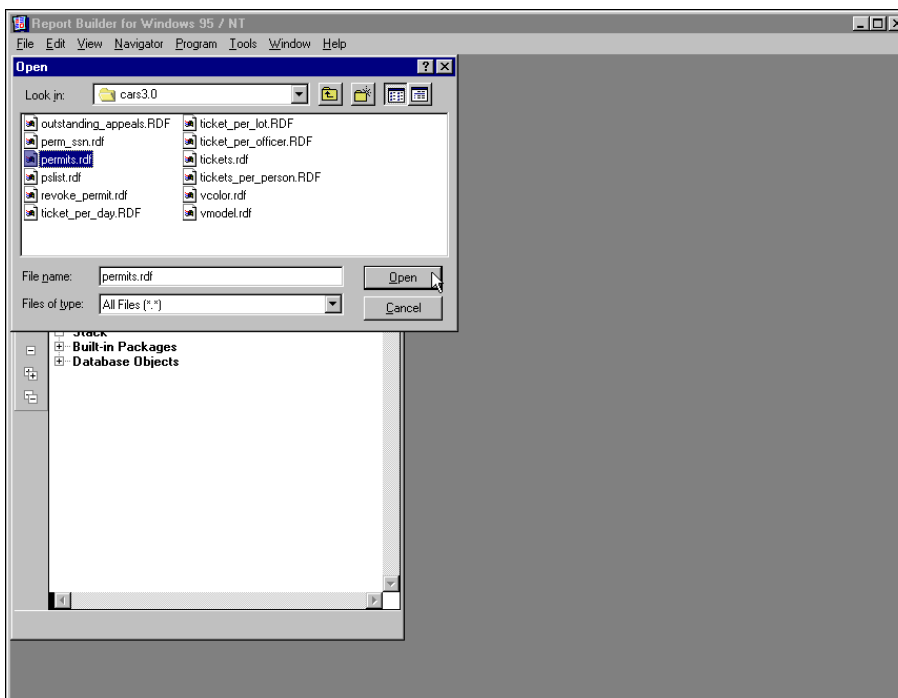
SAMPLE MASTER-DETAIL REPORT

The Master Detail Report displays the master record above and to the right of the detail records. Multiple detail records may be displayed for a single master record. The column labels for the master record are displayed to the left of the data. The column labels for the detail record are displayed above the data.



CONVERTING AN EXISTING REPORT

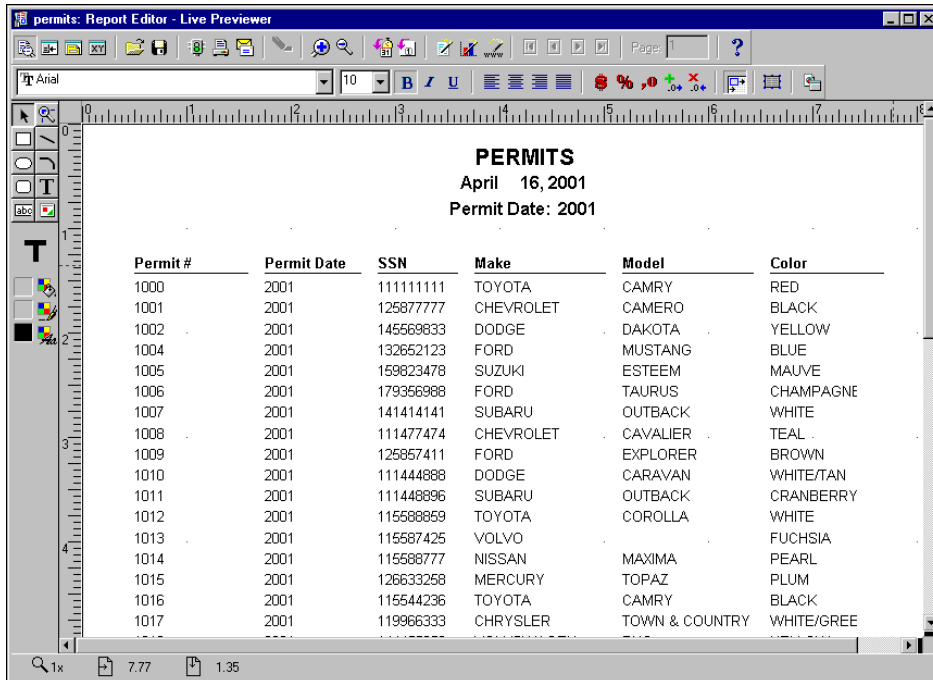
An existing Oracle Report can be converted to Developer 6i in a matter of minutes. To convert an existing report open the rdf file in the Oracle Reports Builder tool by selecting File/Open from the main menu.



The Object Navigator will be updated immediately and will display all of the objects in the Oracle Report. A new executable can be created by selecting File/Administration/Compile Report from the main menu. The Compile Report function creates a new REP file that can be used for deployment to end-users.

RUNNING THE REPORT

The new report can be executed by selecting File/Run from the main menu or by clicking in the Run icon in the tool bar. The report will be displayed in the Live Previewer window. Changes can be made to the appearance of the report in the live previewer.



The screenshot shows the 'permits: Report Editor - Live Previewer' window. The report content is as follows:

Permit #	Permit Date	SSN	Make	Model	Color
1000	2001	111111111	TOYOTA	CAMRY	RED
1001	2001	125877777	CHEVROLET	CAMERO	BLACK
1002	2001	145569833	DODGE	DAKOTA	YELLOW
1004	2001	132652123	FORD	MUSTANG	BLUE
1005	2001	159823478	SUZUKI	ESTEEM	MAUVE
1006	2001	179356988	FORD	TAURUS	CHAMPAGNE
1007	2001	141414141	SUBARU	OUTBACK	WHITE
1008	2001	111477474	CHEVROLET	CAVALIER	TEAL
1009	2001	125857411	FORD	EXPLORER	BROWN
1010	2001	111444888	DODGE	CARAVAN	WHITE/TAN
1011	2001	111448896	SUBARU	OUTBACK	CRANBERRY
1012	2001	115588859	TOYOTA	COROLLA	WHITE
1013	2001	115587425	VOLVO		FUCHSIA
1014	2001	115588777	NISSAN	MAXIMA	PEARL
1015	2001	126633258	MERCURY	TOPAZ	PLUM
1016	2001	115544236	TOYOTA	CAMRY	BLACK
1017	2001	119966333	CHRYSLER	TOWN & COUNTRY	WHITE/GREE

CONCLUSION

Oracle Reports 6i is a Graphical User Interface (GUI) tool that is used to create reports based on data stored in Oracle database tables. The purpose of a report is to display database information in a meaningful manner for end-users. Oracle Reports 6i provides the capability to generate reports that will run either client-server or from an Internet browser. Oracle Corporation has created a design interface that remains relatively consistent throughout all of its development tools. Once the developer has worked with one of the Oracle Developer tools, learning to use the other development tools has a reduced learning curve due to the consistency of the design environment.

ABOUT THE AUTHOR

Elizabeth Boss is President of Boss Consulting Services, Inc. She has more than 15 years of experience in application development and database administration as a database administrator, consultant, instructor, and curriculum developer. As a senior consultant/instructor, Elizabeth has worked directly with customers in all phases and aspects of the design, development, and administration of Oracle systems. She is a frequent presenter at international and local user groups, and, in 1997 and 2001, was listed among the top 25 speakers at the IOUG-A Conference.

Elizabeth can be reached at:

Boss Consulting Services, Inc.

10375 Park Meadows Dr., Suite 250

Phone: (877)489-7745 Fax: (720) 284-3893

E-mail: eboss@boss-consulting-inc.com

Web: www.boss-consulting-inc.com