

A PICTURE IS WORTH A THOUSAND WORDS: GRAPHICS IN FORMS

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Introduction

Developer/2000's graphical capabilities present a resource untapped by most applications. Effective use of Oracle Graphics charts and imported images allows development of outstanding and useful applications. Participants learn how to imbed Graphic charts within forms and use triggers to control interaction between the form and the graphic. Creation of graphs using parameters to control content is illustrated by several examples. Example triggers are explored that support "drill-down" functionality coordinating graphic data with database values. The use of boilerplate images and image data items is discussed in detail. Cross-platform design issues are explained with special emphasis given to web-targeted forms. Effective use of Oracle Graphics charts and imported images allows development of outstanding and useful applications. Participants learn how to imbed Graphic charts and images within forms and use triggers to control interaction between the form and the graphic.

Embedded Oracle Graphics

Developer/2000 gives us a greatly improved Oracle Graphics component. Oracle Graphics is easy to use, powerful, and works well when executed alone or when executed in conjunction with Oracle Forms. Graphic objects may be used in forms to graphically represent data and allow users a more-intuitive way of viewing data and/or launching queries. Oracle Graphics is an OLE Server, so, objects created with it may be included in non-Oracle OLE Clients like Microsoft Excel and Microsoft Word.

Using Oracle Graphics objects from Oracle Forms

Oracle Graphics is an easy-to-use product that creates data-aware charts and graphics. Graphic objects are often the easiest way to illustrate data to a user and are frequently a way to make user input less error-prone. As part of Developer/2000, Oracle Graphics is designed to work closely with Oracle Forms and Oracle Reports. Developer/2000 Release 2.1 (and later releases) incorporates Oracle Graphics tightly, even including a Chart Wizard to aid in creation and maintenance of forms with embedded graphics.

Oracle Graphics is both an OLE Server and an OLE Client, this means that graphic objects may include things from other OLE Servers or that Oracle Graphics objects may be used inside of OLE Containers.

Oracle Graphics can transfer/receive data from Oracle Forms, allowing "drill-down" applications

When executed by another product, Oracle Graphics starts another process, the Oracle Graphics Batch Executable — this process remains in memory for future use.

Defining Oracle Graphics objects

Oracle Graphics is a rich product, the basics for creating an application to work with an Oracle Graphics object using data from an existing block follow these steps:

As a form is created, it may be desirable to include a chart, so, the Chart Tool is used to indicate where in the visual layout a chart should go

Next, the Chart Wizard starts and asks for information necessary to build the chart

The Chart Wizard may be reentered later, so, if the chart isn't perfect the first time it can be corrected easily later

Finally, the form is tested

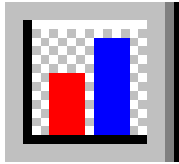
Some Oracle Graphics objects may be directly linked to SQL, others might not be. "Drill down" graphics may be tied to forms using PL/SQL within a form or by having PL/SQL triggers inside the embedded graphic object.

Graphics objects may be created that both send and receive data from the form.

Defining a Chart Object on the Form

Use the chart tool to create a chart on the form:

1. "Click" on the chart tool.



2. "Drag" the chart on the layout editor

If using the Chart Wizard, a series of panels begins, the following pages show the progression needed to make a working graph. (Example assumes that Master-Detail form already exists with DEPT block as Master and EMP block as Detail)



If manually building the chart item, make it the size and shape desired

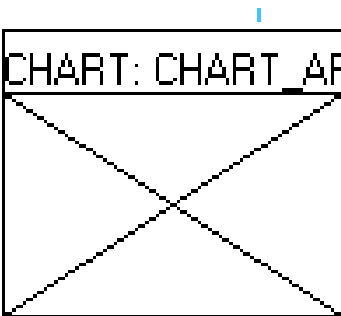
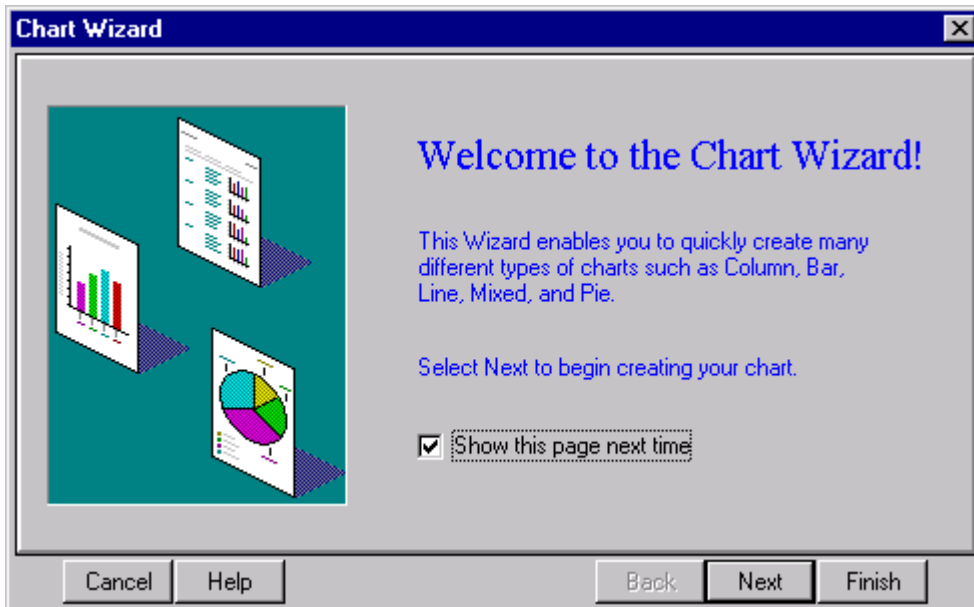


Chart Wizard Welcome

The first panel is simply a welcome to the Chart Wizard, it may be omitted from future display if desired:



Choose Chart Type

This panel allows selection of the chart format, since the wizard is reentrant a variety of panel types may be experimented before selecting the format that best suits the application's need:

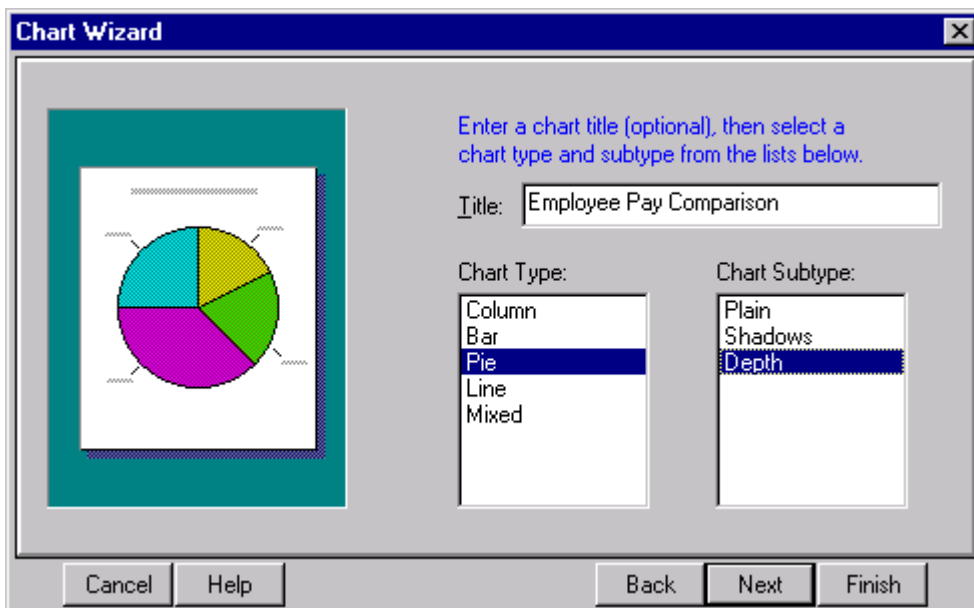
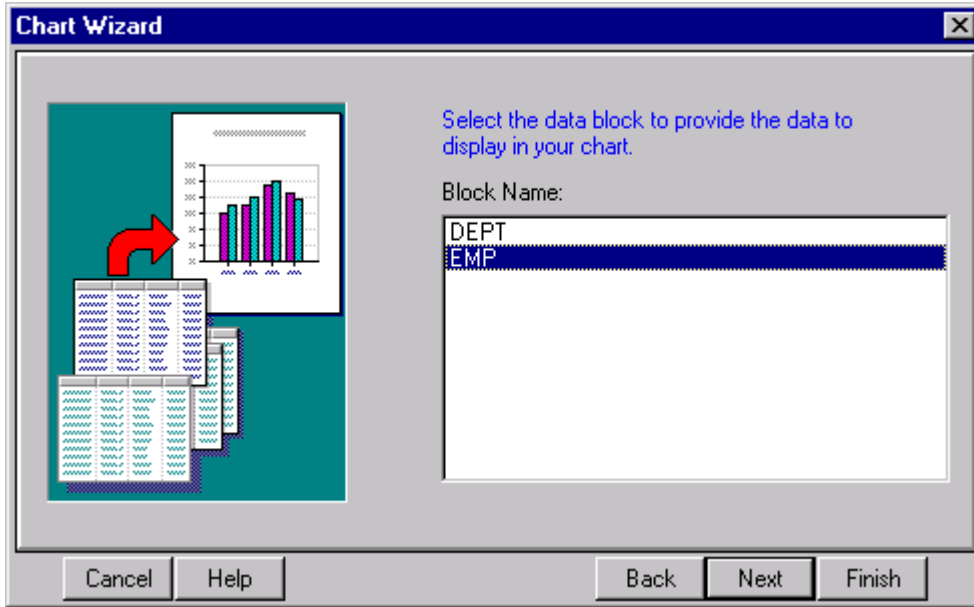


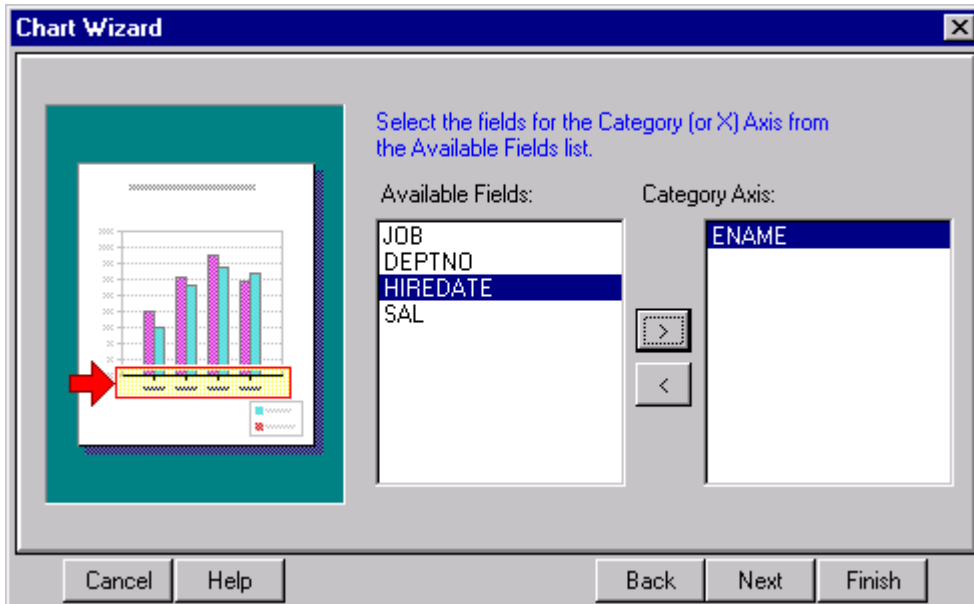
Chart Data Block

Next, specify the block where the chart's data will come from:



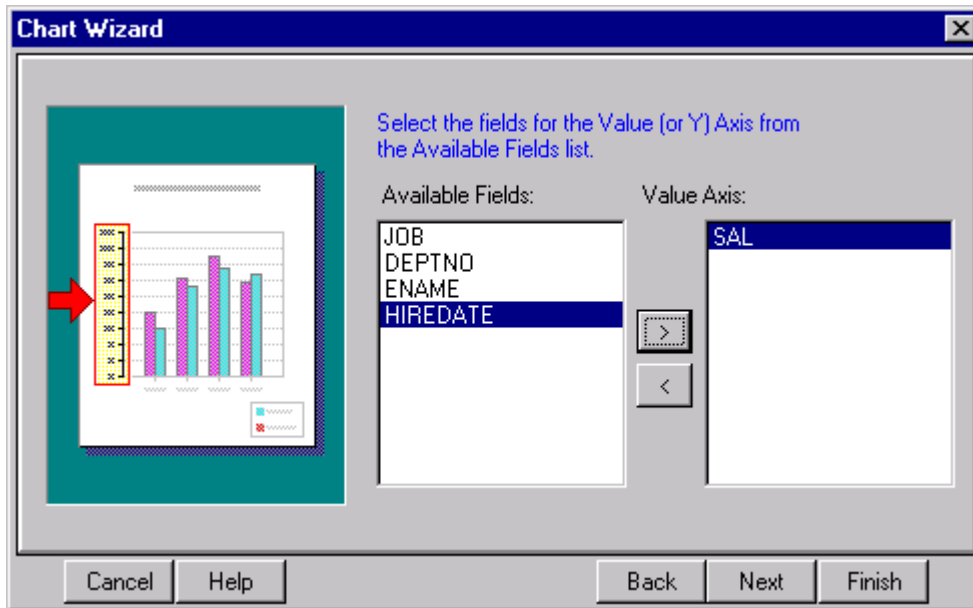
Category Column

Choose the column(s) that will supply the category data for the chart, these values will label the chart items:



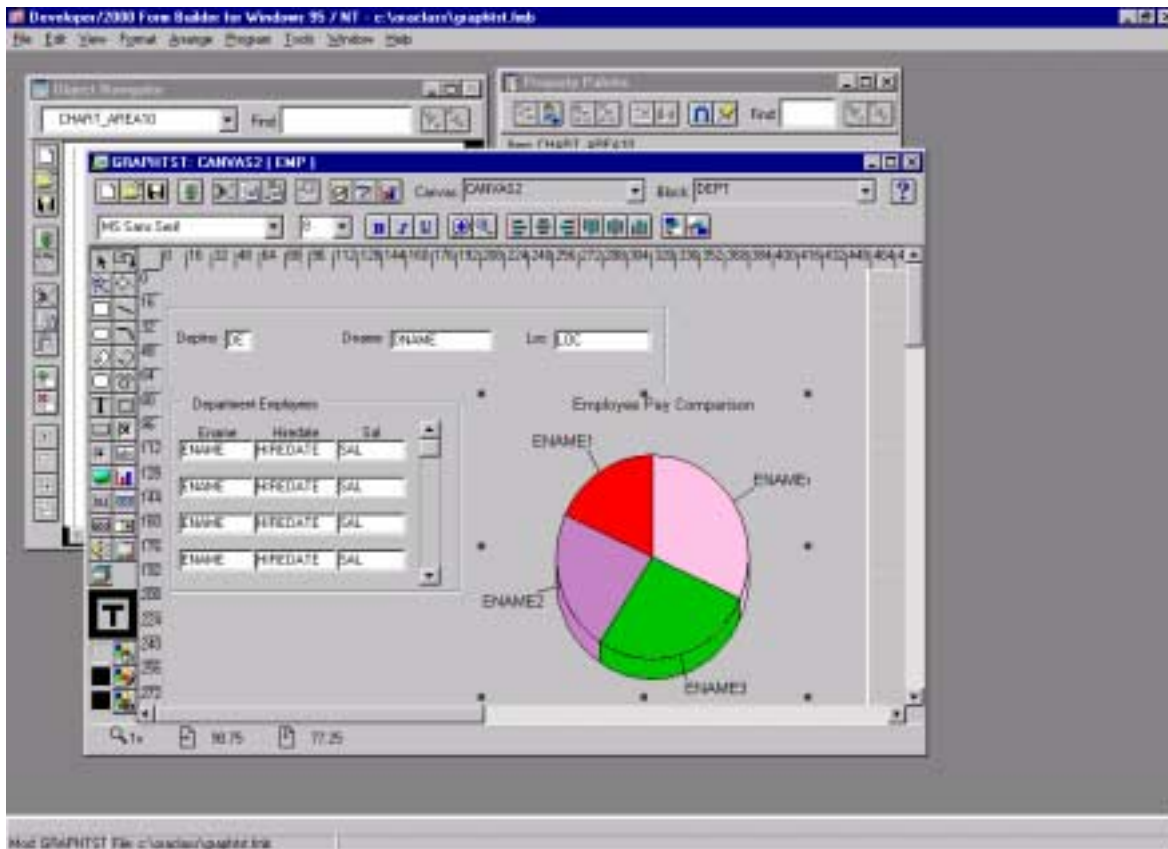
Value Column

Choose the column(s) to supply values for the charts graphics, if multiple columns are specified each will be assigned a different color:



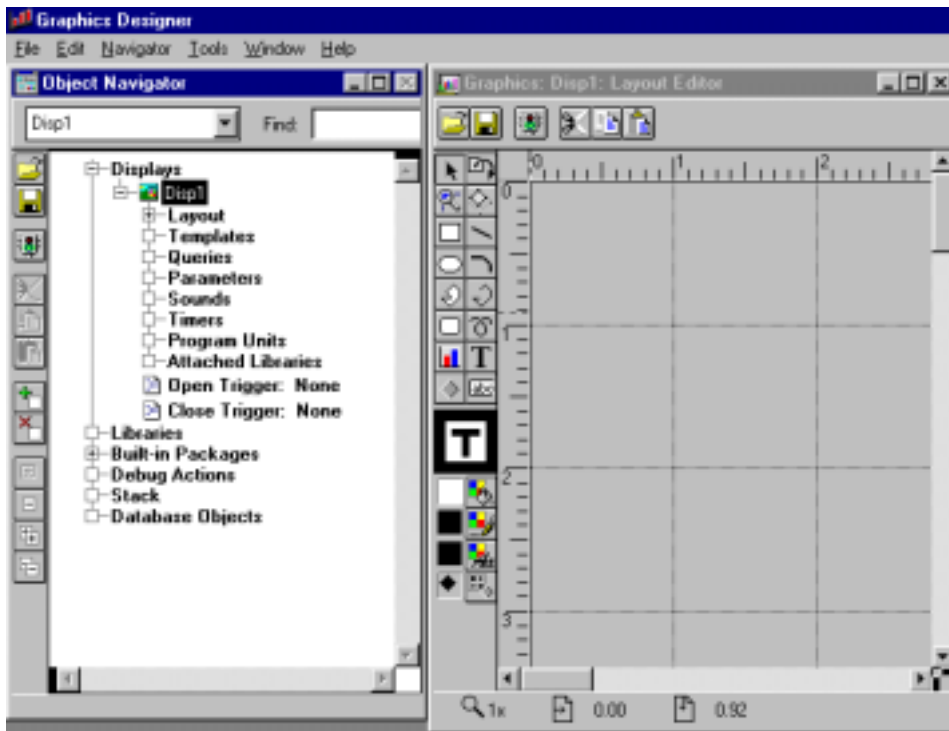
Layout Editor

Here is what the Layout Editor display looks like after adding the chart:



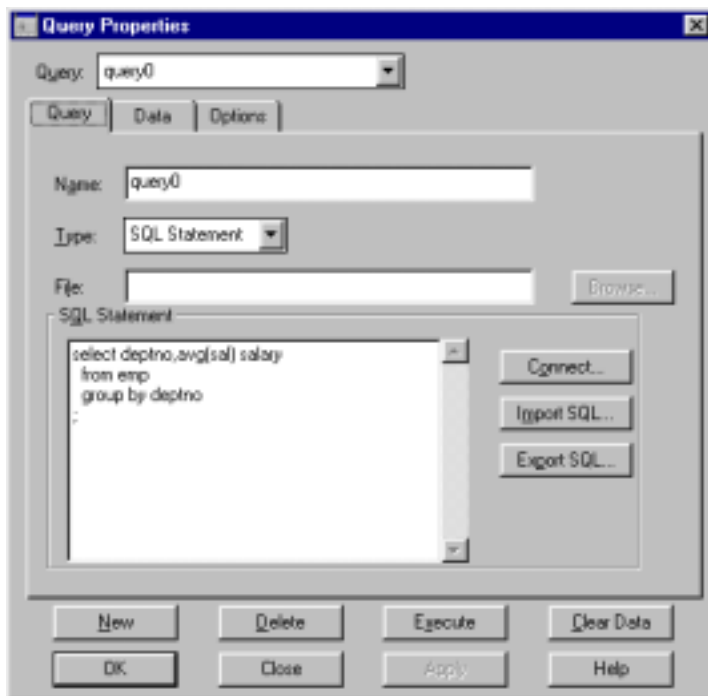
Creating Object in Oracle Graphics

Oracle Graphics uses the familiar Object Navigator interface:



Create a Query - Query Tab

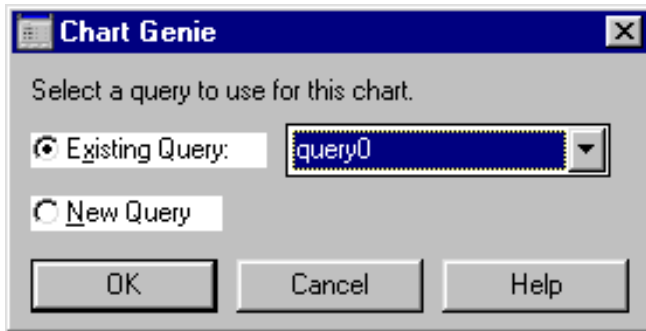
Start by creating a new query, in more complex graphics parameter values may be used in the WHERE clause or other parts of the queries. The Data Tab shows the values to be used in the graphic and the Options Tab allows control over number of rows, date format, and PL/SQL associated with the graphic:



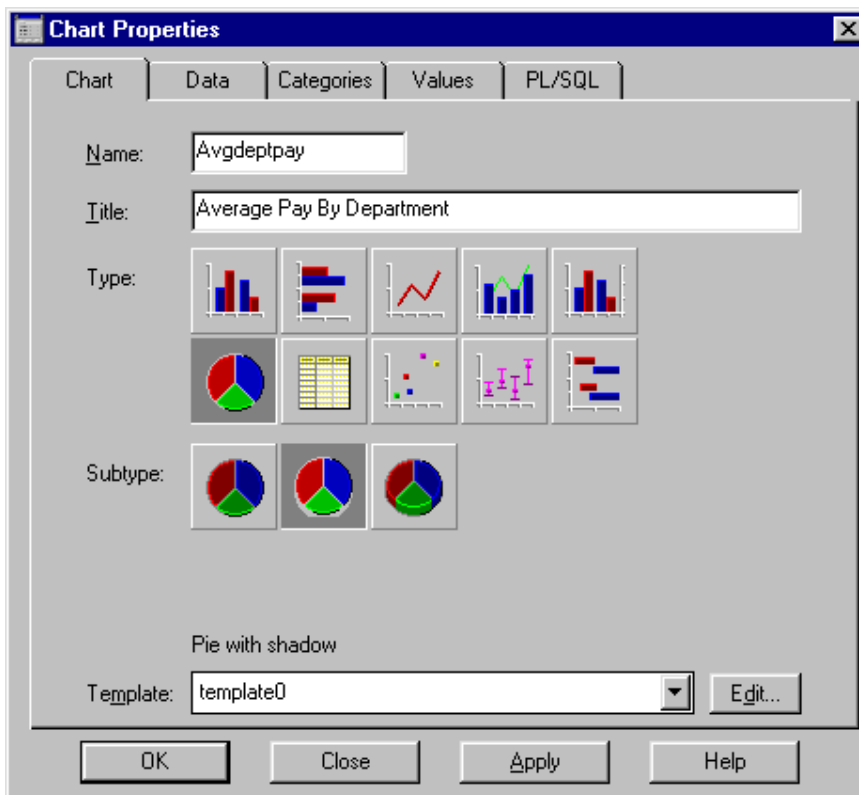
Create a Chart

Use the Layout-Editor's Chart Tool to begin the creation of a chart.

Tell the Chart Genie to use the existing query:



Describe the Chart Properties, chart type, data columns, categories, values, and position:



When creating the chart manually, the Form's PL/SQL must be prepared to use the chart as well. This is a four-step procedure:

1. Define the chart object on the form
2. Attach the OG (Oracle Graphics) library
3. Notify Oracle Forms that you will be using a graphics object
4. Use the object

Attaching the OG Library

Oracle Graphics includes a library of PL/SQL program units called OG (og.pll) specifically created for manipulating graphics. The OG library must be attached in order to use it; use the object navigator to attach the library. The OG library contains many built-in subprograms. Some of the program units that are useful are:

OG.Open	Initiate use of graphics object
OG.MouseDown	Simulate mouse click down on chart
OG.MouseUp	Simulate mouse click up on chart
OG.Interpret	Execute PL/SQL unit in chart
OG.GetNumParam	Retrieve numeric parameter from chart
OG.GetCharParam	Retrieve character parameter from chart

Full documentation may be found in the Oracle Forms Reference. (Note: Unless you desire to provide a hard-coded path to .pll libraries, they should be placed into a path named in the oracle.ini parameters named: ORAPLSQLLOADPATH or ORACLE_PATH. Likewise, Oracle Graphics will search for .ogd files in the path identified by the oracle.ini parameters: GRAPHICS25_PATH or ORACLE_PATH.

Notify Oracle Forms of Chart's Use

Most applications use a WHEN-NEW-FORM-INSTANCE form-level trigger to initialize use of the Oracle Graphics object.

```
OG.Open('mygraph.ogd','myFormItem',TRUE); or OG.Open('mygraph.ogd','myFormItem',FALSE);
mygraph.ogd Oracle Graphics file
myFormItem Name of chart item on form
TRUE/FALSE FALSE causes object to be resized to fit item
TRUE (the default) causes object to be clipped
```

Passing Mouse Activities to the Chart

A WHEN-MOUSE-CLICK trigger on the chart item is a common way to activate an Oracle Graphics object's code. This allows the Oracle Forms application to pass along the mouse event to the Oracle Graphics logic. The mouse event must be passed to Oracle Graphics so that "drill down" logic may be executed properly.

```
OG.MouseDown('mygraph.ogd','myFormItem');
```

Getting Values Back from the Chart

Upon return from the graphics object, get the value(s) resulting from the graphics object's use. Be sure to use the correct PL/SQL function: OG.GetNumParam for numeric data or OG.GetCharParam for character data.

```
OG.GetNumParam('mygraph.ogd','myFormItem','numVar');
OG.GetCharParam('mygraph.ogd','myFormItem','charVar');
mygraph.ogd Oracle Graphics file
myFormItem Name of chart item on form
numVar Name of numeric variable inside Oracle Graphics object
charVar Name of character variable inside Oracle Graphics object
```


Reusing a Chart

The OG.Refresh, OG.Interpret, and OG.Close procedures are used to work with existing charts:

```
OG.Refresh('mygraph.ogd', 'myFormItem');           Re-execute query and reload
OG.Intrepret('mygraph.ogd', 'myFormItem', plsqlcode, refresh, plist); Execute PL/SQL in graphic
OG.Close('mygraph.ogd', 'myFormItem');           Close chart
```

Parameter Lists

Many OG routines use parameter lists, the basics of parameter list use are:

Define a parameter list ID variable:

```
plist paramlist;           -- "plist" can be any name
```

Create a parameter list:

```
plist := create_parameter_list('anyname');           -- "anyname" can be any name
```

Add parameter(s) to the list:

```
add_parameter(plist, 'param_name', text_parameter, param_value_field);
```

Reload a parameter (infrequently used):

```
set_parameter(plist, 'param_name', text_parameter, 'param_value');
```

See if a parameter list already exists:

```
plist := get_parameter_list('anyname');
if idnull (plist) ...
```

Destroy a parameter list"

```
destroy_parameter_list(plist);
```

Web Fonts

Only six fonts are common between MS Windows, Motif, and Web-based forms:

<u>Java/Web</u>	<u>Windows</u>	<u>Modif/X Windows</u>	<u>MacIntosh</u>
Courier	Courier New	adobe-courier	Courier
Dialog	MS Sans Serif	b&h-lucida	Geneva
DialogInput	MS Sans Serif	b&h-lucidatypewriter	Geneva
Helvetica	Arial	adobe-helvetica	Helvetica
Symbol	WingDings	itc-zapfdingbats	Symbol
TimesRoman	Times New Roman	adobe-times	Times Roman

Conclusion

This presentation illustrated the ease of using Oracle Graphics in making Oracle Forms applications more full-function. Oracle Graphics is an easy to use, powerful tool allowing graphic representation of data based upon queries. Oracle Forms triggers may be used to initiate the display of graphics and to pass values that control the actual graphic that is created.

The use of a picture (via Oracle Graphics) may well be worth a thousand words displayed individually or in summary on a form.

About the Author

John King is a Partner in King Training Resources, a firm providing instructor-led training since 1988 across the United States and Internationally. John has worked with Oracle products and the database since Version 4 and has been providing training to application developers since 1986.

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