# Using the Graph Tool

Most of the Layout Tools were discussed in the Creating a New Free Form Label section in Discern Explorer Layout Builder Tutorial Part 1. However, the Graph Tool  was not covered in that section because its functionality is normally not used in the context of a Free Form Label.



The Graph Tool enables you to display the output of a Discern Explorer query in graphical format in a layout section. The following common graph formats are supported:

1. XY (Scatter)
2. Line
3. Column
4. Bar
5. Pie
6. Line - Column
7. Line - Column on 2 Axes

## Graphing Data From a Single Query

Often, it is more useful to display data in a graphical format rather than in a textual format. For example, suppose you wanted to see if there was a pattern to the number of encounters registered on each day of the week. The number of encounters registered on each day could be reported as text but a pattern might be easier to detect if the data is displayed as a graph.
The following example creates a query that returns the number of encounters that were registered on each day of the week over a date range entered by the user at run time.

1. Using Discern Visual Developer (DVDev), from the File menu, select **New**.
2. From the File Type list, select **Layout Program**.
3. In the Program Name box, enter **1_*your_initials*_Example_Graph** and click **OK**. The New Layout Program dialog box opens.
4. Verify that the Standard Layout option for the Report Layout and PostScript option for the Output Type are selected and click **Next**. The Paper Size dialog box is displayed.
5. Keep the defaulted values for the Paper Size and click **Finish**. The previous two dialog boxes, New Layout Program and Paper Size are used to populate the basic properties of the layout. These properties can be reviewed at any time by selecting **Report Properties** from the Edit menu. A layout with a single section named DetailSection is created.
6. From the Tools menu, select **Prompt Builder**. The Prompt Builder dialog box opens with a single control for an output device.
7. Click **Add** to add a second prompt to ask for a start date from the user.
8. In the **General** tab, set the options as follows:

| | |
|---|---|
| **Prompt Display:** | Select the Beginning Date |
| **Prompt Name:** | Sdate |
| **Control Type:** | Date Time |
| **Prompt Type:** | String |

9. In the **Date / Time** tab, verify that the Date Only option is selected and the Command Line Format is DD-MMM-YYYY.
10. In the Anchor date & time area on the **Calculate Default** tab, uncheck the Current date & time option. Enter a negative value in the Day or Month control to make the default start date far enough in the past to allow a query to qualify encounters that were registered on several days of the week.

    The negative value you enter should depend on the amount of data that exists in your environment. If you have a lot of data, set the Day field to -7 to make the default start date one week in the past. If you do not have a lot of data, or if the encounters you have were not registered very recently, you might need to set the Month field to -3 to make the default start date three months in the past.
11. Click **Add** to add a third prompt to get an end date from the user.
12. In the **General** tab, set the following:

| | |
|---|---|
| **Prompt Display:** | Select the Ending Date |
| **Prompt Name:** | Edate |
| **Control Type:** | Date Time |

| Prompt Type: | String |
|---|---|

13. In the **Date / Time** tab, verify the Date Only option is selected and the Command Line Format is DD-MMM-YYYY.
14. Click **Save** to save the prompt form and close the Prompt Builder dialog box.
15. From the Tools menu, select **Query Builder**.
16. Click **Add**. The Add Query dialog box opens.
17. Name the query **Get_Encounters_By_Day**. Verify that the Associate Layout option is selected, and click **OK** to add the query. The Discern Query Builder dialog box opens.
18. In the **Tables** tab, select the ENCOUNTER table.
19. In the **Fields** tab:
    1. Select the REG_DT_TM field (registration date and time).
    2. Add an expression to get the name of the day when the encounter was registered using the following text:

    ----------------------------------------------------------------------------------------------------

    3. Add an expression to display the number of the day when the encounter was registered using the following text:

    ----------------------------------------------------------------------------------------------------

    Using the expressions created above, Reg_Day is set to the text string that represents the name of the day. For example, Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, or Saturday. The text string flexes based on the language and location. Reg_Day_Num is set to 0, 1, 2, 3, 4, 5, or 6. Using these two expressions enables you to sort the output in the order the days occur in the week using Reg_Day_Num and to display the name of the day using Reg_Day.

    In the **Qualifications** tab, add the following code to select encounters that were registered between the dates the user selected at the prompts:

    ----------------------------------------------------------------------------------------------------

    Notice in the concat statement above there is one and only one space between the quotation marks that follow the $Edate symbol. Since the Command Line Format for the Edate prompt is DD-MMM-YYYY, and the Prompt Type is string, the date which the user selects at the prompt is passed to the layout program as a string in DD-MMM-YYYY format. Passing that string to the cnvtdatetime() function returns a date time value that represents the very earliest time on that date. Using the concat() function to append a single space and 23:59:59 to the date the user selected at the prompt causes the cnvtdatetime() function to return a date time value that represents the very last possible time on the date the user selected.

20. In the **Sort** tab, sort on the REG_DAY_NUM expression and then on the REG_DAY expression.
21. In the **Control Options** tab:
    1. Select the **Into "NL:"** option.
    2. For testing, set the Max Records: to 1000 to limit the query to read only 1000 records.

    When setting the Max Records, select a number large enough to allow you to return encounters that were registered on several days of the week, but small enough to prevent an extremely long query from running if you make a mistake while creating this example. If this was a program you would eventually move to production, you would want to remove the Max Records value after you verified that the query was efficient.
22. Click **Close** to close Query Builder. Your Add Queries dialog box should look similar to the following example:
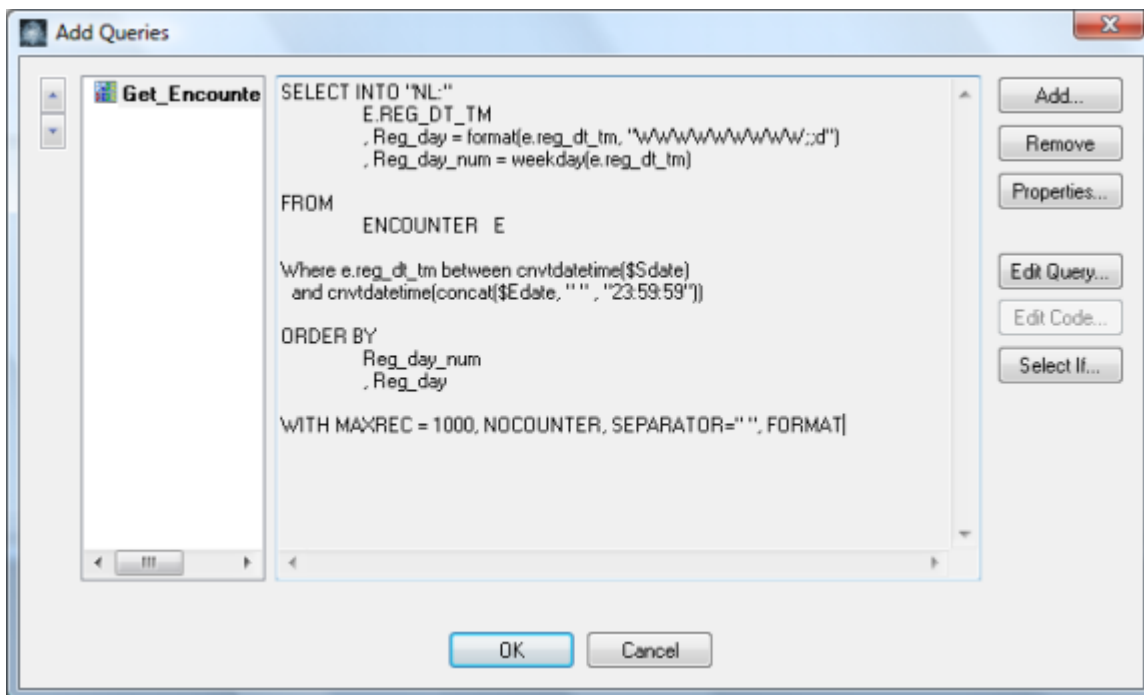


23. Click **OK** to close the Add Queries dialog box. The Layout Work space dialog box opens. The Select/Modify Sections dialog box opens.

Your layout display should look similar to the following screen:
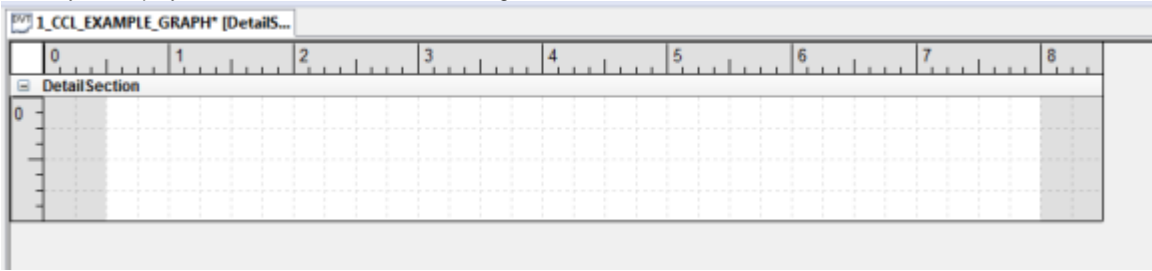


You want to create a section that renders only once at the beginning of the report to display the report title,
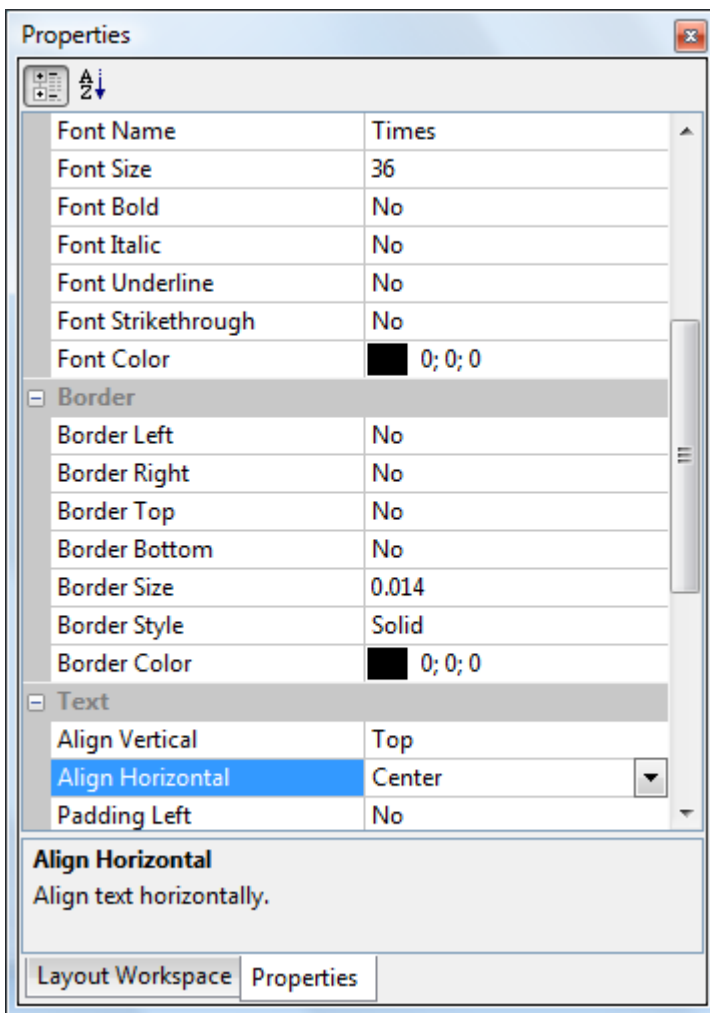
24. From the Select/Modify Section of the Workspace dialog box, select the Head Report option. Click **Yes** to create a new layout section. A new section called HeadReportSection is displayed.
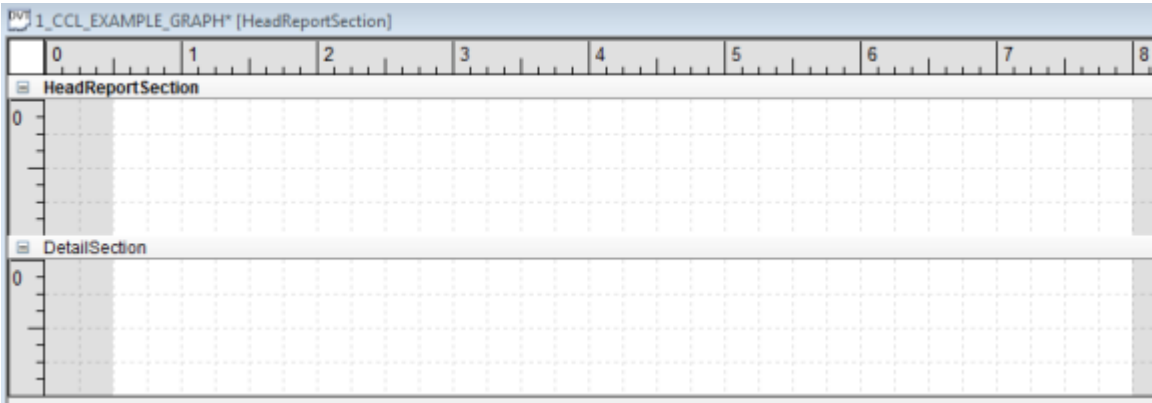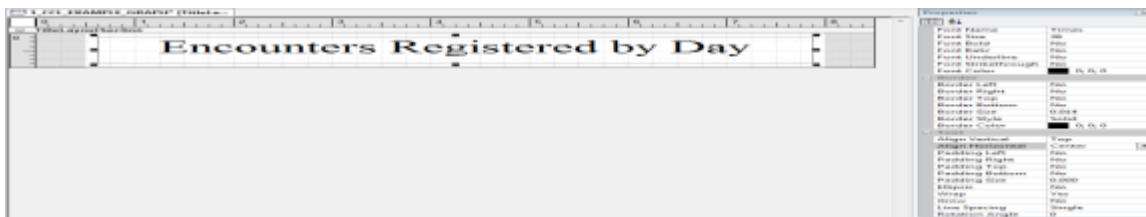


25. Double-click the **HeadReportSection** title bar. The Properties window is displayed.
26. In the Properties window, modify the name to **TitleLayoutSection**.

27. Use the Label Tool [Aa] to add the report title **Encounters Registered by Day** to the TitleLayoutSection.
28. Use the Formatting toolbar or the Properties window to set the following items:
    1. The font to **Times**
    2. The font size to **36**
    3. Center the text
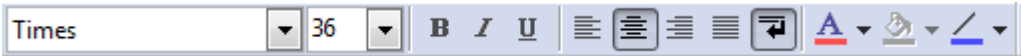


If the Formatting toolbar is not displayed, from the View menu, select Toolbars > **Formatting**.

| Font Name | Times |
|---|---|
| Font Size | 36 |
| Font Bold | No |
| Font Italic | No |
| Font Underline | No |
| Font Strikethrough | No |
| Font Color | 0; 0; 0 |
| **Border** | |
| Border Left | No |
| Border Right | No |
| Border Top | No |
| Border Bottom | No |
| Border Size | 0.014 |
| Border Style | Solid |
| Border Color | 0; 0; 0 |
| **Text** | |
| Align Vertical | Top |
| Align Horizontal | Center |
| Padding Left | No |

**Align Horizontal**
Align text horizontally.

Layout Workspace | Properties

Verify the Label Item is tall enough and wide enough to display the entire text.



29. Select the Layout Workspace dialog box and click the word **Head Report** (not the checkbox option). Verify that the TitleLayoutSection is listed in the Associated Layout Sections.
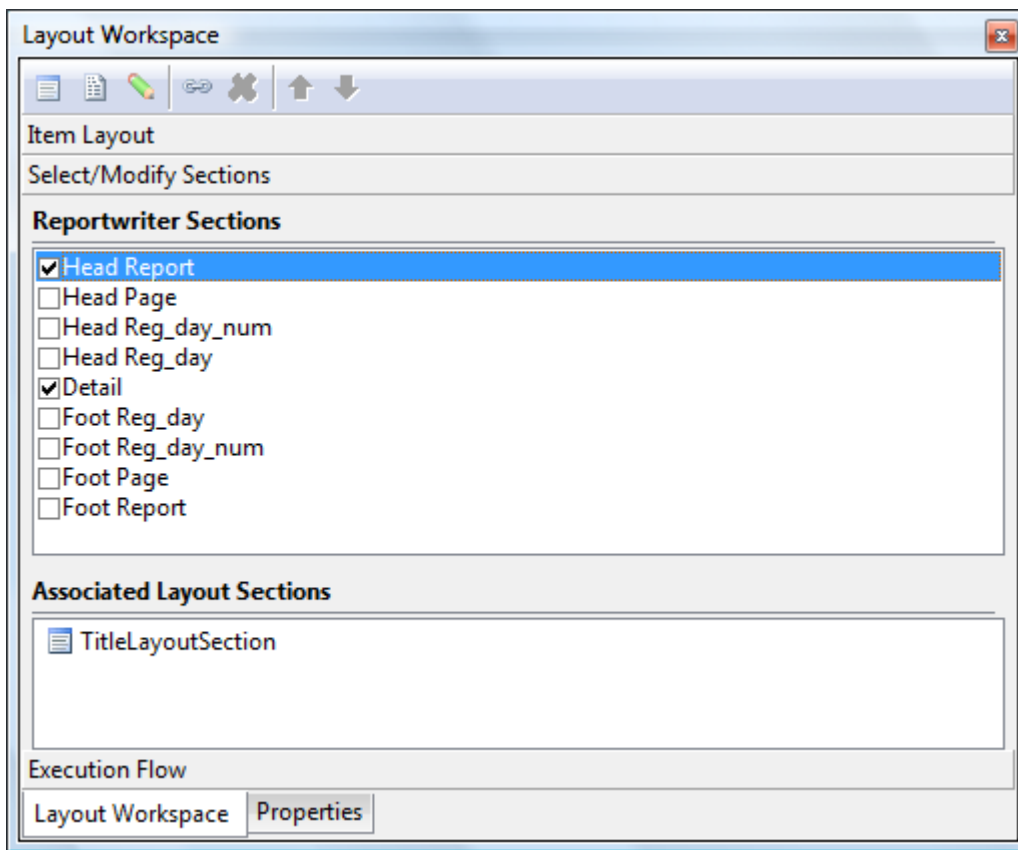
This report calculates the number of encounters registered in a day, but does not display any detailed information from the specific day. As we do not need to render any information for a specific day, we can delete the DetailSection.

30. Click the **DetailSection** title bar.
31. From the Edit menu, select Remove > **Section**. Click **Yes** to verify that you want to remove the section.

    The Foot Reg_day Reportwriter section is at the end of the logical grouping for the Reg_day and is where the number of encounters can be calculated. We need to create a section associated to the Foot Reg_day Reportwriter section to report on the calculated number of encounters registered in the day.

32. From the Select/Modify Section of the Workspace dialog box, select the Foot Reg_day Reportwriter option. Click **Yes** to create a layout section associated to the Reportwriter section. FootReg_DaySection is created and listed in the Associated Layout Sections for the section.
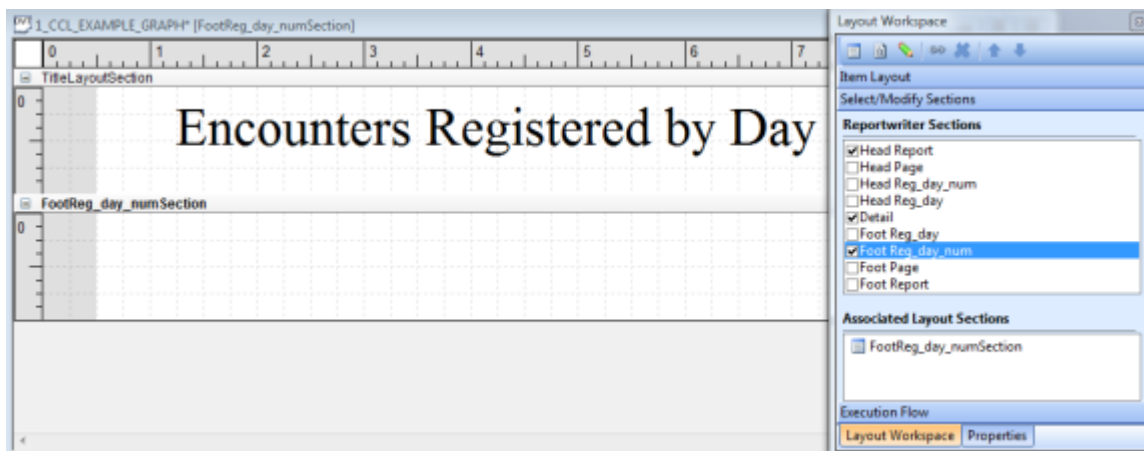


33. Double-click the **Foot Reg_DaySection** title bar. The Properties dialog box is displayed.
34. On the Properties for the new section, modify the Name to **RegDayLayoutSection**.

35. Click the **New Code Segment** button on the Layout Workspace toolbar. The code segment is automatically inserted in to the Reportwriter Section. Your layout should look similar to the following screen:
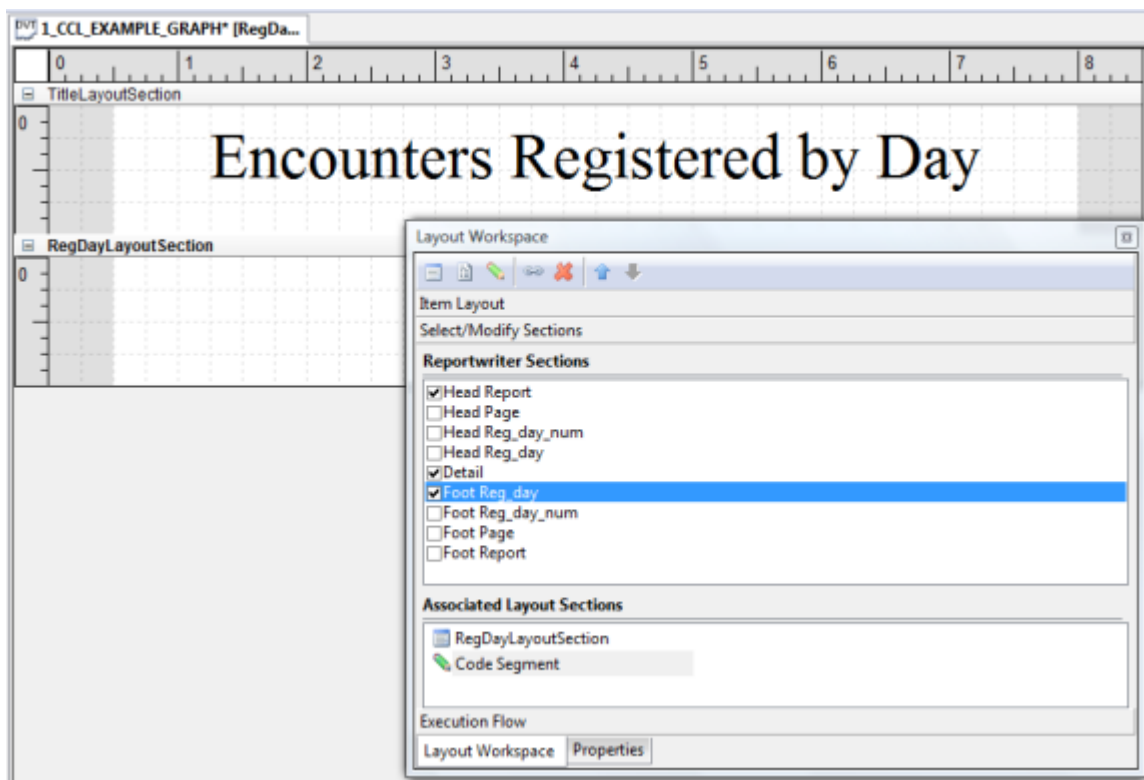
36. In the Associated Layout Sections, double-click **Code Segment** to open the Layout Source [Code Segment] dialog and enter the following command in the source window:

---

You can expect the Layout Source [Code Segment] dialog box to display similar to the following example:
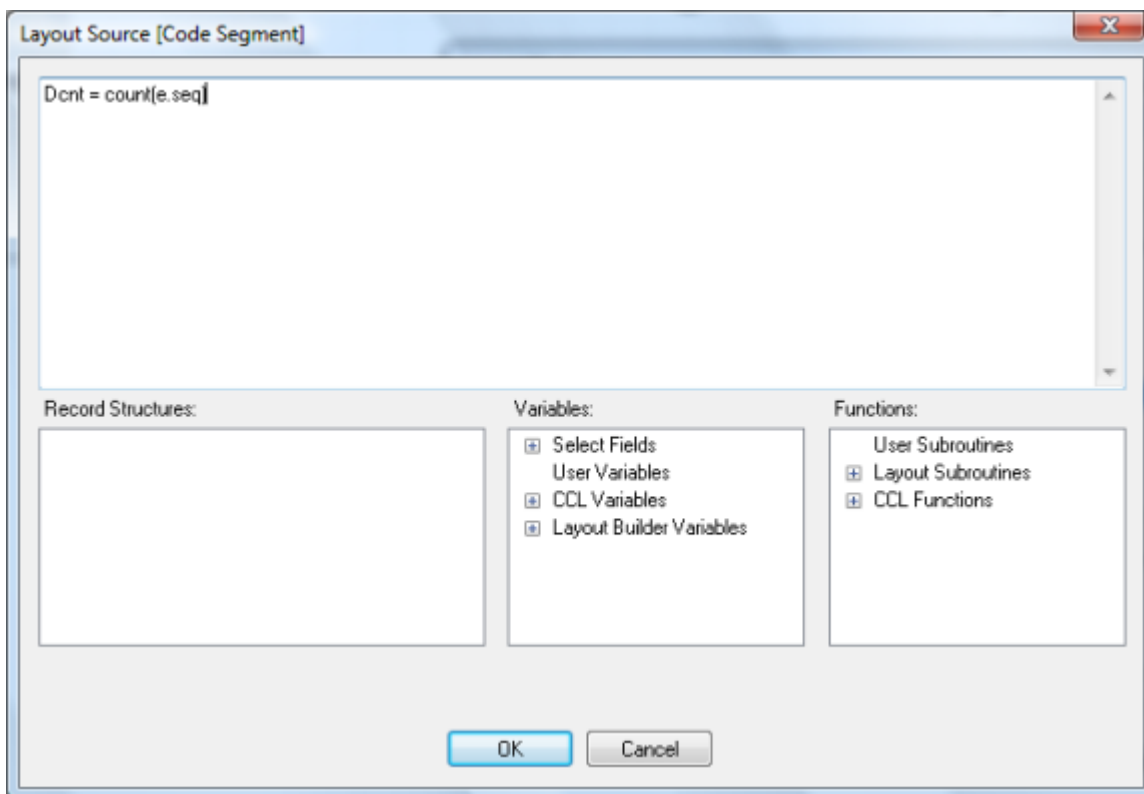


Adding Dcnt = (e.seq) using the steps above creates a variable named Dcnt that is set equal to the number of encounters registered on each day. Since this command is placed in the Foot Reg_day reportwriter section, Dcnt is reset each time the day changes. Displaying Dcnt in the Foot Reg_day

reportwriter section shows the number of encounters registered on each day in textual format.

37. Click **OK** to close the Layout Source [Code Segment] dialog box.
38. Click **Code Segment** in the Associated Layout Section and click the Up Arrow button to move it to the top of the list. Code Segments and Layout Sections are executed in the order that they appear in the Associated Layout Sections list. Moving the Code Segment to the top of the list causes the commands in the Code Segment to be executed before the RegDayLayoutSection is rendered.
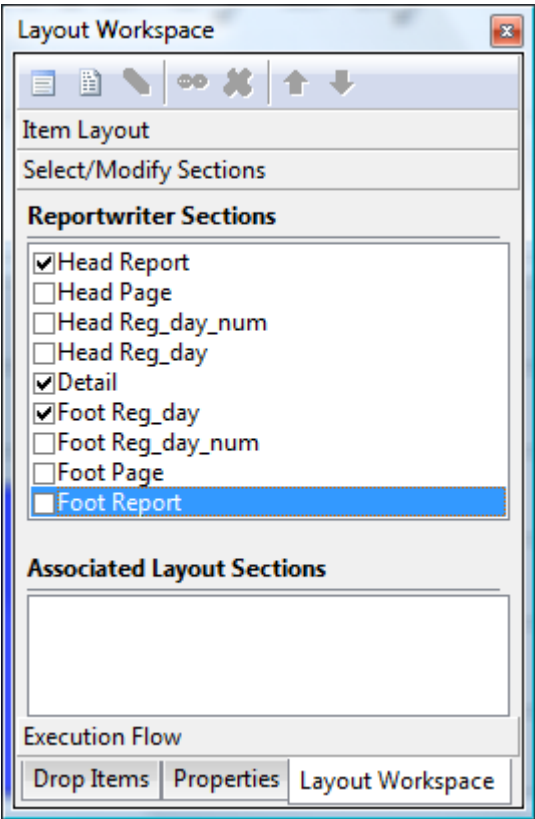


39. Use the Text Tool [A] to place a text item in the RegDayLayoutSection.
40. In the Properties window, name this item **Reg_day_label**.
41. Use the following command as the source for this item:

Make sure to size the text item appropriately to display the entire string.

42. Use the Text Tool [A] to place another text item to the right of Reg_day_label in the RegDayLayoutSection.
43. In the Properties window, name this item **DayCount**.
44. Use cnvtint(dcnt) as the source for this item.
45. Use the vertical resize to drag the bottom of the RegDayLayoutSection up to just below the two items you added above. Your layout should look similar to the following example:
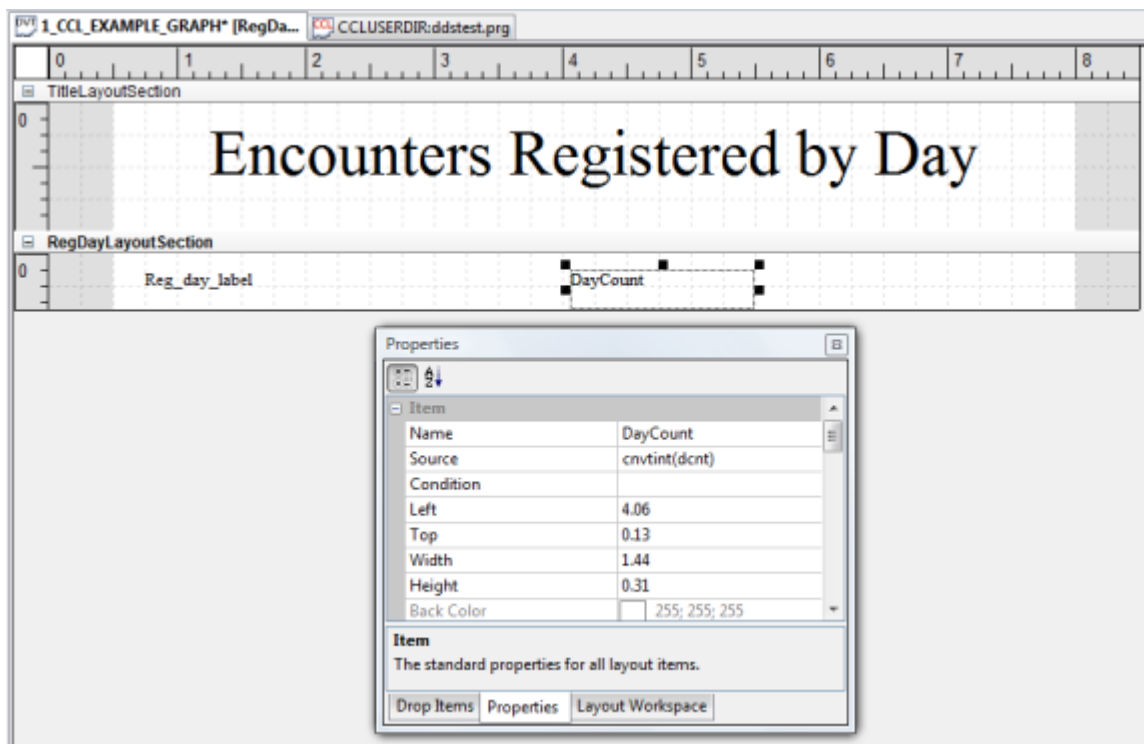
46. From the Build menu, select **Run "1_*Your_Initials*{_}Example_Graph"**, or press CTRL+F5 to execute your layout program.
47. Click **Yes** when prompted to save the layout. The prompt form opens.
48. At the prompt, use MINE for the output device and enter starting and ending dates that will return records that were registered over several different days. Your output should look like the following example:
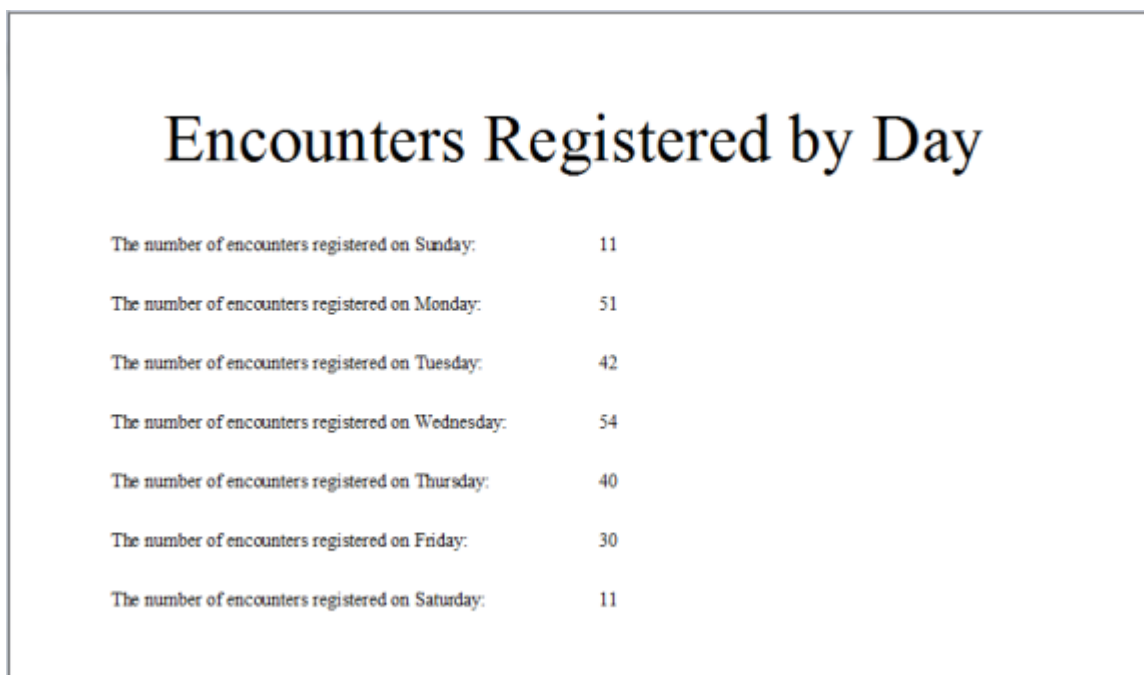


The example above shows the output in textual format. We will now display the output in a graph.

49. Close the output display.
50. From the Select/Modify Section of the Workspace dialog box, select the Foot Report Reportwriter section check box.
51. Click **Yes** to create a new layout section.
52. In the Properties for the new section, modify the name to **GraphLayoutSection**.
53. Modify the height of the GraphSection to **3.0**. You can expect your layout to be similar to the following screen:
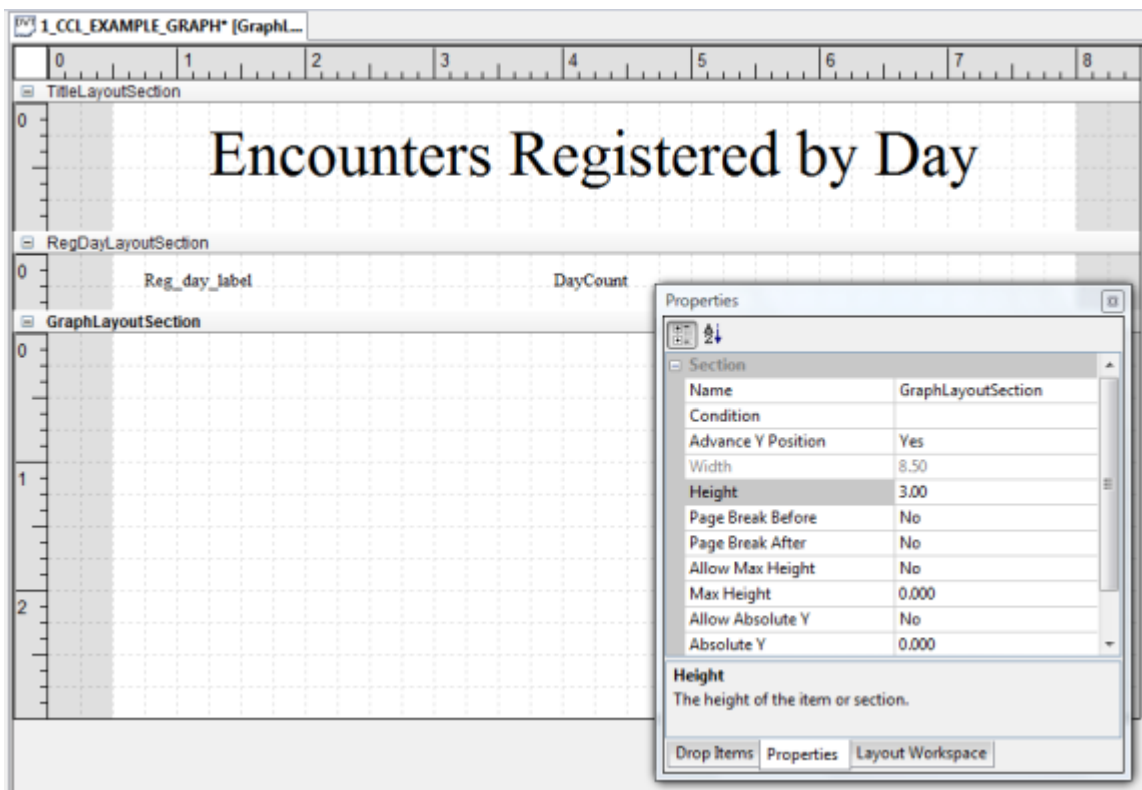
54. Click the **Graph Tool** [icon] and create a rectangular graph area in the GraphLayoutSection area that covers most of the section. The Graph dialog box opens.
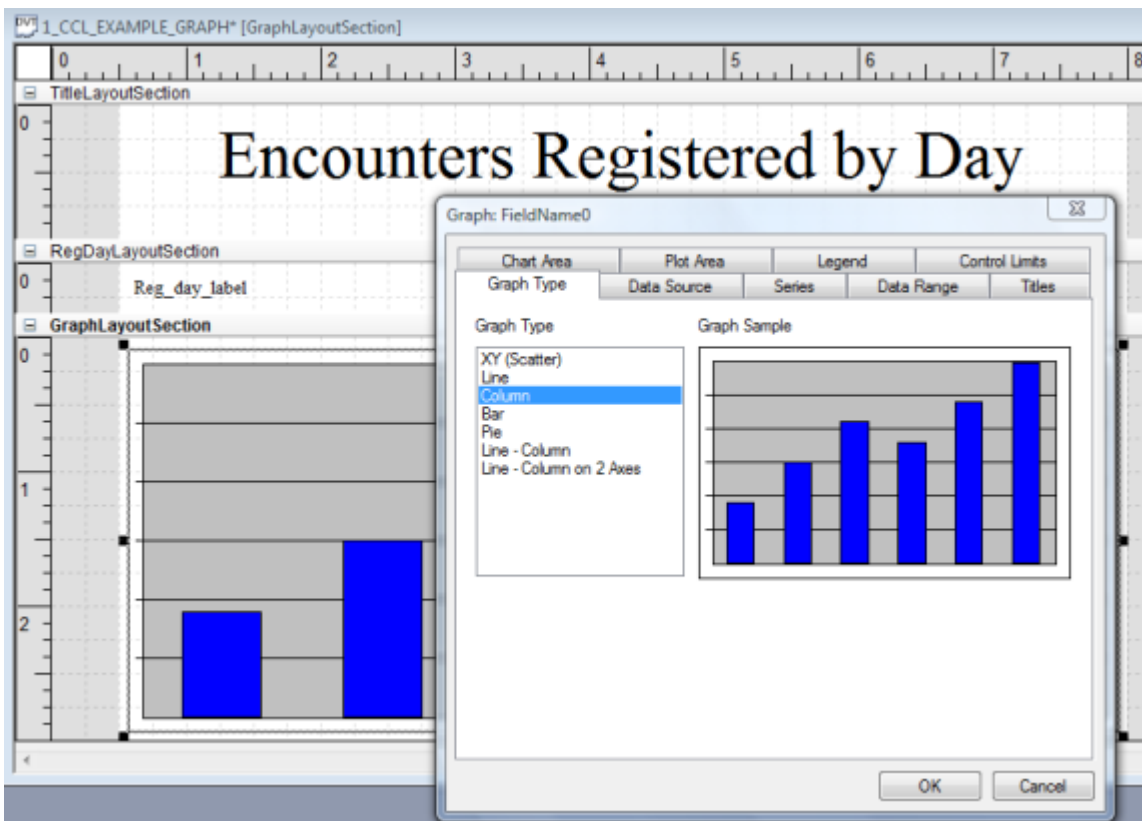


The **Graph Type** tab on the Graph dialog box is used to determine the type of graph that is generated.

55. Verify the Column Graph Type is selected on the **Graph Type** tab.

The **Data Source** tab on the Graph dialog box is used to select the query that supplies the data to be graphed and the major break points for graphing
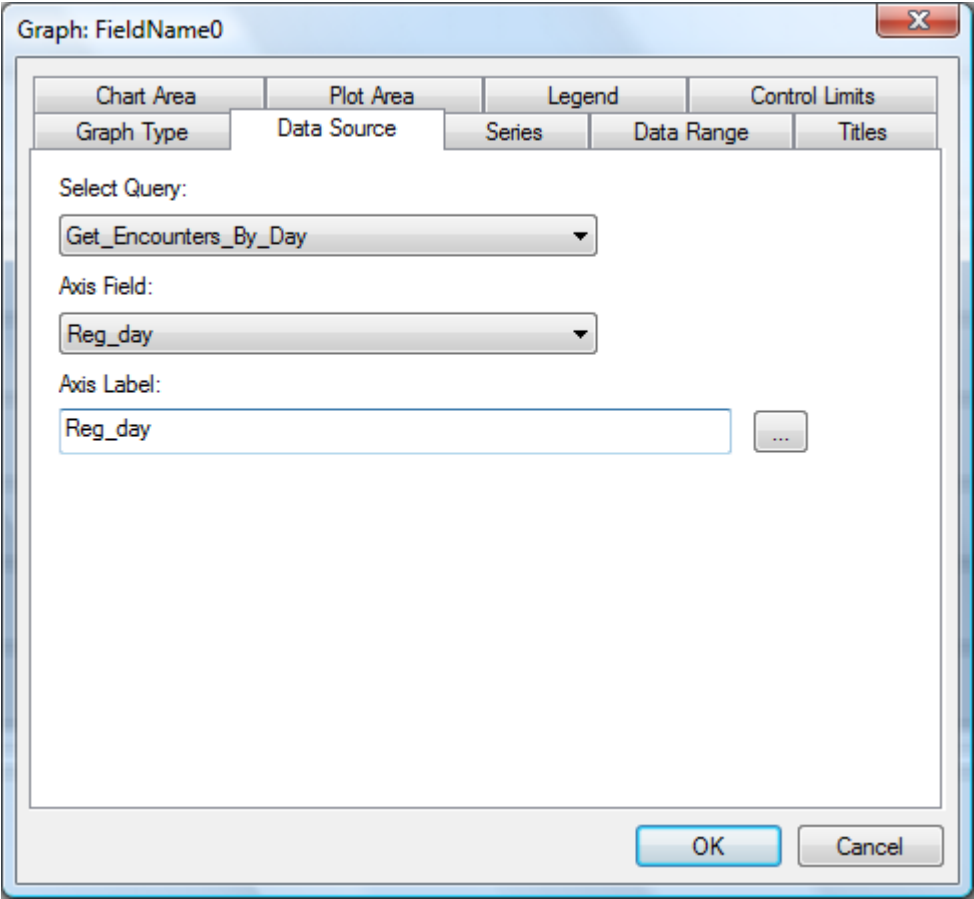
the data.

56. In the **Data Source** tab, use the Select Query list to select the Get_Encounters_By_Day query.

    Because the Get_Encounters_By_Day query is sorted by Reg_day_num and Reg_day, those expressions are displayed as options in the Axis Field: list. The Axis Field determines the major break points for the graph. In this example, display a new column on the graph each time the day changes. Selecting Reg_day as the Axis Field generates a new column on the graph each time the registration day changes.

57. Select **Reg_day** as the Axis Field.
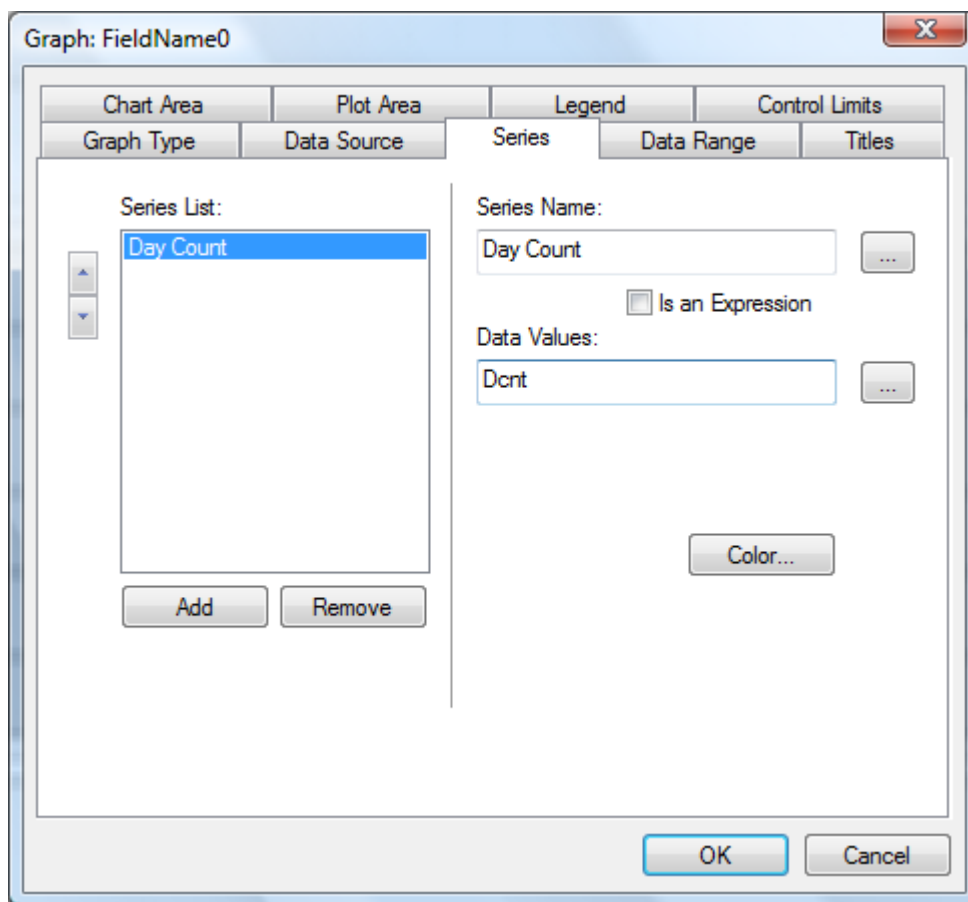58. Enter **Reg_day** as the Axis Label.



The **Series** tab is used to determine the data values to be graphed. By default, a single series named Series1 is created on the **Series** tab. For this example you want the graph to show the number of encounters registered on each day of the week. That number is stored in the DCNT variable created earlier.

59. In the **Series** tab, verify Series1 is selected in the Series List.
60. Modify the Series Name from Series1 to **Day Count**. The Series Name is displayed in the Legend if the Show Legend option is selected on the **Legend** tab.
61. Enter **DCNT** in the Data Values box.

**Graph: FieldName0**

| Chart Area | Plot Area | Legend | Control Limits |
| Graph Type | Data Source | Series | Data Range | Titles |

Series List:

Day Count

Add    Remove

Series Name:

Day Count    ...

☐ Is an Expression

Data Values:

Dcnt    ...

Color...

OK    Cancel

62. Click **OK** to close the Graph Properties dialog box.
63. From the Build menu, select **Run "1_*Your_Initials*{_}Example_Graph"** or press CTRL+F5 to execute your layout program.
64. At the prompt, use MINE for the output device and enter starting and ending dates that will return records that were registered over several different days. Your output should look like the following:

# Encounters Registered by Day

The number of encounters registered on Sunday:          11

The number of encounters registered on Monday:          51

The number of encounters registered on Tuesday:          42

The number of encounters registered on Wednesday:          54

The number of encounters registered on Thursday:          40

The number of encounters registered on Friday:          30

The number of encounters registered on Saturday:          11
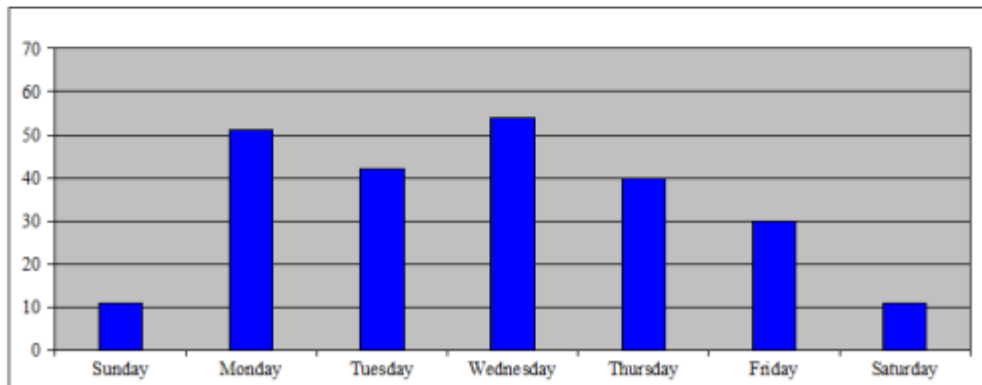


In the example above, the Y axis defaulted to a minimum value of 0 and a maximum value of 70. Your output will be different based on the data in your database. The **Data Range** tab is used to control the appearance of the Y axis on the graph, which you can use to control the size of your graph and for other cosmetic purposes.

65. Close the output window to return to your layout.
66. Double-click the graph item to open the Graph dialog box.
67. In the **Data Range** tab:
    1. Set the Minimum value to a number that is slightly less than the lowest count your query is returning. For this example, set the Minimum value to 5.
    2. Set the Maximum value to a number that is slightly higher than the highest count your query is returning. For this example, set the Maximum value to 55.
    3. Set the Index value to a number that will change the breaks on the Y axis. For this example, set the Index value to 5.

    Your Graph dialog box should look similar to the following example:

The minimum and maximum fields can be used to force the Y axis to always have a specific range. The Index field is used to control the scale of the intermediate lines on the graph. If these fields are left blank, Layout Builder generates the Y axis based on the data being graphed. Setting a minimum and maximum value causes the Y axis to be the same regardless of the data graphed. Using a minimum and maximum can be useful when you want the range of the graph to be the same across multiple executions. One caveat to consider when setting the minimum and maximum values is that if the data graphed exceeds the maximum value, or is less than the minimum value, the Y-axis is not extended. For example, if the maximum is set to 50 and the data to be graphed is 55, the column would end at 50. If the minimum is set to 5 and the data to be graphed is 4, the column would not be displayed. The Format field can be used to format the index values that are displayed on the Y-axis. A display option can be entered directly in the Format field. For more information on display options see the Command Reference.

68. Click **OK** to close the Graph Properties dialog box.
69. From the Build menu, select **Run "1_*Your_Initials*{_}Example_Graph"** or press CTRL+F5 to execute your layout program.
70. At the prompt, use MINE for the output device and enter starting and ending dates that will return records that were registered over several different days.

Your output is displayed similar to the following example. Your numbers will be different based on the data that exists in your environment.

# Encounters Registered by Day

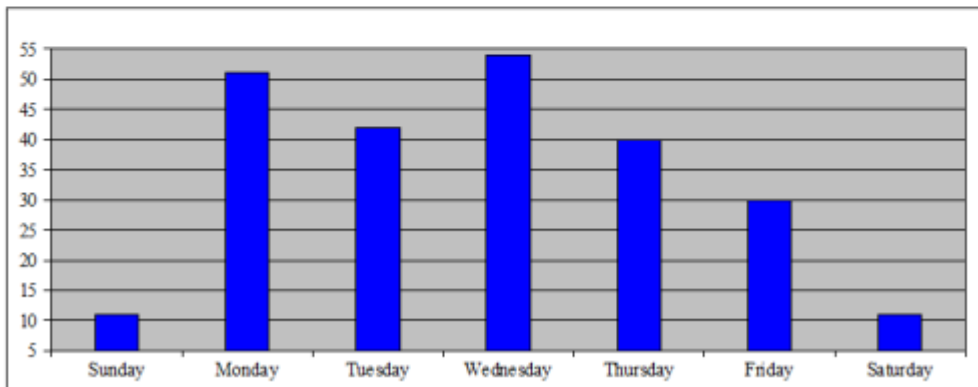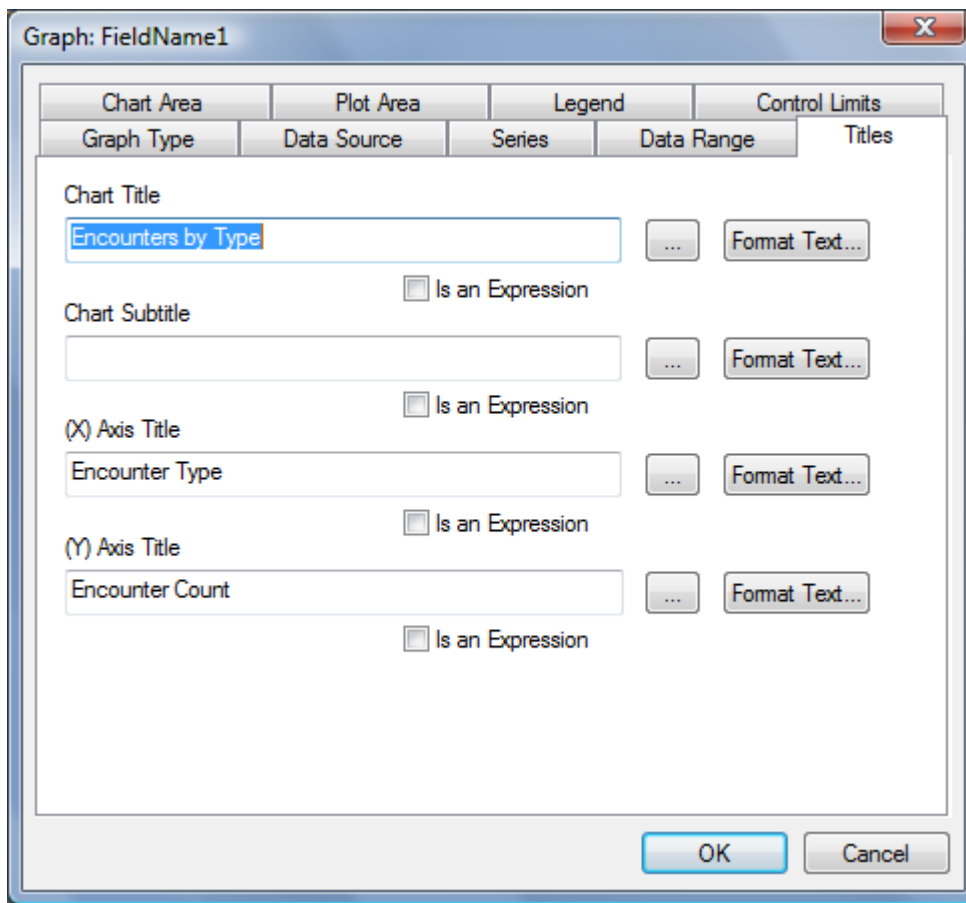| | |
|---|---|
| The number of encounters registered on Sunday: | 11 |
| The number of encounters registered on Monday: | 51 |
| The number of encounters registered on Tuesday: | 42 |
| The number of encounters registered on Wednesday: | 54 |
| The number of encounters registered on Thursday: | 40 |
| The number of encounters registered on Friday: | 30 |
| The number of encounters registered on Saturday: | 11 |



Adding titles to the graph can make it more meaningful and easier to read.

71. Close the output window to return to your layout.
72. Double-click the graph item to open the Graph Properties dialog box.
73. In the **Titles** tab:
    1. Enter **Registered Encounters by Day** as the Chart Title.
    2. Enter **Day of Week** as the (X) Axis Title.
    3. Enter **Encounters Registered** as the (Y) Axis Title.

74. Click **OK** to close the Graph Properties dialog box.
75. From the Build menu, select **Run "1_*Your_Initials*{_}Example_Graph"** or press CTRL+F5 to execute your layout program.
76. At the prompt, use MINE for the output device and enter starting and ending dates that will return records that were registered over several different days.

# Encounters Registered by Day

| | |
|---|---|
| The number of encounters registered on Sunday: | 11 |
| The number of encounters registered on Monday: | 51 |
| The number of encounters registered on Tuesday: | 42 |
| The number of encounters registered on Wednesday: | 54 |
| The number of encounters registered on Thursday: | 40 |
| The number of encounters registered on Friday: | 30 |
| The number of encounters registered on Saturday: | 11 |



**Registered Encounters by Day**
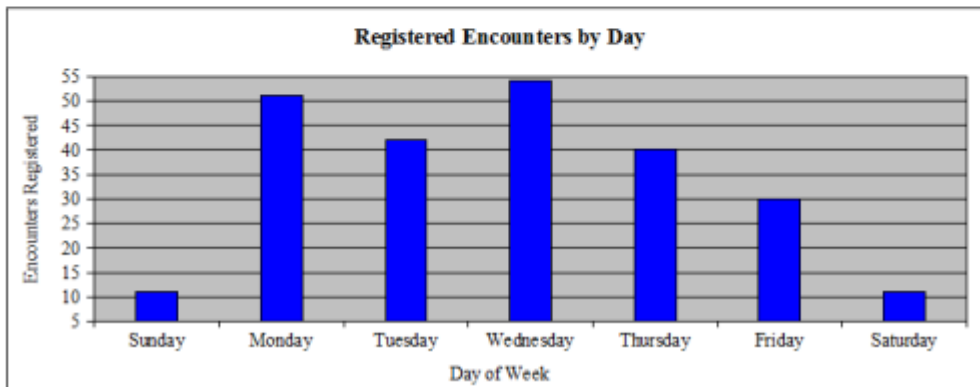
77. Close the output window to return to your layout.

So far the Encounters Registered by Day graph has been a single series graph. Suppose you want to subdivide the encounters registered on a day by the encounter type. We can accomplish this by creating separate counter variables for the different encounter types and then use those variables as a series in the graph.

To keep this example fairly simple we will limit the query to only return inpatient, outpatient, and emergency encounter types. If your environment does not have rows on the ENCOUNTER table with these encounter types, select different encounter types that exist in your environment.

78. From the Tools menu, select **Add Code Values**. The Add Code Values dialog box opens.
79. Enter the following information to create global variables that can be set equal to the Code_Values for inpatient, outpatient, and emergency encounters.

Your Add Code Values dialog box should display similar to the following example:
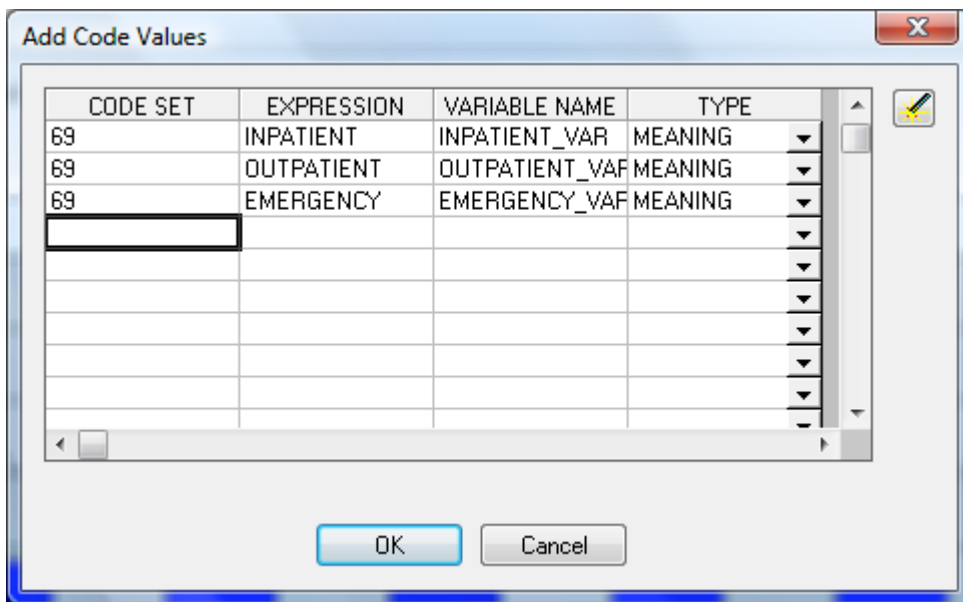
80. Click **OK** to close the Add Code Values dialog box. Depending on the data in your environment, you might need to select some different encounter types.
81. From the Tools menu, select **Query Builder**. The Add Queries dialog box opens.
82. Verify the Get_Encounters_by_Day query is selected and click **Edit Query**. The Query Builder dialog box opens.
83. In the **Fields** tab select the ENCNTR_TYPE_CLASS_CD field.
84. In the **Qualifications** tab, add the following code:

--------------------------------------------------------------------------------

Your qualifications look similar to the following example:
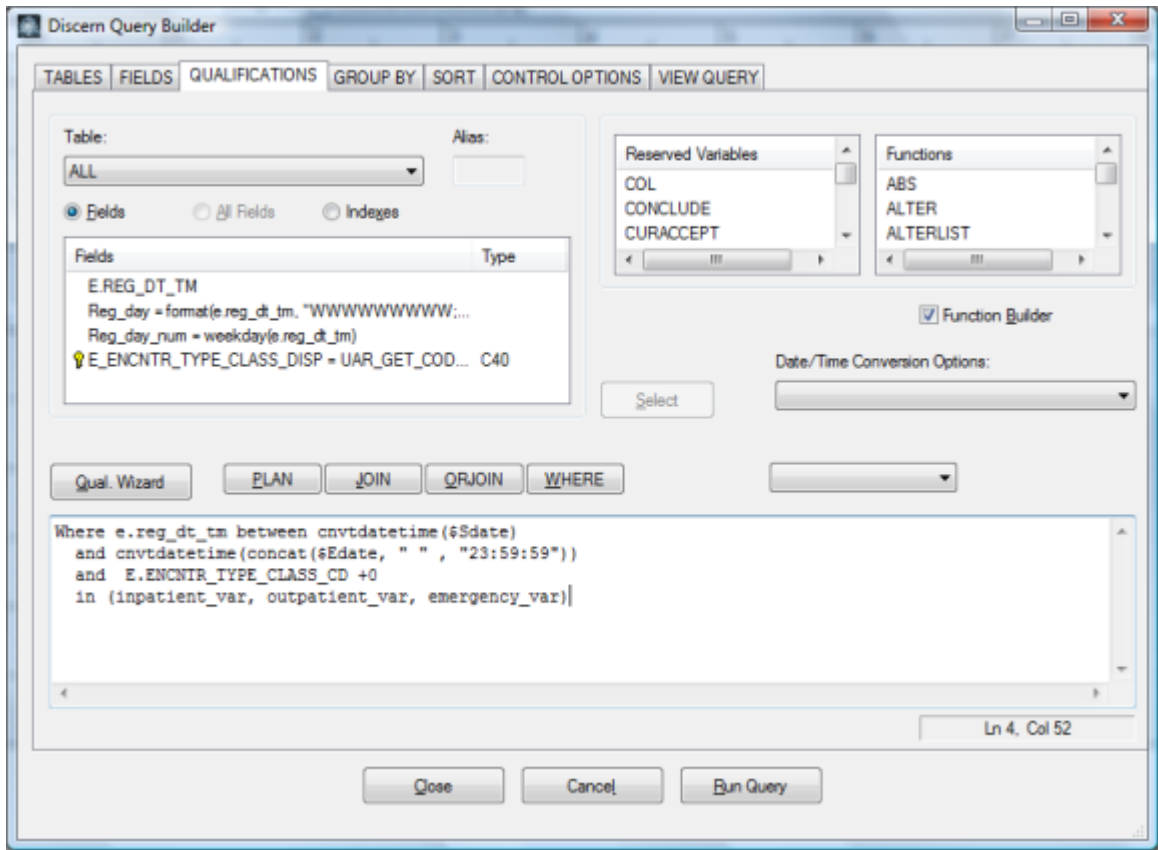


85. Click **Run Query**. The Run Query dialog box shown below opens.
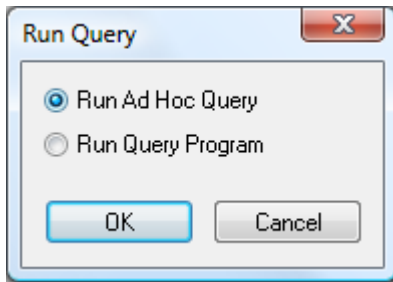
The Run Query dialog box allows you to either execute just the current query using the Run Ad Hoc Query option, or to execute the commands from the beginning of the program through the current query using the Run Query Program option. Since your current query uses values from the prompts in the qualifications, it cannot be executed as a stand-alone query. To execute, the query needs the beginning and ending dates from the prompts. Choosing the Run Query Program option displays the prompt form and then executes the program through the current query.

86. Select the Run Query Program option and click **OK**.
87. At the prompt, use MINE for the output device and enter starting and ending dates to return records that were registered over several different days.

    Verify your output includes inpatient, outpatient, and emergency encounters.

88. Close the output window.
89. Close Query Builder.
90. Click **OK** to close the Add Queries dialog box.
91. From the Select/Modify Section of the Workspace dialog box, select the Foot Reg_day Reportwriter section (click the label, not the check box).
92. Double-click the Code Segment. The Layout Source [Code Segment] dialog box opens.

    Currently, you have the following code in the Layout Source [Foot Reg_day] dialog box:

    ------------------------------------------------------------------------------------------------------------------------------------

    Using the code above, Dcnt is set equal to the total number of encounters registered on each day of the week.

93. Add the following code directly below the Dcnt = count(e.seq) code:

    ------------------------------------------------------------------------------------------------------------------------------------

    In the above code, only encounters with the specific encntr_type_class_cd are counted when setting the Icnt, Ocnt, and Ecnt variables.
    Your Layout Source [Code Segment] dialog box should look similar to the following example:
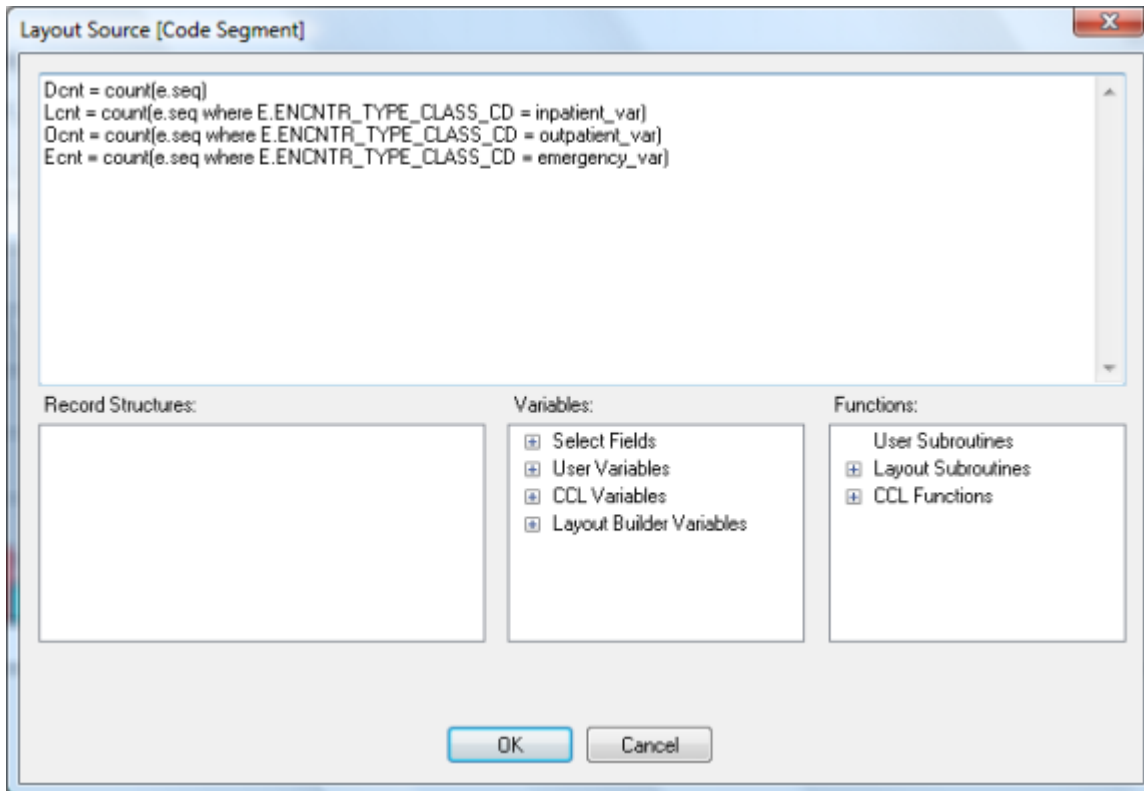


94. Click **OK** to close the Layout Source [Code Segment] dialog box.

95. Double-click your graph item to open the Graph dialog box.
96. In the **Series** tab, click **Add** to add a series for Icnt.
97. In the Series Name box, enter **In Pat Count**; in the Data Values box enter **Icnt**.
98. Click **Add** to add a series for Ocnt.
99. In the Series Name box, enter **Out Pat Count**; in the Data Values box, enter **Ocnt**.
100. Click **Add** to add a series for Ecnt.
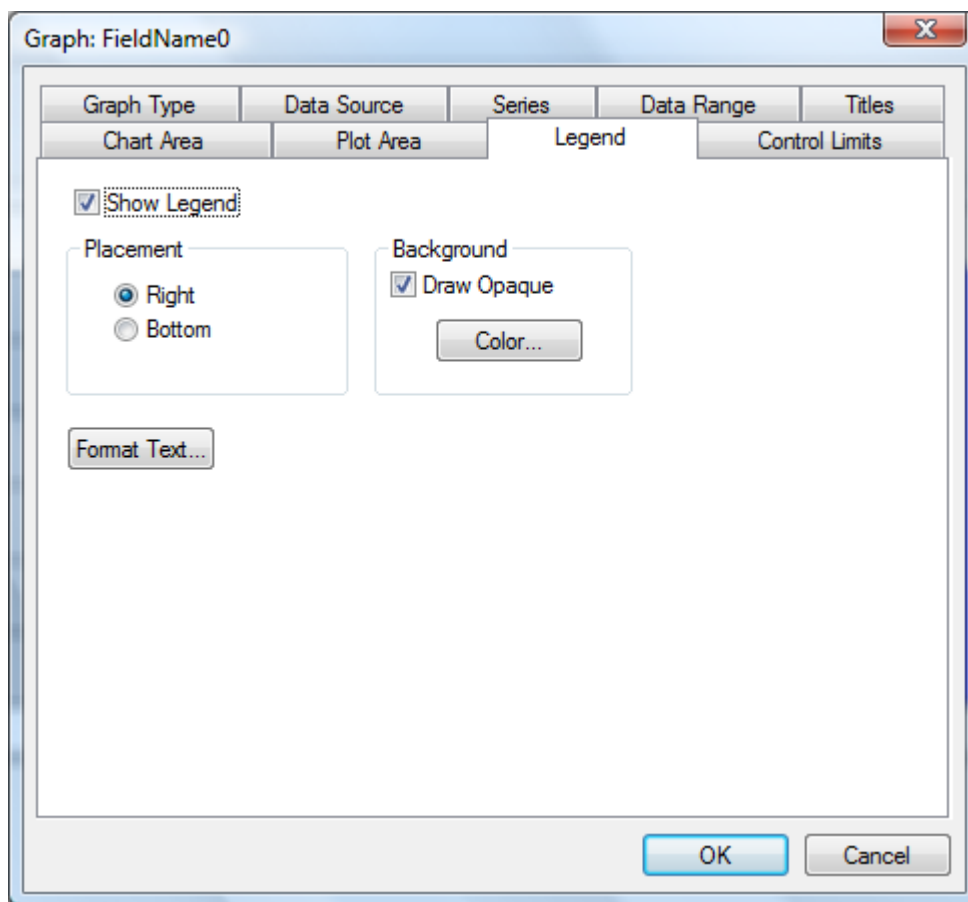101. In the Series Name box, enter **ER Pat Count** and in the Data Values box, enter **Ecnt**.

Your Graph dialog box should look similar to the following example:
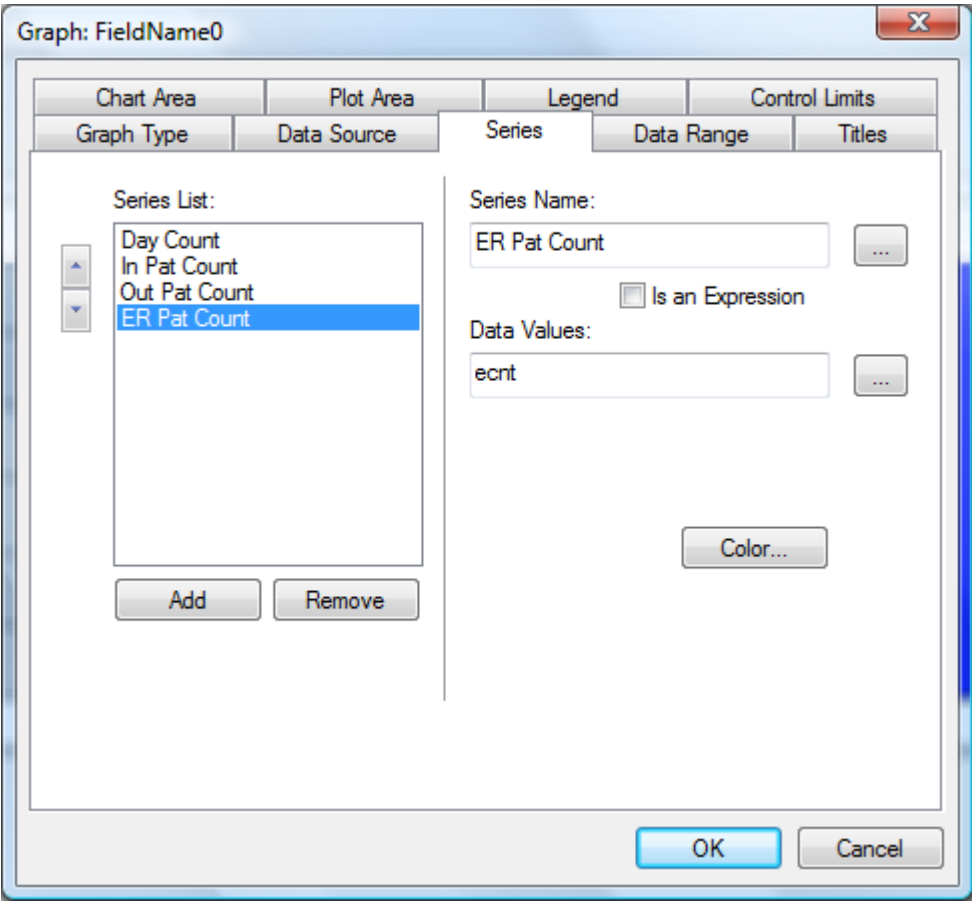


Adding Icnt, Ocnt, and Ecnt to the **Series** tab displays a column on the graph for each of those variables. Because Reg_day is used as the Axis Field on the **Data Source** tab, the graph displays four columns for each day of the week. The first column displays the total number of encounters, the second column shows the number of inpatient encounters, the third column displays the outpatient encounters, and the fourth column displays the emergency encounters. You can use the **Legend** tab to display a legend that indicates what each of the columns represents.

102. Click the **Legend** tab and select the Show Legend option.

Your Graph dialog box should display similar to the following example:

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**Graph: FieldName0**

Graph Type | Data Source | Series | Data Range | Titles
Chart Area | Plot Area | Legend | Control Limits

☑ Show Legend

**Placement**
- ◉ Right
- ○ Bottom

**Background**
☑ Draw Opaque

[Color...]

[Format Text...]

[ OK ] [ Cancel ]

103. Click the **Data Range** tab on the Graph dialog box.
104. Delete the Minimum, Maximum, and Index values. This ensures that all values are displayed on the graph.
105. Click **OK** to close the Graph dialog box.
106. From the Build menu, select **Run "1_*Your_Initials*{_}Example_Graph"** or press CTRL+F5 to execute your layout program.
107. Click **Yes** when prompted to save the layout. The prompt form opens.
108. At the prompt, use MINE for the output device and enter starting and ending dates that will return records that were registered over several different days.

Your output is displayed similar the following example. Your numbers will be different based on the data that exists in your environment.

# Encounters Registered by Day

| | |
|---|---|
| The number of encounters registered on Sunday: | 44 |
| The number of encounters registered on Monday: | 32 |
| The number of encounters registered on Tuesday: | 29 |
| The number of encounters registered on Wednesday: | 28 |
| The number of encounters registered on Thursday: | 41 |
| The number of encounters registered on Friday: | 15 |
| The number of encounters registered on Saturday: | 7 |
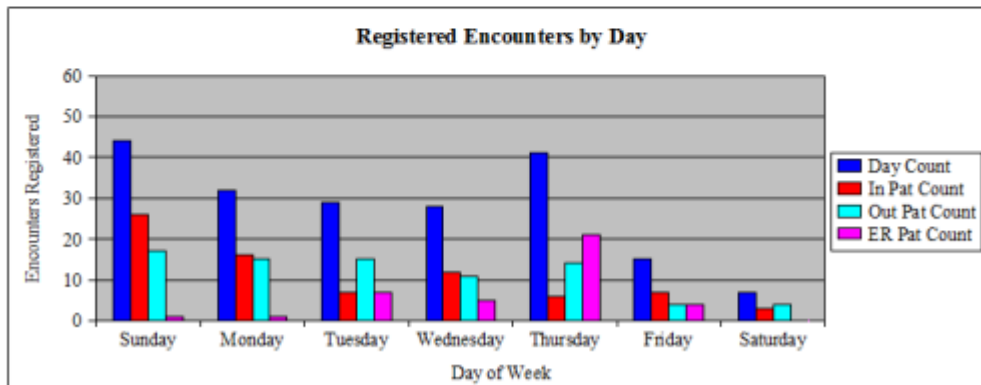


In the above report, Day Count represents the total number of encounters registered on each day of the week. The sum of the other three counts equals Day Count. Rather than expressing Day Count as a column, the graph could be more meaningful if Day Count was expressed as a line to represent the total number of encounters and the other three counts continued to be displayed as columns. This is done by changing the graph type to Line - Column.

109. Close the output window to return to the layout.
110. Double-click your graph item. The Graph dialog box opens.
111. In the **Graph Type** tab, select Line - Column.
112. In the **Series** tab, select the Day Count series and modify the Type to Line.
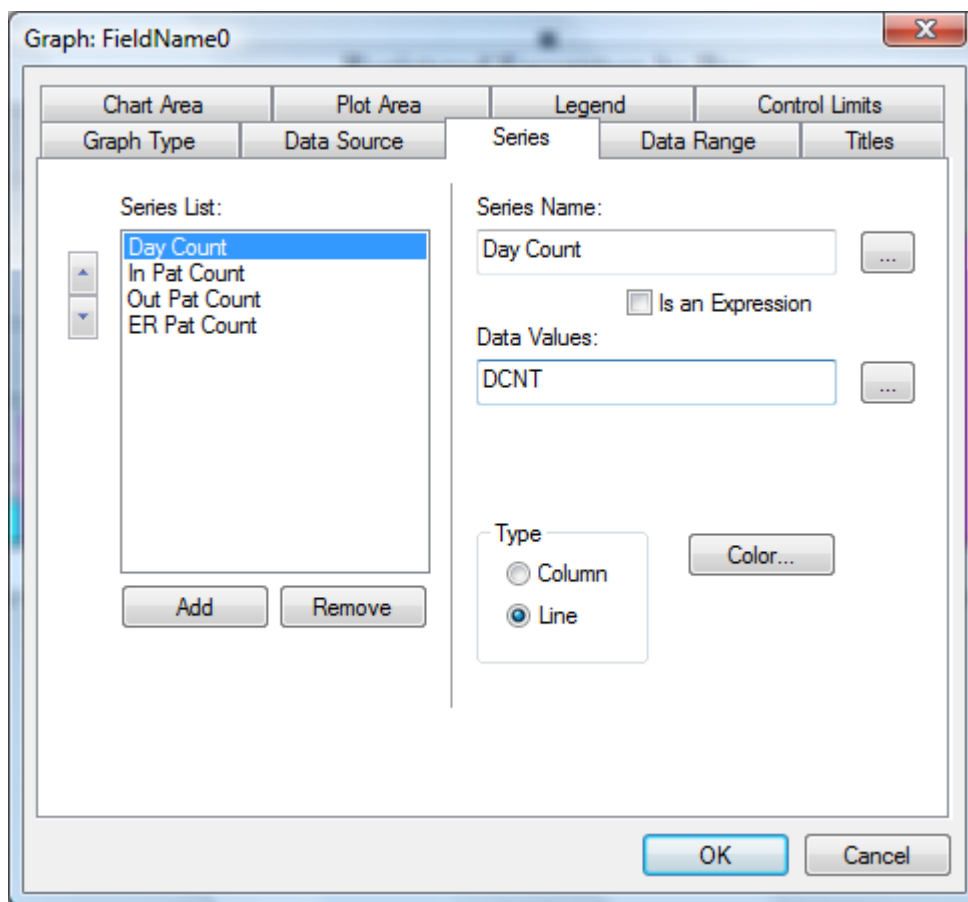
113. Click **OK** to close the Graph Properties dialog box.
114. From the Build menu, select **Run "1_*Your_Initials*{_}Example_Graph"** or press CTRL+F5 to execute your layout program. Click **Yes** when prompted to save the layout. The prompt form opens.
115. At the prompt, use MINE for the output device and enter starting and ending dates that will return records that were registered over several different days.

Your output is displayed similar to the following example. Your numbers will be different based on the data that exists in your environment.
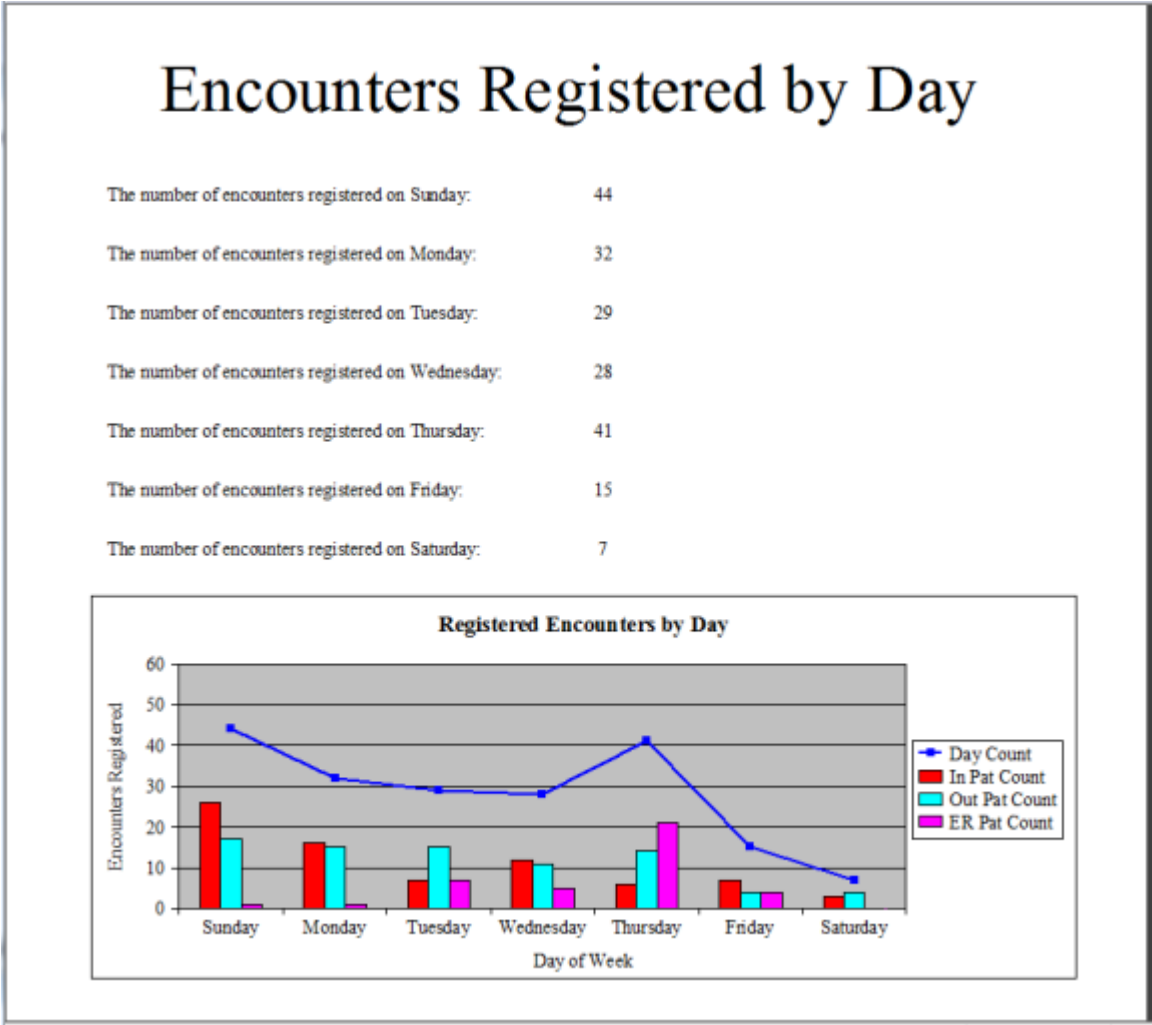


# Graphing Data From Multiple Queries

There might be times when you want to graph data from several sources. The example above used Discern Explorer Reportwriter sections to create count variables and display them in graphical format. Aggregates created in the selection list of a query can also be displayed in graphical format. Layout Builder enables you to create layout sections that are not associated with a reportwriter section of a specific query. It also enables you to create multiple queries in a single layout program. The Graph Tool enables you to select a query as the data source for the graph. Combining this functionality enables you to create multiple graphs from different queries and display them in a single layout program. To demonstrate this functionality, you will create a report that contains a graph displaying the number of encounters with specific encounter types over a time period that will be specified by the user with a prompt. The report also will contain a graph showing the counts of specific orders over the same time period.

1. Using DVDev, from the File menu, select **New**. The New dialog box opens.
2. From the File Type list, select **Layout Program**.
3. In the Program Name box, enter **1_*Your_Initials*_Graph_Ords_Encs** and click **OK**. The New Layout Program dialog box opens.
4. Verify the Standard Layout Report Layout and PostScript Output Type options are selected and click **Next**. The Paper Size dialog box is displayed.
5. For your report, keep the defaulted values and click **Finish**. When a new layout program is created, DVDev places an empty layout section on the layout titled DetailSection.
6. In the Properties window, modify the name to **TitleSection** (if the Properties window is not displayed, open it using the Properties option on the View menu).
7. Use the Label Tool  to add the report title to the TitleSection.
8. Use the Formatting toolbar shown below to set:
    1. The font to **Times**
    2. The font size to **36**
    3. Center the text



If the Formatting toolbar is not displayed, from the View menu, select Toolbars > **Formatting**. Your layout should look similar to the following:
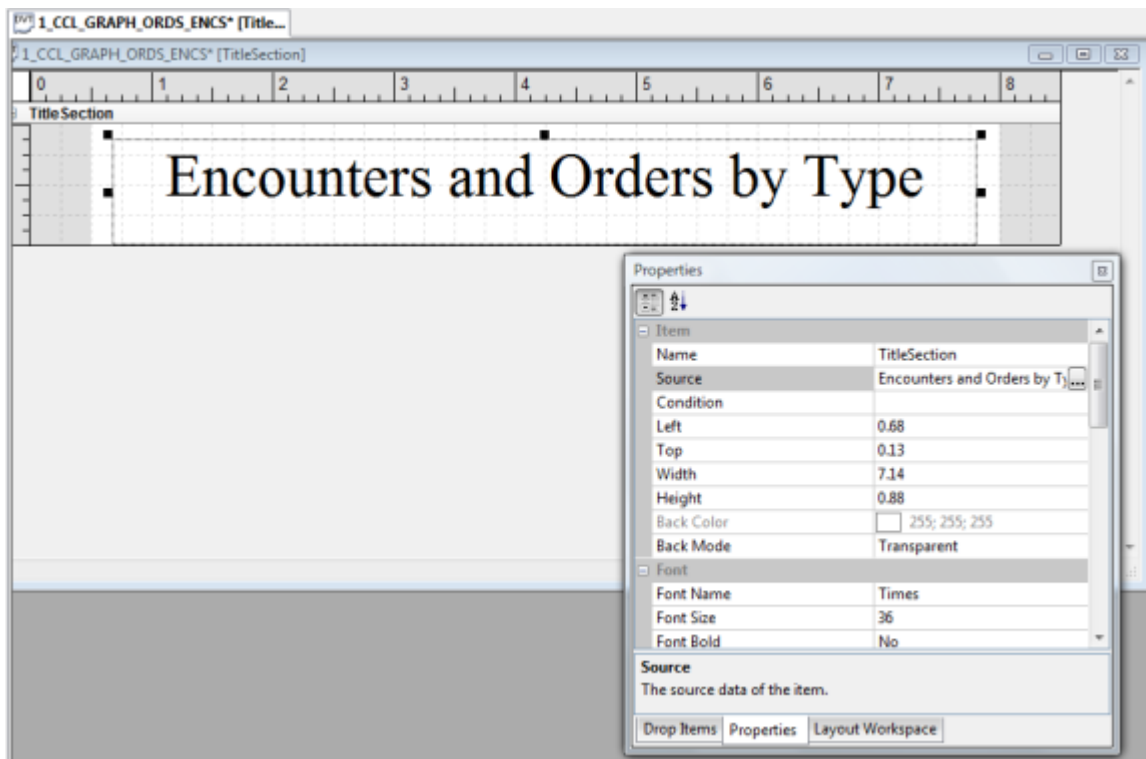
9. From the Build menu, select **Run "1_*Your_Initials*{_}Graph_Ords_Encs"** or press CTRL+F5 to execute your layout program.
10. Use MINE at the prompt for the output device and click **Execute**. Your output should be similar to the following:
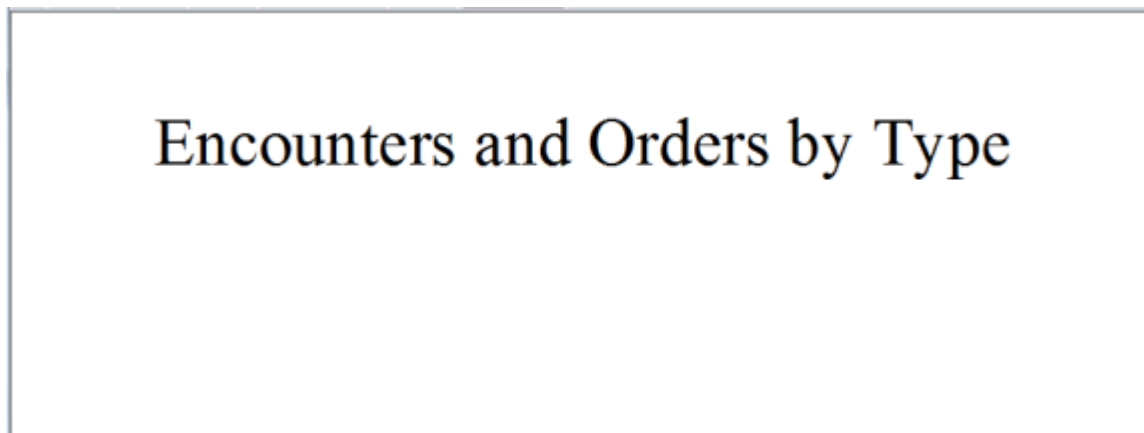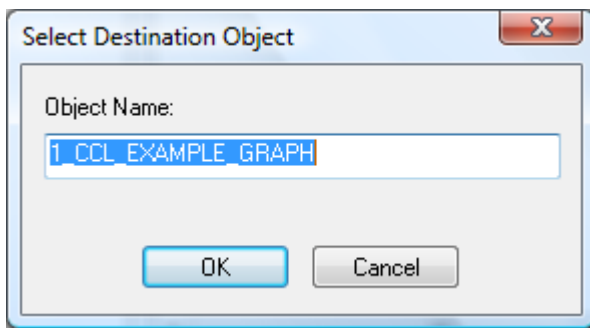


At this point it is important to understand that when a layout is associated with a query, rendering a layout section requires the layout section to be added to at least one of the Reportwriter sections of the associated query. If the layout is not associated with a query, each layout section is rendered in the order they are displayed on the layout. Because there is no query associated with the layout in this example, the TitleSection layout section is rendered when the program is executed.

For this report, you will use prompts for a starting and ending date that are very similar to the prompts we used in the previous example where you created the graph using data from a single query. You could recreate these prompts using the Prompt Builder; however, it is easier to copy the prompts from the earlier example program to this example program. If you did not complete the earlier example, see the Graphing Data from a Single Query section and follow the steps for creating the prompts.

11. Close the Report Output window.
12. From the Tools menu, select **Transfer Objects**. The Transfer Objects dialog box opens.
13. In the Source Object box, enter **1_*Your_Initials*{_}Example_Graph** and click **Browse**. Your prompt form opens in the search result box.
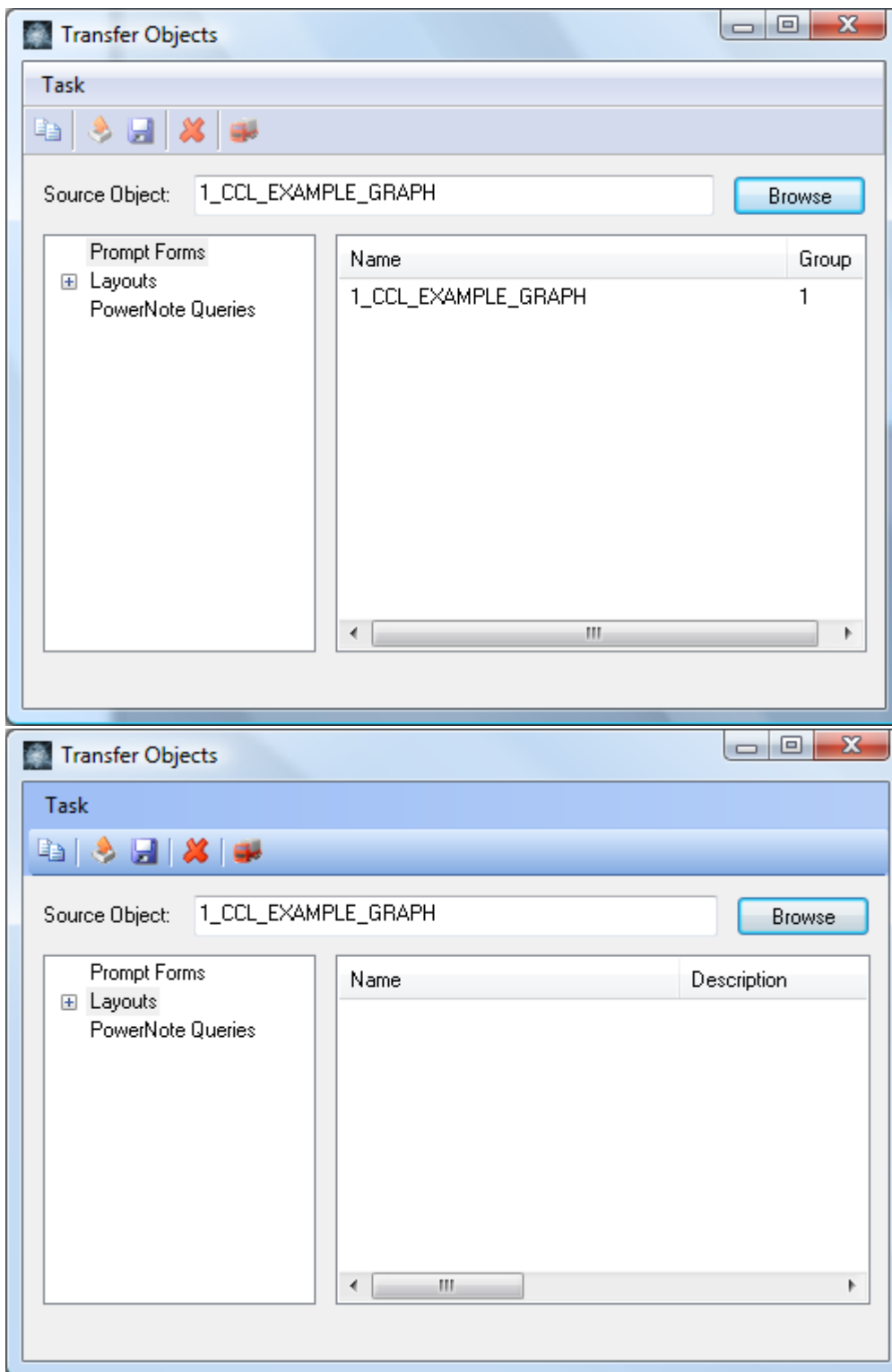
14. Right-click your prompt form and select **Copy Object**, or select **Copy Object** from the Task menu. The Select Destination Object dialog box opens.

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15. In the Object Name box, enter **1_*Your_Initials*{_}Graph_Ords_Encs** and click **OK**. A warning message similar to the following example is displayed.
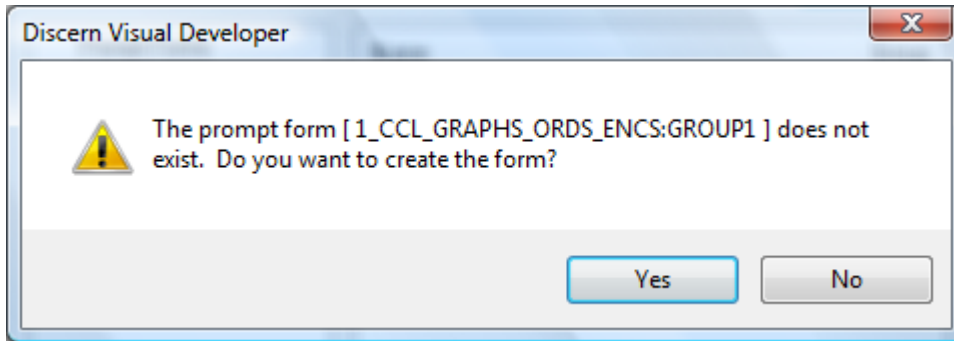


When you executed the layout program earlier in this exercise, a default prompt form with an output device control was used for your program.
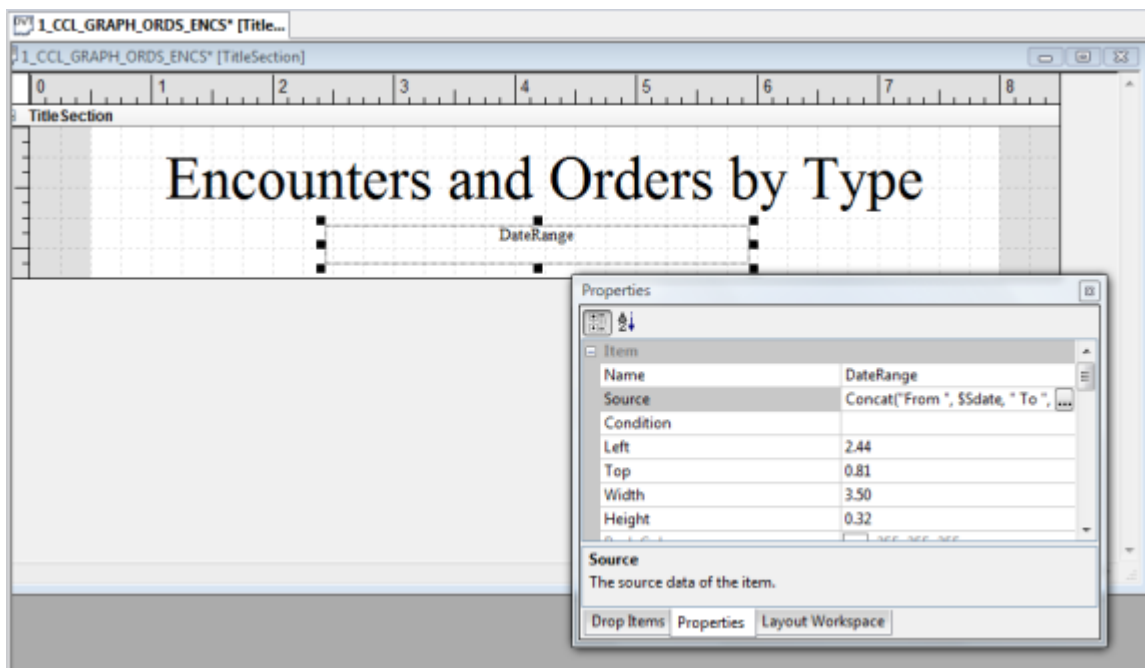
16. Click **Yes** to create a prompt form for the 1_*Your_InitialsGraph_Ords_Encs* program that is a copy of the prompt form from the 1*Your_Initials*{_}Example_Graph program. A message similar to the following example is displayed:
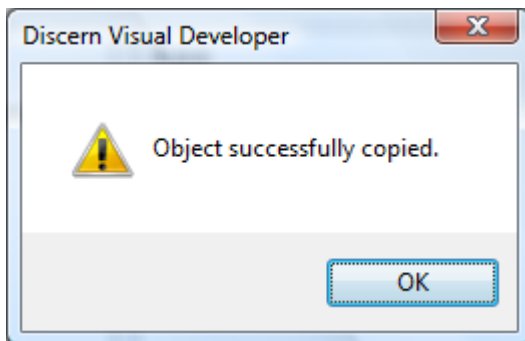


17. Click **OK** and close the message dialog box.
18. Close the Transfer Objects dialog.
19. From the Build menu, select **Run "1_*Your_Initials*{_}Graph_Ords_Encs"** or press CTRL+F5 to execute your layout program. The new prompt form is displayed with a control for an output device, a control for the starting date, and a control for the ending date.
20. Click **Cancel** to close the prompt form.

    On the prompt form you just copied there is a control named Sdate. It has a Date Time control with a Prompt Type of String and a Command Line Format of "dd-mmm-yyyy". There also is a control named Edate. It has a Date Time control with a Prompt Type of String and a Command Line Format of "dd-mmm-yyyy". A common request is to have the values entered at the prompts displayed in the output.

21. On the Properties for the TitleSection change the Height to 1.25.

22. Use the Text Tool  to place a text field in the TitleSection layout section.
23. In the Properties dialog box, enter **DateRange** as the Name.
24. Enter **Concat("From ", $Sdate, " To ", $Edate)** as the source.
25. Center the text. Your layout should look similar to the following example:

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26. From the Build menu, select **Run "1_*Your_Initials*_Graph_Ords_Encs"** or press CTRL+F5 to execute your layout program. Click **Yes** when prompted to save the layout. The prompt form opens.
27. At the prompt, use MINE for the output device and enter starting and ending dates. Your output should be similar to the following example:
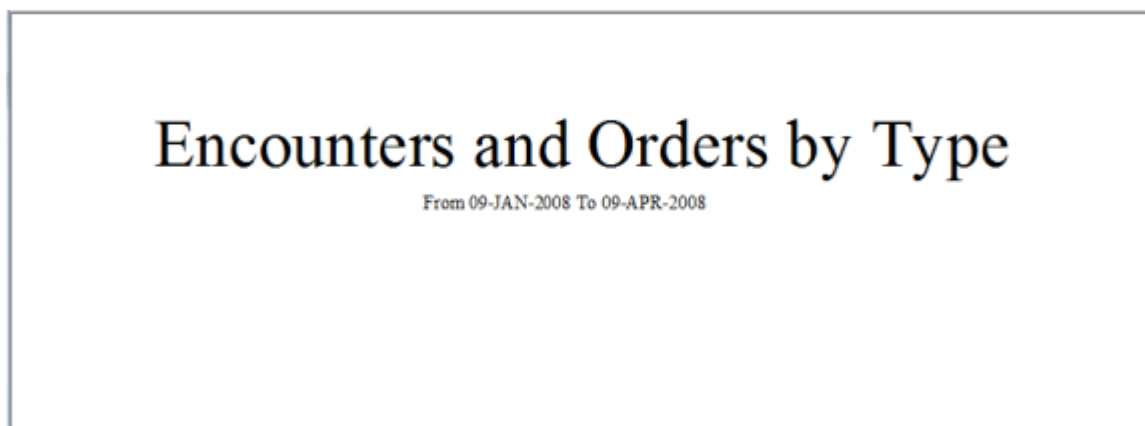


For this example we want to create a graph to show the counts of orders with specific catalog codes and a graph to show the counts of encounters with specific encounter type class codes. To qualify on the specific orders and encounters, you need to create and set variables equal to the code values of the specific catalog and encounter type class codes.

28. Close the Report Output window.
29. From the Tools menu, select **Add Code Values**. The Add Code Values dialog box opens.
30. Enter the following codes to create global variables that can be set equal to the Code_Values for inpatient, outpatient, and emergency encounters. By default, the Add Code Values dialog box appends _VAR to the value you enter as the Expression to create the Variable Name. Double-click the Variable Name column to modify the name of the variable.

----------------------------------------------------------------------------------------------------------------------------------

For Code Set 200, the MEANING might not be populated on the code_value table. You need to modify the TYPE to use DISPLAYKEY or another type that reflects what you placed in the EXPRESSION column. Your Add Code Values dialog box should look similar to the following example:

> **ℹ Note**
> You might need to execute a couple of ad hoc queries to determine encounter type class codes and order catalog codes to use and modify your program appropriately.

31. Click **OK** to close the Add Code Values dialog box.

    Next, add two queries, one to count the number of each type of encounter and one to count the number of each type of orders.
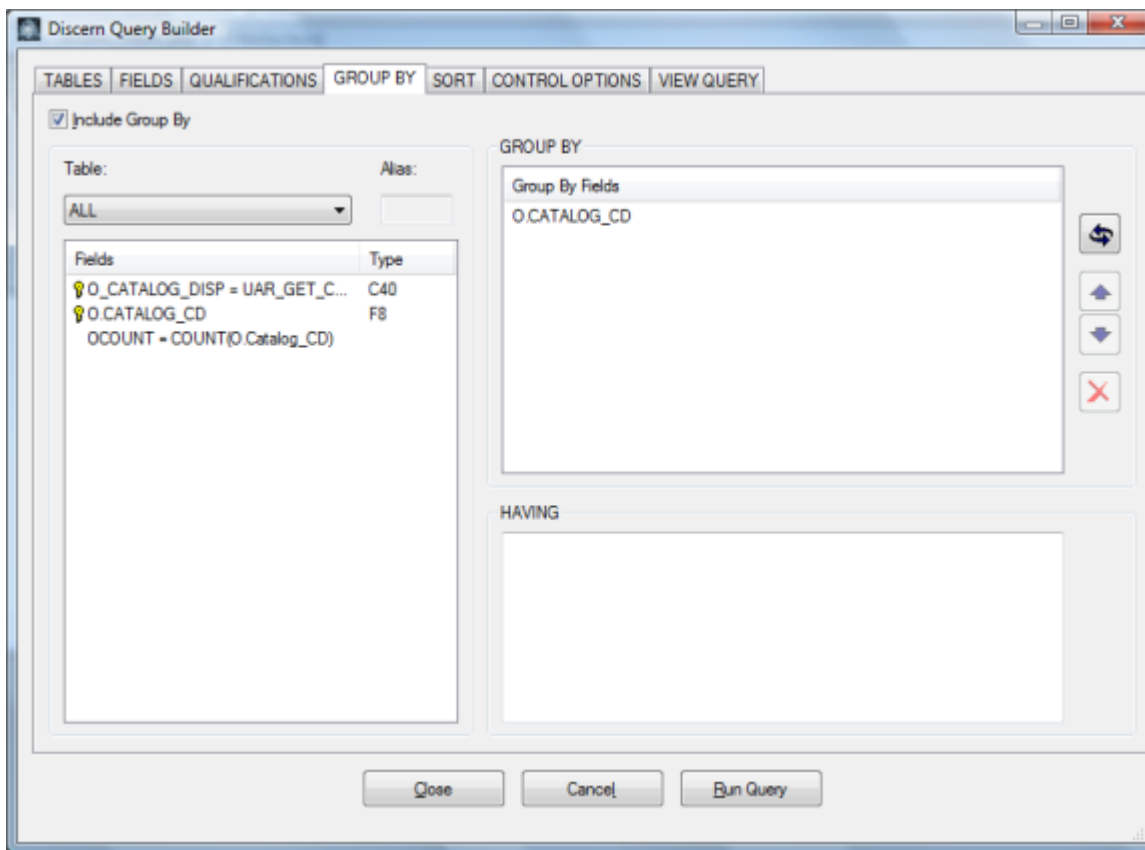
32. From the Tools menu, select **Query Builder**. The Add Queries dialog box opens.
33. Click **Add**. The Add Query dialog box opens.
34. In the Query Name box, enter **Get_Orders**, verify that the Associate Layout option is deselected, and click **OK**. The Discern Query Builder dialog box opens.
35. From the Tables list, select **ORDERS**.
36. Click the **Fields** tab then click **Code Values**. The Code Value Displays dialog box opens.
37. Select CODE_VALUE field and DISPLAY field, and then click **OK**.
38. From the Fields list, select **CATALOG_CD**.
39. Add the expression, **OCOUNT = COUNT(O.Catalog_CD)**.
40. Click the **Qualifications** tab and enter the following code:

    ----------------------------------------------------------------------------------------------------------------------------------

    In the above qualification, we used the variables you created from Code Set 200 in the IN clause. Also in the qualification, the + 0 used after the O.Catalog_CD, O.Catalog_CD +0 forces the query to use the index on O.Orig_Order_DT_TM.

41. Click the **Group By** tab, select the Include Group By option, and verify O.Catalog_Cd is displayed in the Group By Fields list.

    The Query Builder dialog box should look similar to the following example:

42. Click the **Sort** tab and select O_CATALOG_DISP from the Fields list.
43. Click the **Control Options** tab, set the Max Records to **1000** and select the Into "NL:" option.
44. Click **Close** to exit Discern Query Builder and return to the Add Queries dialog box. The code for your Get_Orders query that is displayed on the Add Queries dialog box should look similar to the following example:
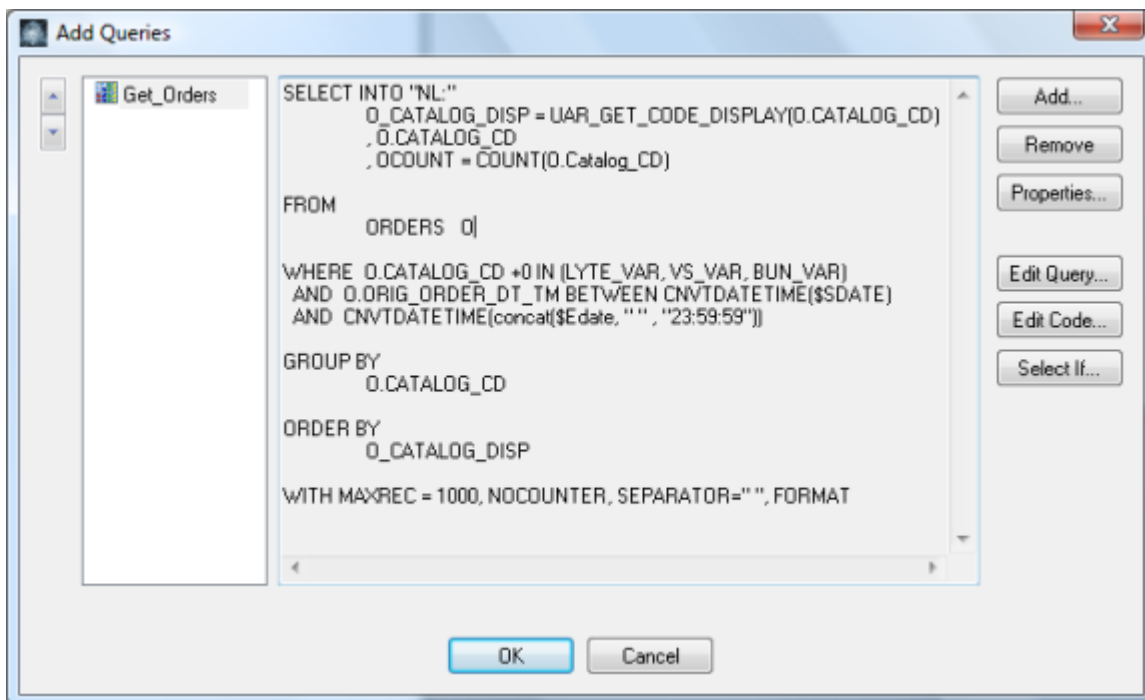


45. Click **Add** to start the next query that will get encounter information. The Add Query dialog box opens.
46. In the Query Name box, enter **Get_Encounters**, verify the Associate Layout option is deselected and click **OK**. The Discern Query Builder dialog box opens.
47. From the Tables list, select **ENCOUNTER**.
48. Click the **Fields** tab and click **Code Values**. The Code Value Displays dialog box opens.
49. Select the CODE_VALUE field, the DISPLAY field and click **OK**.
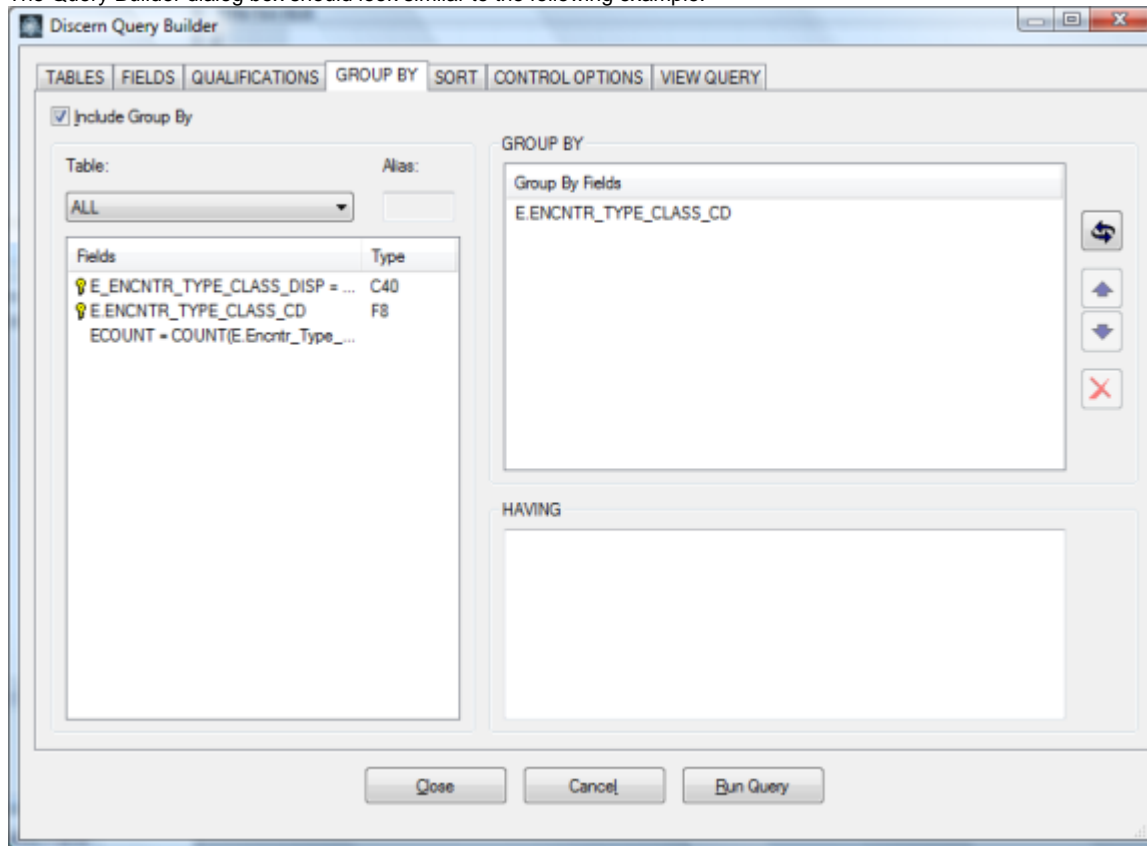
50. Select the Encntr_Type_Class_CD field.
51. Enter the expression, **ECOUNT = COUNT(E.Encntr_Type_Class_CD)**
52. Click the **Qualifications** tab and enter the following code:

---

In the example above, you used the variables you created from Code Set 69 in the IN clause. In this example, E.Encntr_Type_Class_CD +0 forces the query to use the index on E.Reg_DT_TM. Also notice the prompt symbols $Sdate and $Edate are used in both queries for this program.

53. Click the **Group By** tab and select the Include Group By option and verify E.Encntr_Type_Class_CD is displayed in the Group by Fields list.

The Query Builder dialog box should look similar to the following example:



54. Click the **Sort** tab, and select E_ENCTR_TYPE_CLASS_DISP from the Fields list.
55. Click the **Control Options** tab, set the Max Records to 1000, select the Into "NL:" option and click **Close** to exit Discern Query Builder and return to the Add Queries dialog box.

The code for your Get_Encounters query that is displayed on the Add Queries dialog box should look similar to the following example:
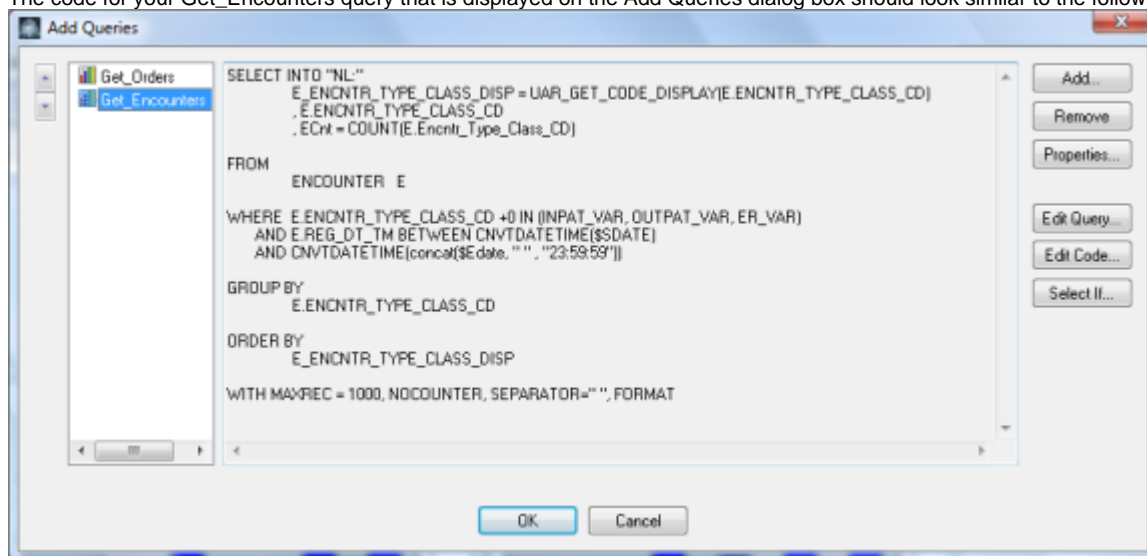


56. Click **OK** to close the Add Queries Dialog box.

We are now ready to add graphs to the layout to display the output of the queries in graphical form.

57. From the Edit menu, select Insert > **Section** to insert a new layout section.
58. Modify the name of the new section to **GraphSection**.
59. Drag the GraphSection down below the TitleSection.
60. Modify the Height of the GraphSection to **3.5**. You can expect your layout to be similar to the following screen:
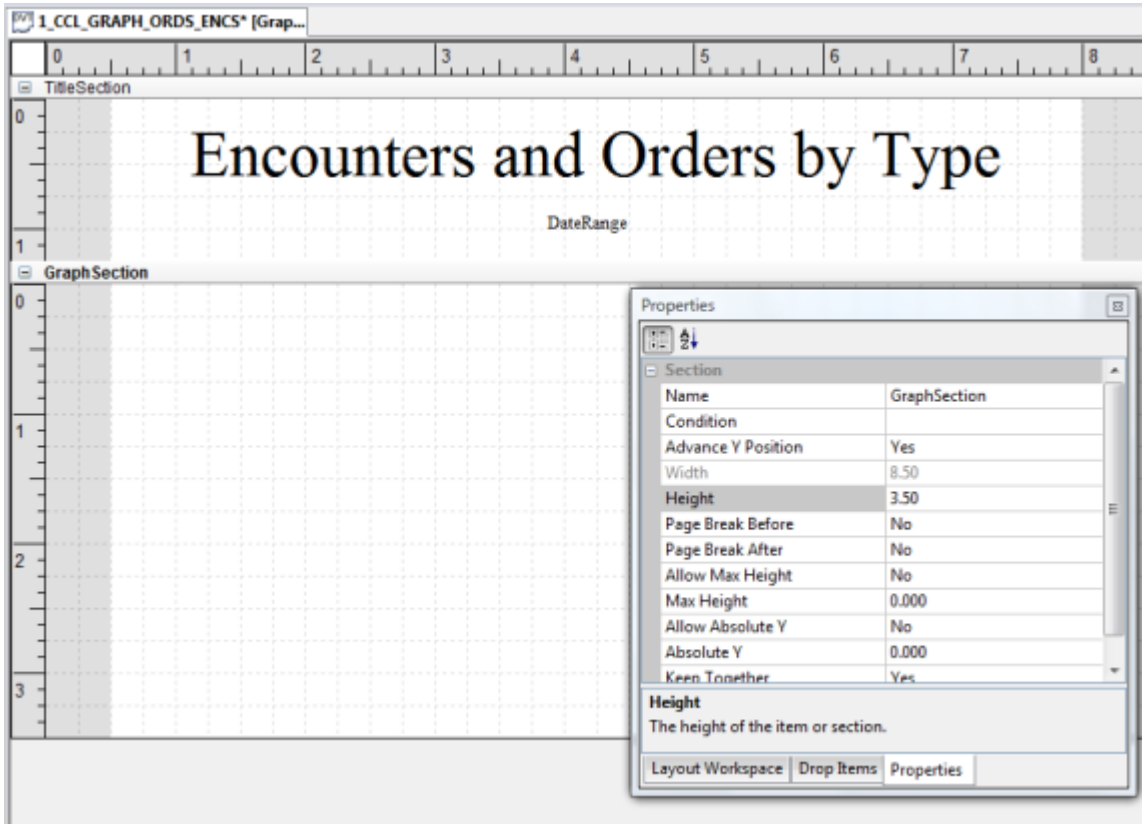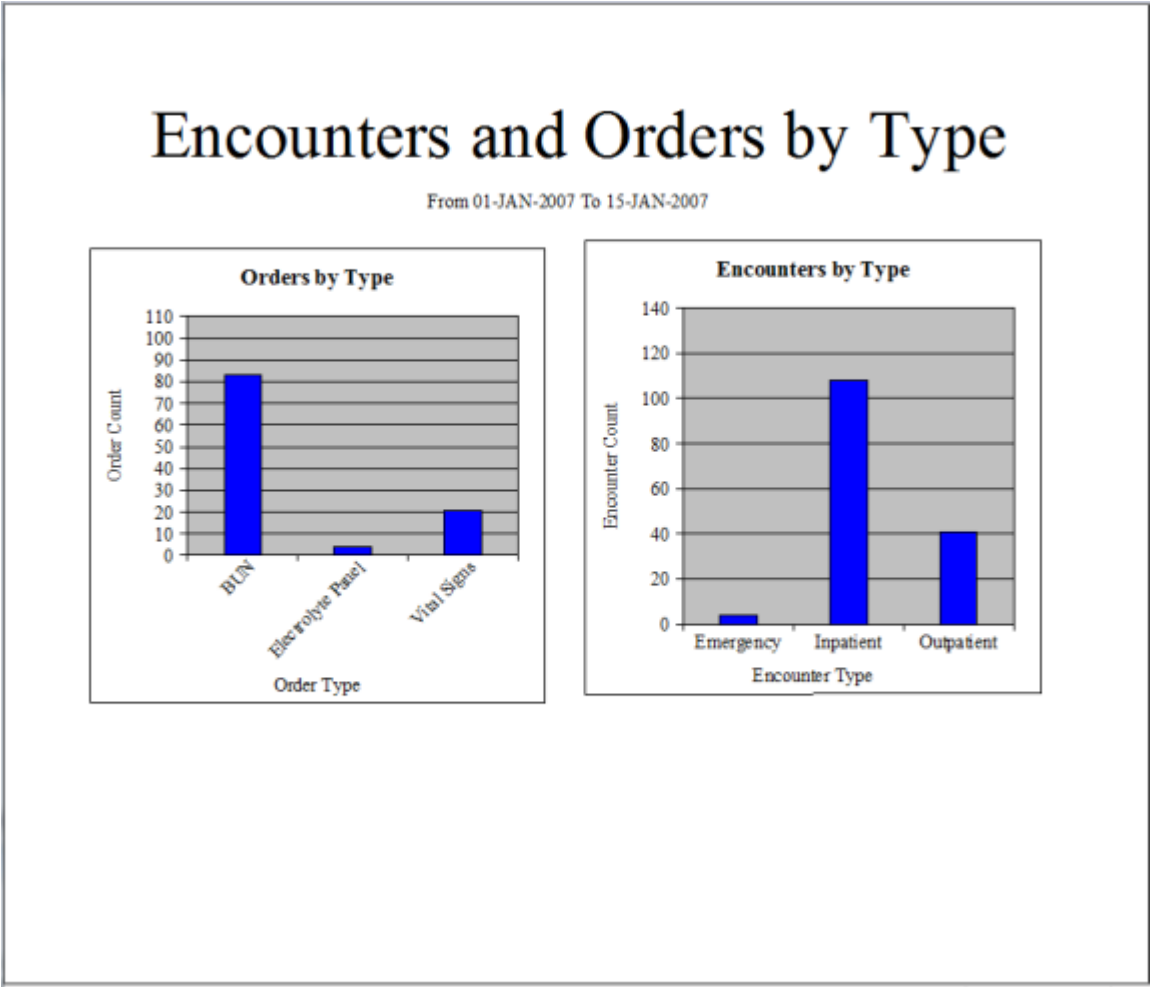


61. Use the Graph Tool  to create a graph item over most of the left side of the GraphSection layout section. The Graph dialog box opens.
62. Click the **Data Source** tab, and from the Select Query list, select Get_Orders.
63. From the Axis Field list select O_Catalog_Disp, and in the Axis Label box enter **O_Catalog_Disp**, or click the ellipsis button to open the Layout Source dialog box and select O_Catalog_Disp from the Variables list.
64. Click the **Series** tab, and in the Series Name box, modify the name to **Order Count**.
65. In the Data Values box enter **Ocount**, or click the ellipsis button to open the Layout Source dialog box and from the Select Fields list, select Ocount.
66. Click the **Titles** tab. In the Chart Title box, enter **Orders by Type**, in the (X) Axis Title box, enter **Order Type**, and in the (Y) Axis Title box, enter **Order Count**. Click **OK** to close the Graph dialog box.
67. Use the Graph Tool  to create a graph item over most of the right side of the GraphSection layout section. The Graph dialog box opens.
68. Click the **Data Source** tab, and from the Select Query list, select Get_Encounters.
69. From the Axis Field list, select E_ENCTR_TYPE_CLASS_DISP. In the Axis Label box, enter **E_ENCTR_TYPE_CLASS_DISP**, or click the ellipsis. button to open the Layout Source dialog box and from the Variables list, select E_ENCTR_TYPE_CLASS_DISP.
70. Click the **Series** tab and in the Series Name box, modify the name to **Encounter Count**.
71. In the Data Values box, enter **Ecount**, or click the ellipsis button to open the Layout Source dialog box and from the Select Fields list, select Ecount.
72. Click the **Titles** tab. In the Chart Title box, enter **Encounters by Type**, in the (X) Axis Title box, enter **Encounter Type**, and in the (Y) Axis Title box, enter **Encounter Count** and click **OK** to close the Graph dialog box.
73. Click **OK** to close the Graph Properties dialog box. You your layout should be similar to the following:
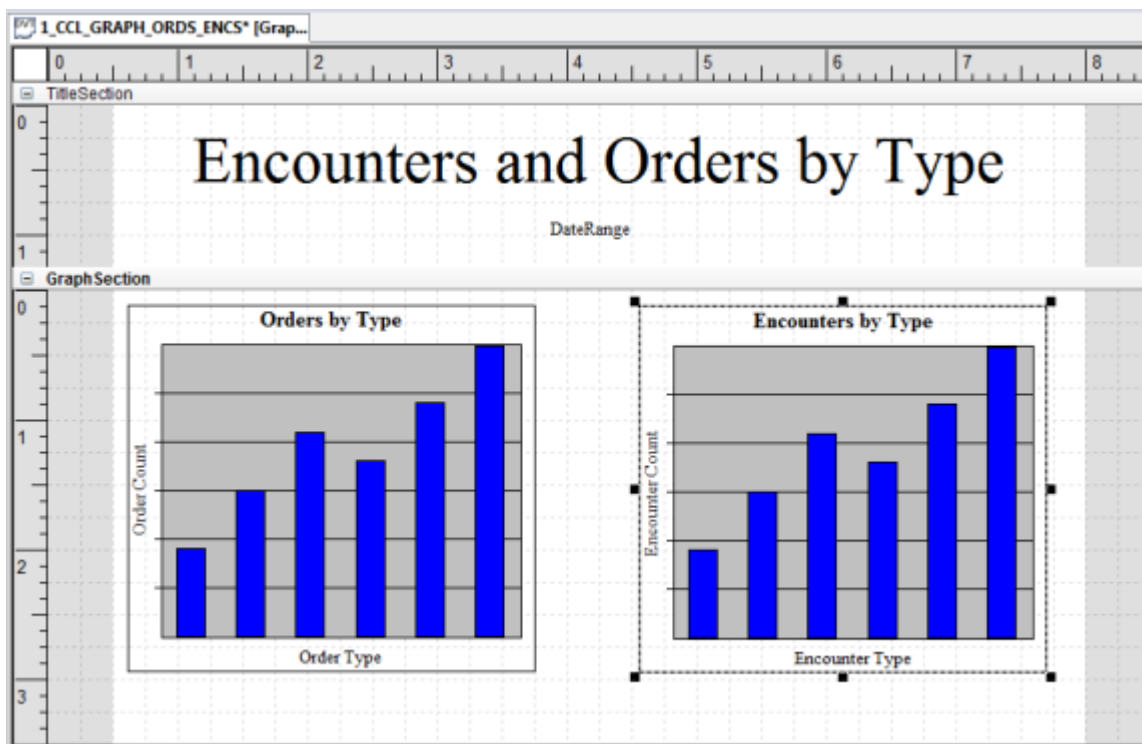
74. From the Build menu, select **Run "1_*Your_Initials*{_}Graph_Ords_Encs"**, or press CTRL+F5 to execute your layout program. Click **Yes** when prompted to save the layout. The prompt form opens.
75. At the prompt, use MINE for the output device and enter the starting and ending dates.

Your output should display similar to the following example. Your numbers, encounter types, and order types will differ based on the data that exists in

your environment and the code values that you created and qualified on earlier in this example.

# Encounters and Orders by Type

From 01-JAN-2007 To 15-JAN-2007

**Orders by Type**

Order Count

110
100
90
80
70
60
50
40
30
20
10
0

BUN    Electrolyte Panel    Vital Signs

Order Type

**Encounters by Type**

Encounter Count

140
120
100
80
60
40
20
0

Emergency    Inpatient    Outpatient

Encounter Type

Once you have completed these steps, continue on to the next part of Use Discern Layout Builder 2007.18, Creating a Table View Output.