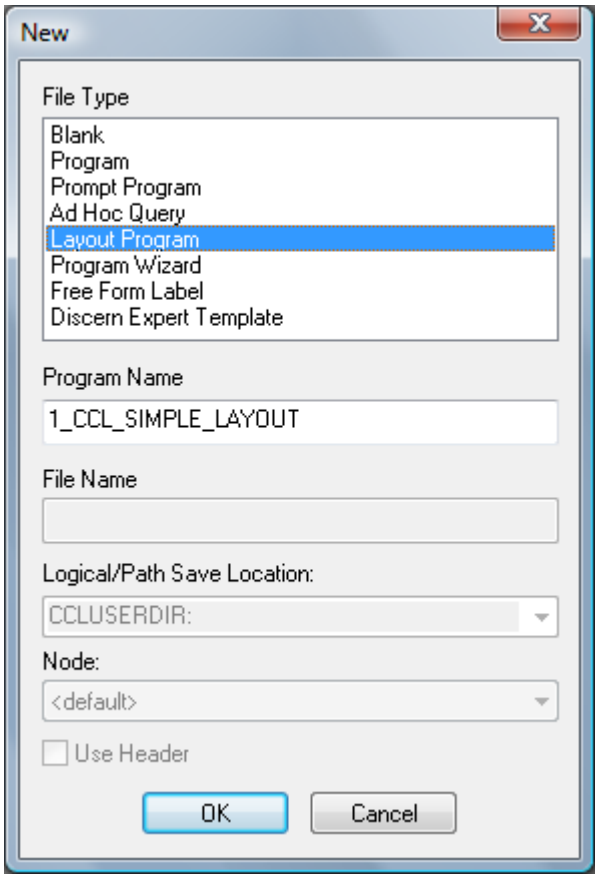
Creating a New Layout Program

This section assumes that you have already completed the Creating a Free Form Label section to gain an understanding of some of the basic functionality of Layout Builder.

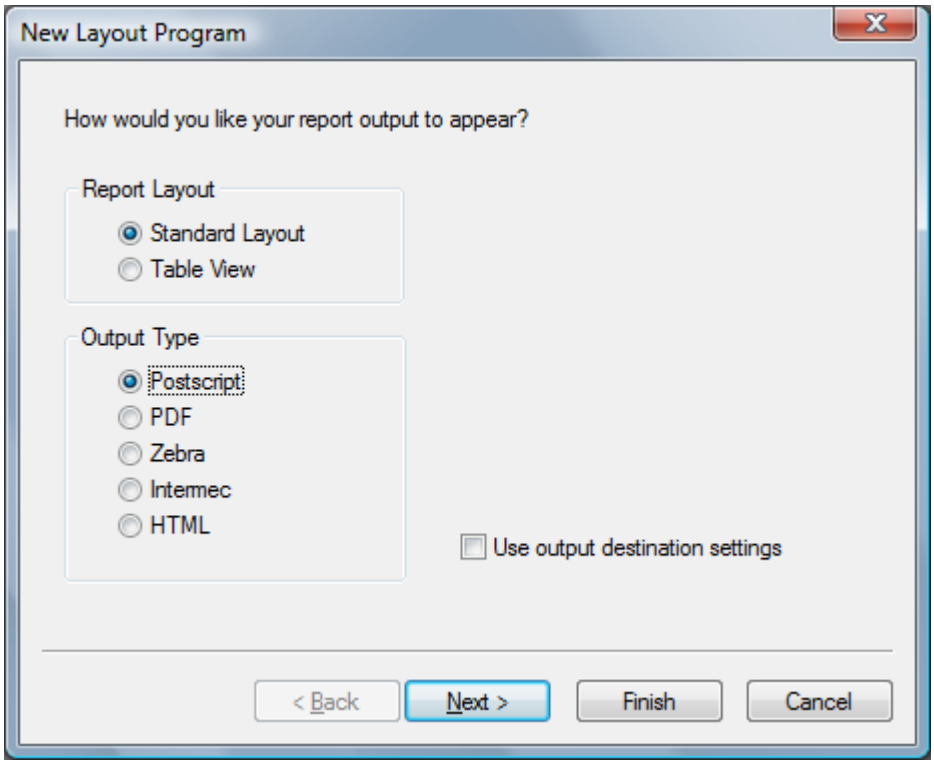
A Free Form Label can be thought of as a single page report with a single report section on the page. Layout programs can be thought of as a multi-page report that allows multiple layout sections on each page. Layout sections can be associated with a reportwriter section of a Discern Explorer select command. Multiple layout sections can be associated with a reportwriter section and a layout section can be referenced in multiple reportwriter sections. To demonstrate the functionality and usage of Layout Builder we will create a layout program that selects and displays information about people and their aliases.

Create A New Layout Program:

1. Using Discern Visual Developer (DVDev), from the File menu, select **New**. Verify the following New dialog box is displayed:

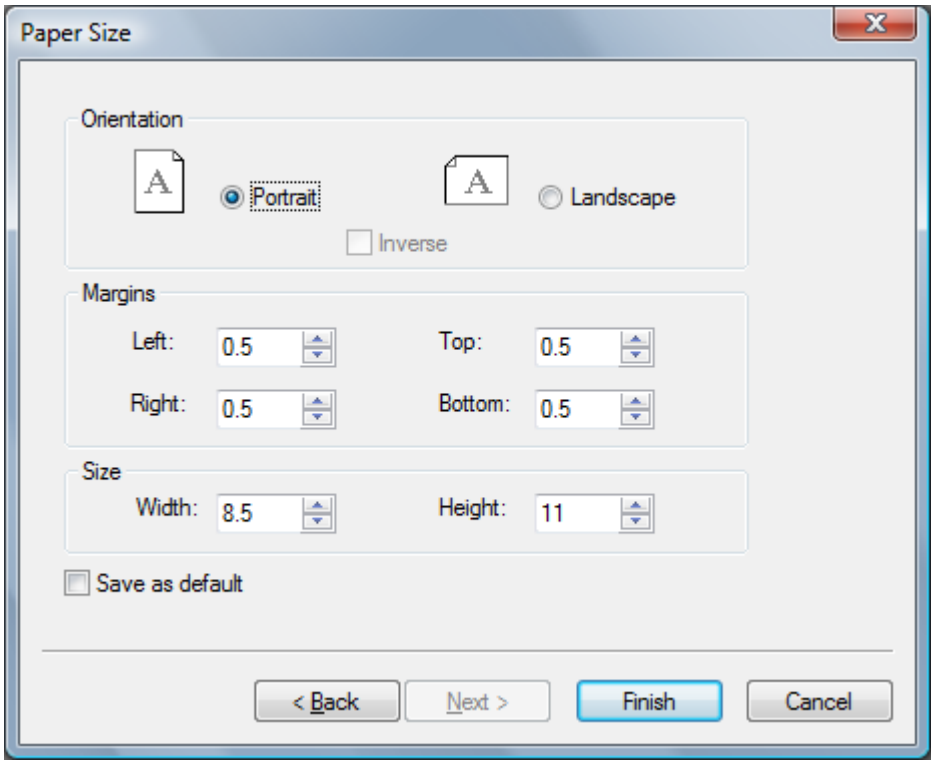


2. Select **Layout Program** from the File Type list
3. Enter **1*_your_initials*_SIMPLE_LAYOUT** as the Program Name and click **OK**. The New Layout Program dialog box is displayed. This dialog box enables you to set the properties of the report layout you are creating. The Standard Layout from the Report Layout section will define a layout that can have sections and items that can be dropped in the sections. The Table View is a layout program that generates a report with data in a table format, displayed using rows and columns. Creating a Table View is discussed in detail in the Layout Builder Programming Reference Master 2007 Part 2.
4. Verify that the Standard Layout is selected.

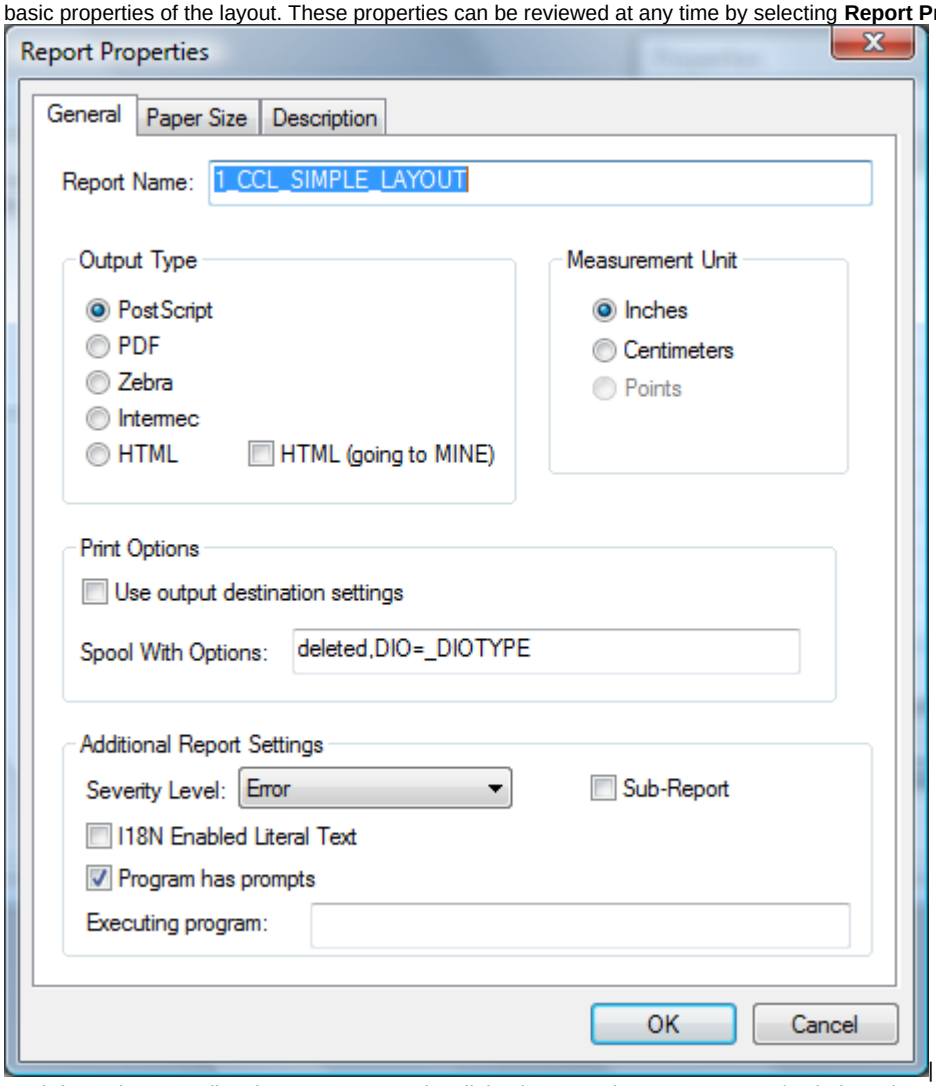


For this simple report we want to create an output that can be viewed on-screen or printed on standard size paper. This is accomplished using PostScript or .PDF output. The output property is used to control the type of output generated when the layout program is executed. Selecting PostScript or .PDF allows you to view the output on the screen by selecting MINE when prompted for an output device when the program is executed from a Discern Explorer application. PostScript or .PDF output can be printed by sending the output to a printer that supports that output type. The Use output destination settings option can be used to allow the output type to be modified at run time based on the type of printer to which the output is being sent. One of the requirements for executing a layout program from a Discern Explorer front-end application is that the program must prompt for an output device and then select into that device. If a back-end printer queue is used at the prompt for an output device and the Use output destination settings option was selected when the layout program was created, the program creates output that matches the printer type. This functionality allows you to have one program that could return the output to the screen or print it on a PostScript, Intermec, or Zebra printer. If the output type of PostScript is selected, the Use output destination settings option is selected, and at run time MINE is used for the output device, the layout program generates PostScript output that can be rendered and displayed on your screen. If at run time an Intermec printer is used for the output device, then the layout program generates output that is compatible with the Intermec printer. If the output is directed to MINE or a file, the default output type is used. If the Use output destination settings option is used and the output is directed to a printer queue, then the program determines the type of output device and generates output to match. For this simple layout program we will create PostScript output.

5. Verify the PostScript output option is selected, the Use output destination settings option is not selected, and click **Next**. The Paper Size dialog box is displayed.

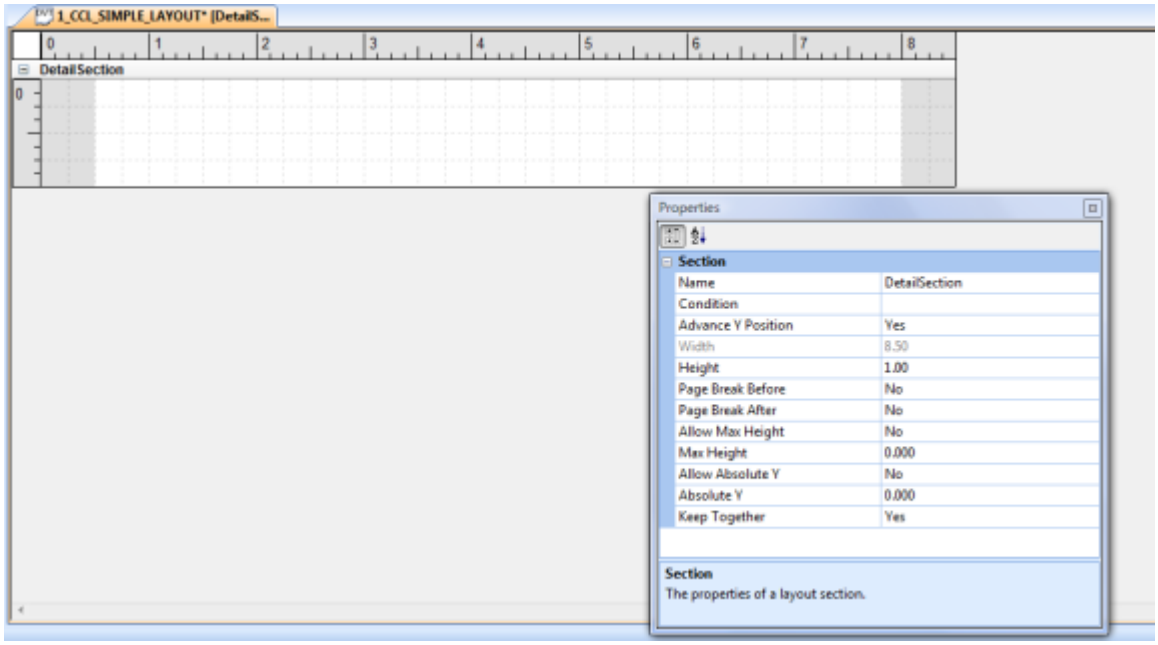


Keep the values already defaulted for our report and click **Finish**. The previous two dialog boxes, New Layout Program and Paper Size populate the basic properties of the layout. These properties can be reviewed at any time by selecting **Report Properties** dialog box from the Edit menu.



For information regarding the Report Properties dialog box, see the Report Properties help topic.

6. When you click **Finish**, a new layout program with a single section is created similar to the following example. If your layout is displayed differently, ensure you have the Properties, Horizontal Ruler, Vertical Ruler, Grid, Margins, and Section Title bars selected on the View menu.

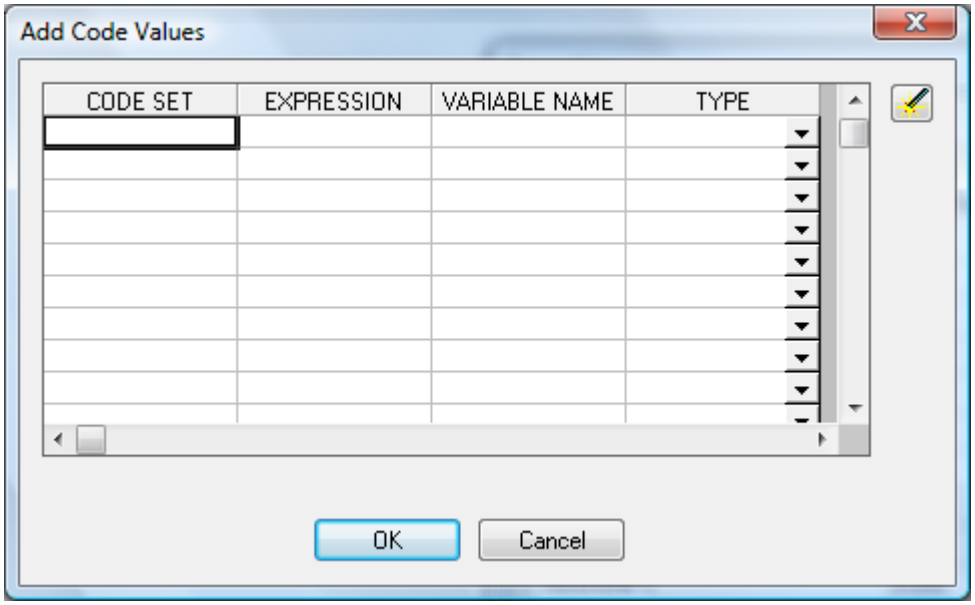


Before using the layout section, some preliminary work is necessary to retrieve people and their aliases. For our example, we will prompt the user for an output device and a last name. We want to retrieve the person ID, full formatted name, gender, birth date, medical record number and Social Security number for people with a last name equal to the name the user entered at the prompt.

Add Code Values

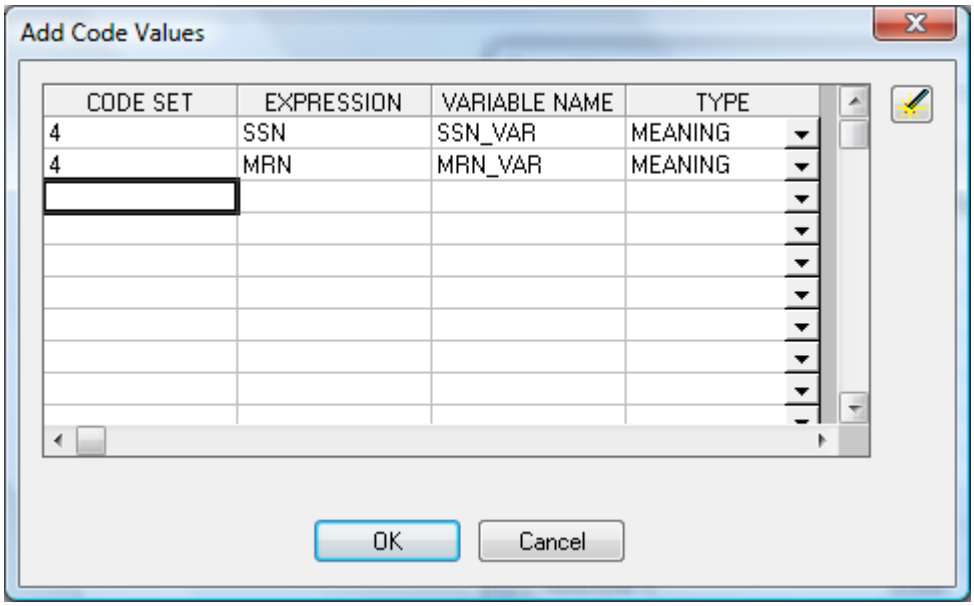
Note
Social Security numbers (SSN) and medical record numbers (MRN) are common aliases used by many, but not all clients. If your site does not use these aliases, select a couple of common person aliases that are associated with most people.
To select only MRN and SSN person aliases, we need to create a couple of global variables that can store the code values for these person alias types.

1. From the Tools menu, select **Add Code Values**. The Add Code Values dialog box is displayed. This dialog box is used to create and set a variable to a code value using UAR_GET_CODE_BY(). For more information on the Add Code Values dialog box see the Code Values Dialog Box help topic.



The person alias type codes come from Code Set 4.
2. Enter **4** in the Code Set column of row 1.
3. Enter **SSN** or the CDF_Meaning of a common person alias in the Expression column of row 1.

4. Click the **Variable Name** column. The value you entered in the Expression column is displayed followed by _VAR by default. The value of Meaning is displayed in the Type column by default.
5. Enter **4** in the Code Set column of row 2
6. Enter **MRN** or the CDF_Meaning of a common person alias in the Expression column of row 2
7. Click the **Variable Name** column. Your Add Code Values dialog box is displayed similar to the following example:

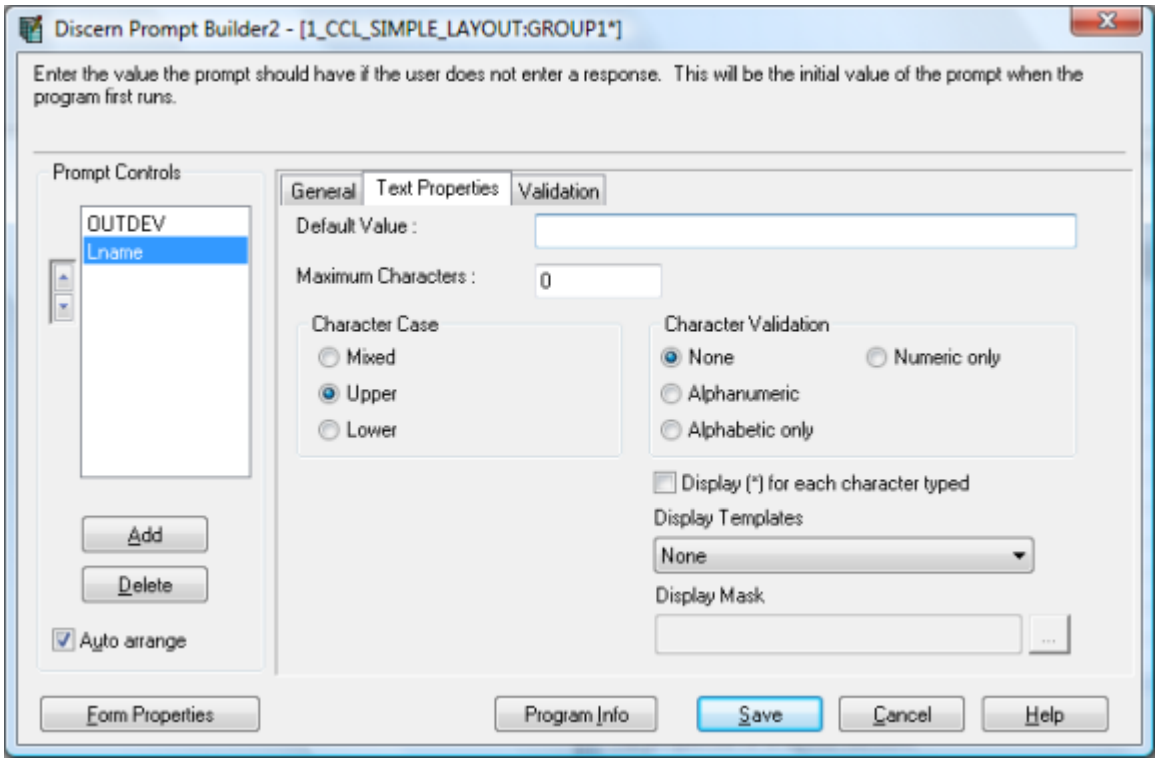


8. Click **OK** to create the variables. The Add Code Values dialog box adds a Declare command to the source code Layout Builder is creating. To see the actual source code, you can select **Layout Code** from the Layout menu. The code values you added are displayed at the bottom of the DVDev Declared Variables section.

Add Prompts

Next, you need to create a couple of prompts to enable the user to view the output of the layout program on-screen or send it directly to a printer, and get a last name from the user to use in the qualifications. This tutorial assumes you are already familiar with using the Prompt Builder tool. If you have never used Prompt Builder, see Use Discern Prompt Builder.

1. From the Tools menu, select **Prompt Builder**. The Prompt Builder dialog box is displayed with a single control for an output device.
2. Click **Add** to add a second prompt to retrieve a last name from the user.
3. In the **General** Tab, set the following:
    1. Prompt Display: Enter the Last Name
    2. Prompt Name: Lname
    3. Control Type: Text Edit
    4. Prompt Type: String
4. Select the **Text Properties** tab and select **Upper** as the Character Case option. Your Prompt Builder dialog is displayed similar to the following example:

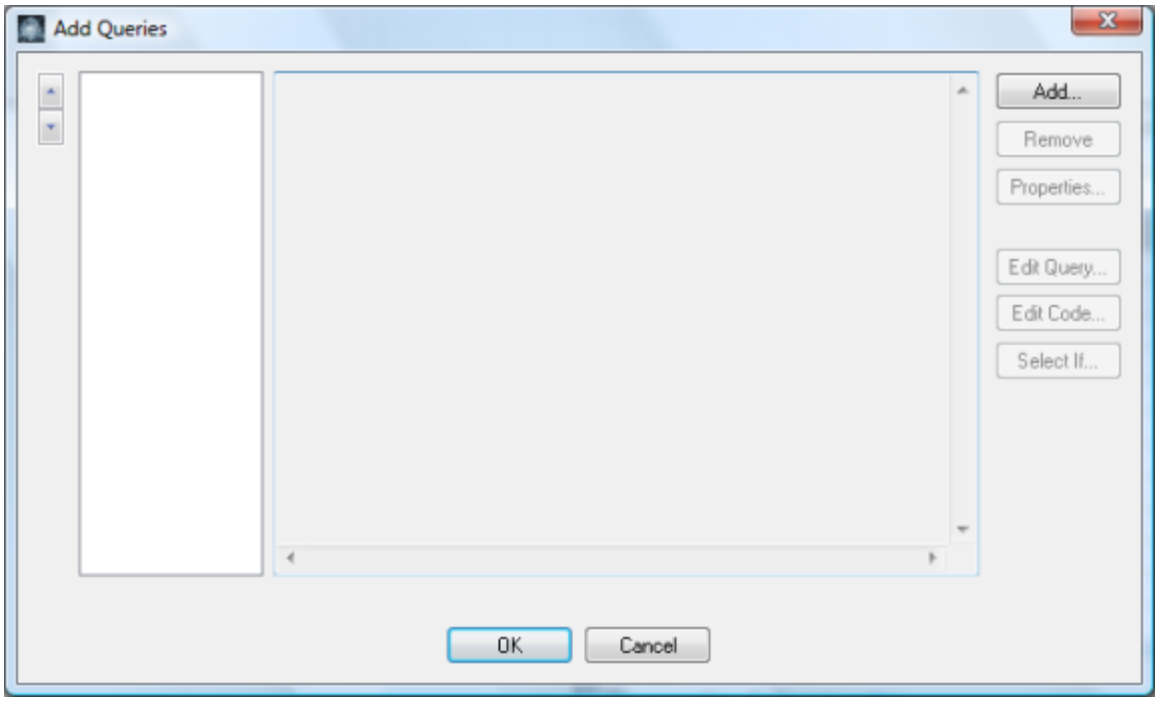


5. Click **Save** to save the prompt form and have it associated with the layout program.

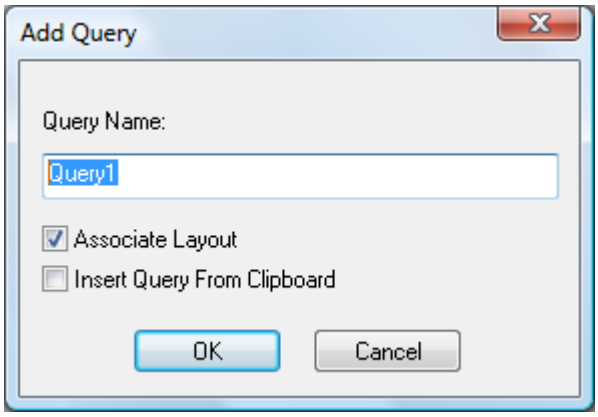
Adding Queries

You are now ready to create the query that retrieves MRN and SSN of people with the last name the user entered at the prompt. This tutorial assumes you are familiar with using Query Builder to create Discern Explorer queries.

1. From the Tools menu, select **Query Builder**. The Add Queries dialog box is displayed:

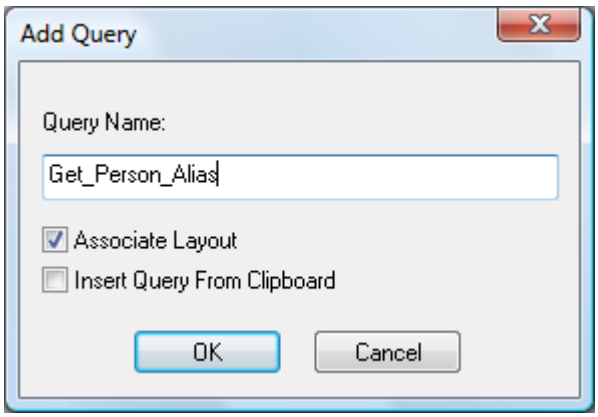


2. Click **Add** to add a query to your layout program. The Add Query dialog box is displayed.



A layout program can have multiple queries to collect data but only one query can be associated with the layout. For example, you might use one query to get all of a person's addresses and store them in a record structure, a second query to get all of a person's phone numbers and store them in the same record structure, and then use a third query to get encounters for the person. The third query could access the information in the record structure and be associated with the layout to display information about the person, their encounters, phone numbers, and addresses. Layout Builder requires that each query be given a name. If the layout program contains multiple queries, they are executed in the order they are displayed on the Add Queries dialog box. Associating the query with the layout enables you to create layout sections that can be used to format the data returned by the query. The name of the query associated with the layout is displayed in **bold** on the Add Queries dialog box. For this simple layout program example you will use a single query to get information about people and their aliases associated with the layout.

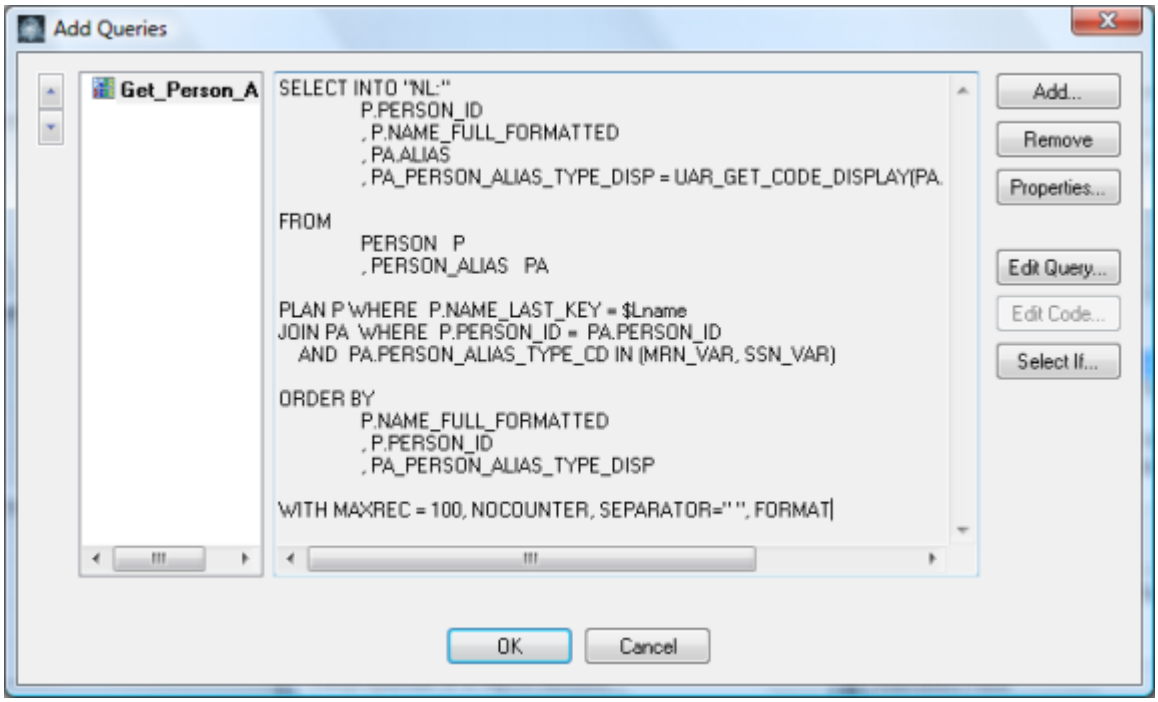
3. Change the Query Name from Query1 to **Get_Person_Aliases**.
4. Verify that the **Associate Layout** option is selected.



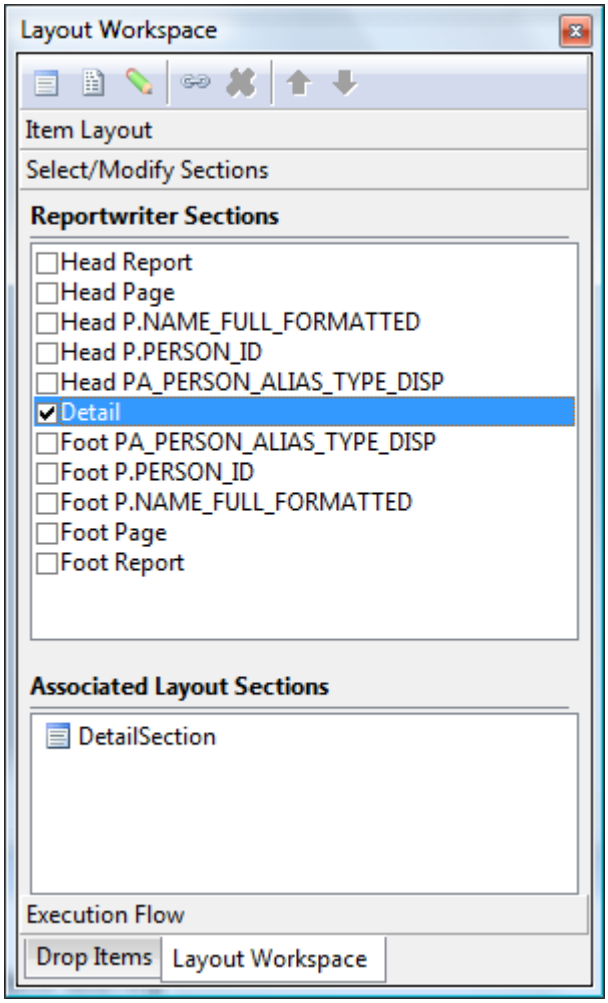
5. Click **OK** to open Query Builder.
6. From the **Tables** tab select the PERSON and PERSON_ALIAS tables. If the PERSON or PERSON_ALIAS table is not displayed, enter **PERSON** in the Table Filter and select the Cerner Millennium folder from the Categories list to display all table names that begin with PERSON. The rest of this section refers to P as the alias for the PERSON table and PA as the alias for the PERSON_ALIAS table.
7. In the **Fields** tab select:
    1. P.PERSON_ID,
    2. P.NAME_FULL_FORMATTED,
    3. PA.ALIAS,
    4. PA.PERSON_ALIAS_TYPE_CD

    Query Builder creates the expression named PA_PERSON_ALIAS_TYPE_DISP by default when the PA.PERSON_ALIAS_TYPE_CD field is selected.
8. Add the following code to the **Qualifications** tab:

9. Using the **Sort** tab, sort on:
    1. P.NAME_FULL_FORMATTED,
    2. P.PERSON_ID,
    3. PA_PERSON_ALIAS_TYPE_DISP
10. In the **Control Options** Tab:
    1. Set the Max Records to 100
    2. Select the Into option and verify that the box is populated with "NL:"
11. Click **Close** to close Query Builder. Your Add Queries dialog box should look similar to the following example:



12. Click **OK** to add the query to your layout program. The Select/Modify Sections dialog box is displayed by default on the Layout Workspace task panel. If the Layout Workspace task panel is not open, from the View menu, select **Layout Workspace**.

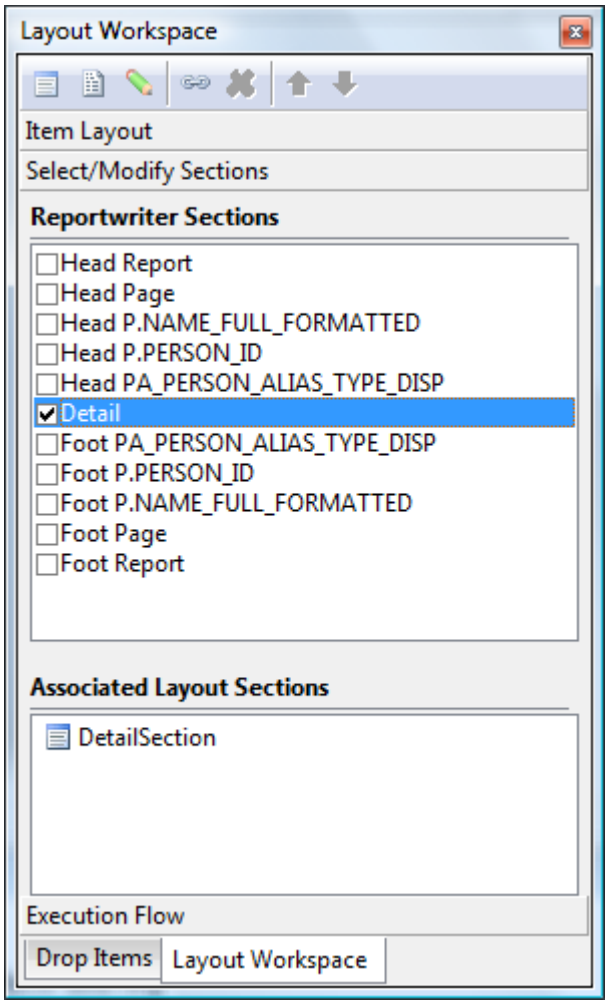


You have completed all of the preliminary work to retrieve people and their aliases. You are now ready to begin using layout sections to format the information returned by the query.

Creating Layout Sections

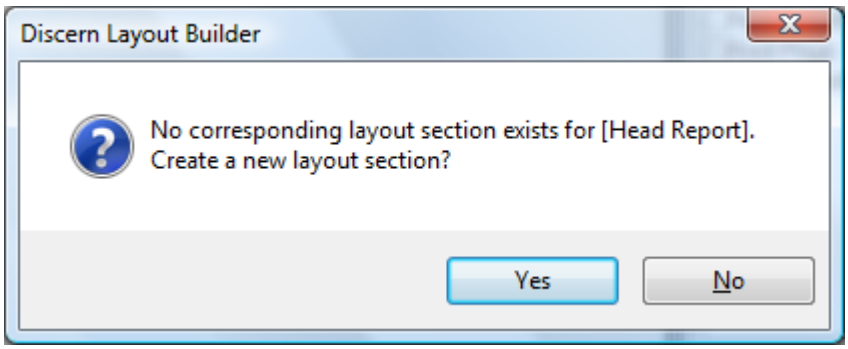
A layout program can be thought of as a multi-page report that allows multiple layout sections on each page. Layout sections can be associated with a reportwriter section of a Discern Explorer select command. Multiple layout sections can be associated with a reportwriter section and a layout section can be referenced in multiple reportwriter sections. When you first created your 1_*your_initials*_Simple_Layout program in the Create a New Layout Program topic, a new layout program with a single section was created. By default, the layout section is named DetailSection.

When you completed the query that is associated with the layout, the Select/Modify Sections dialog box is displayed automatically. The Select/Modify Sections dialog box can also be accessed by selecting **Select/Modify Sections** from the Tools menu. The Select/Modify Sections dialog can be used to create and associate layout sections with reportwriter sections.

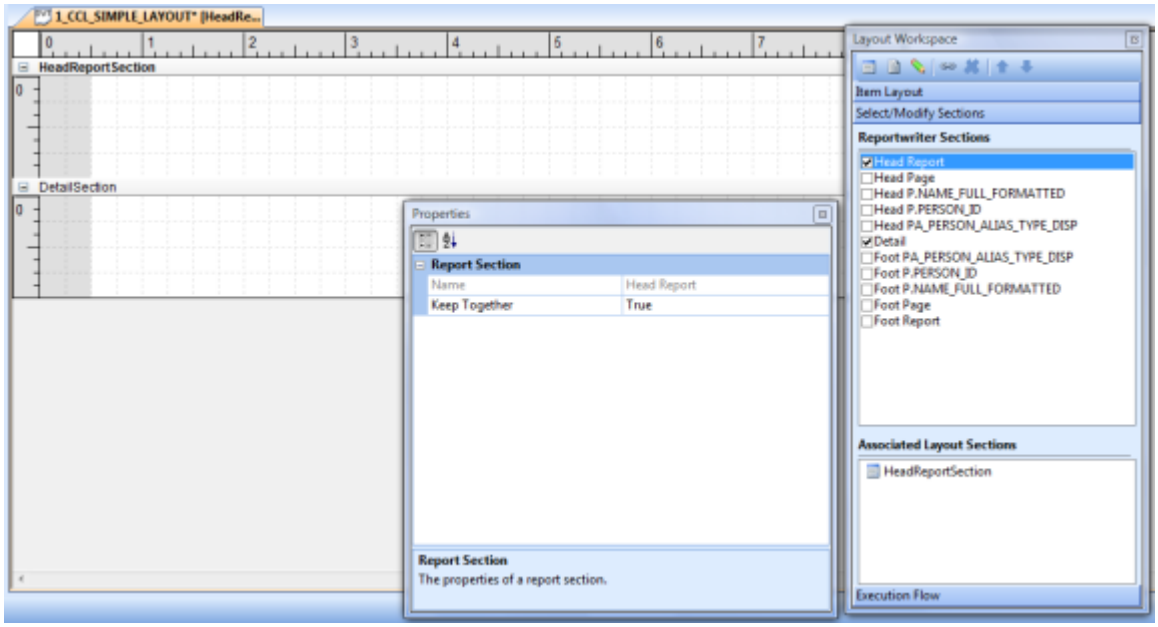


The Reportwriter sections always contain the Head Report, Head Page, Detail, Foot Page and Foot Report sections. If the query associated with the layout uses an Order clause, a head and foot reportwriter section is available for each item in the Order clause. In the simple layout program you want to display information in the following places: at the very beginning of the report, at the top of each page, for each person, for each alias, at the bottom of each page, and at the very end of the report. To accomplish this, you want at least one layout section for the head and foot report, the head and foot page, the head and foot PERSON_ID, and the detail reportwriter sections. Selecting reportwriter sections and clicking **OK** generates a layout section that is associated with the reportwriter section.

1. Select the **Head Report** option. The following Discern Layout Builder message is displayed.

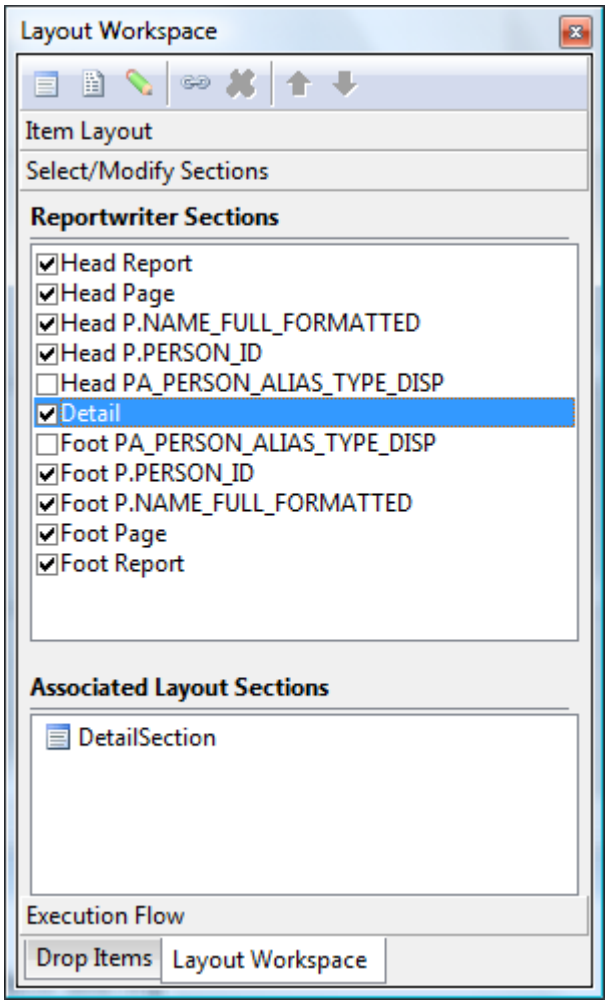


2. Click **Yes** to create a new HeadReportSection as shown in the example:

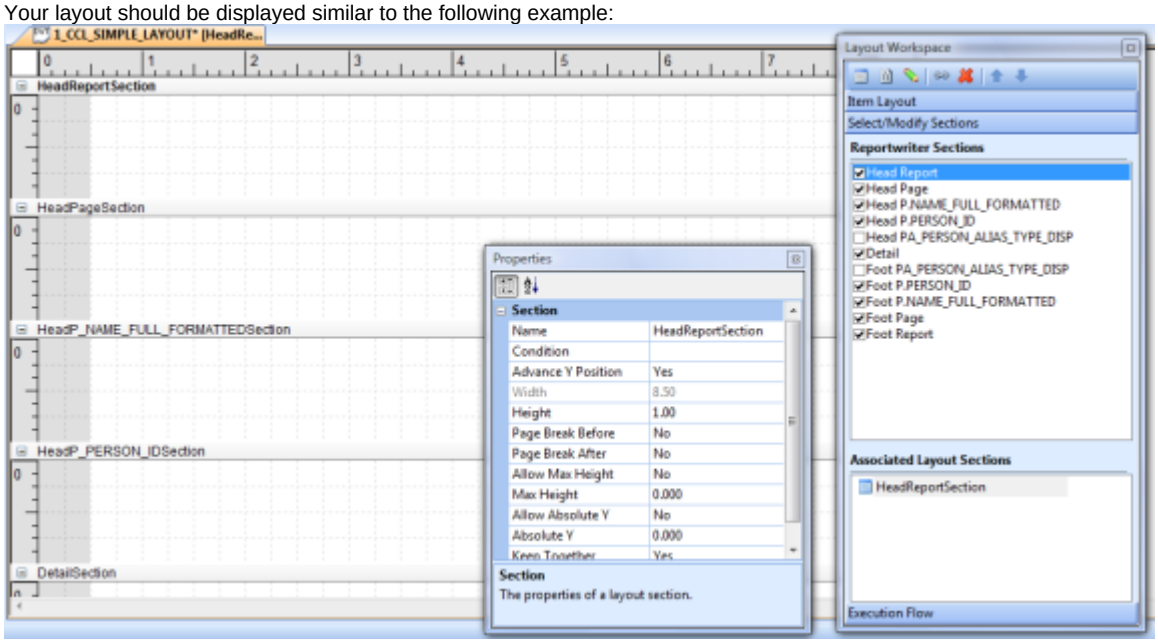


3. Repeat this process by selecting the following reportwriter sections:
    1. Head Page
    2. Head P.NAME_FULL_FORMATTED
    3. Head P.PERSON_ID
    4. Detail (since a layout section named DetailSection already exists, you will not be prompted to create one)
    5. Foot P.PERSON_ID
    6. Foot P.NAME_FULL_FORMATTED
    7. Foot Page
    8. Foot Report

    The Select/Modify Sections will look similar to the following example:



Your layout should be displayed similar to the following example:



If your layout is displayed differently, make sure you have Properties, Horizontal Ruler, Vertical Ruler, Grid, Margins, and Section Title bars selected on the View menu.

Moving Layout Sections

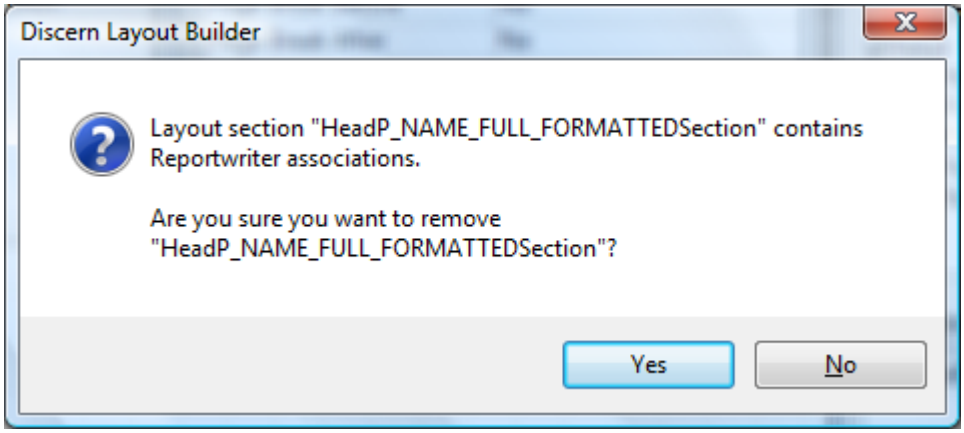
The Layout Builder attempts to put the sections in the order according to its own logic. Confirm that the sections are listed in the following order:

1. HeadReportSection
2. HeadPageSection
3. HeadP_NAME_FULL_FORMATTEDSection
4. HeadP_PERSON_IDSection
5. DetailSection
6. FootP_PERSON_IDSection
7. FootP_NAME_FULL_FORMATTEDSection
8. FootPageSection
9. FootReportSection
   If you find that the sections are out of order, click the ruler below the Section. When a layout section is active, the name is displayed in bold on the DVDev title bar. Drag the Section where you want the section to be placed. You might also drag the section title bar to the area where you want it placed.

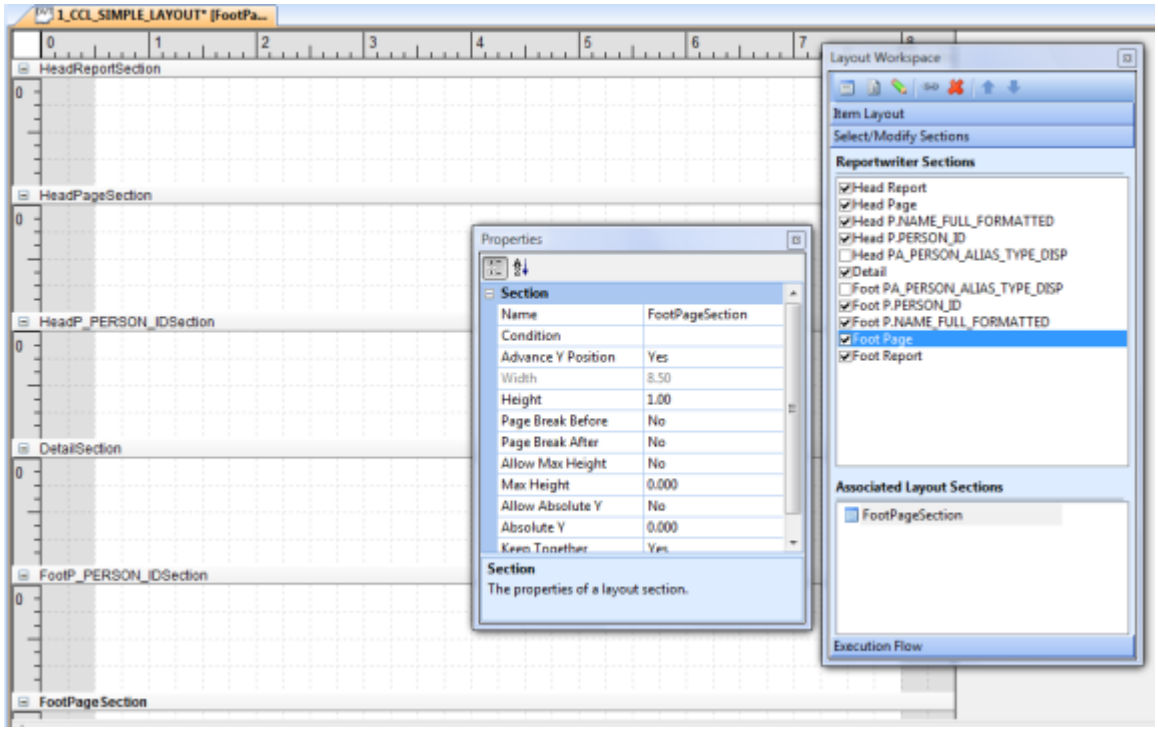
Removing Layout Sections

In the preceding steps, you created a HeadP_NAME_FULL_FORMATTEDSection layout. This section will not be used, so you should remove it.

1. Click the **HeadP_NAME_FULL_FORMATTEDSection** to ensure it is active and from the Edit menu, select Remove > **Section**. The following Discern Layout Builder message box is displayed:



2. Click **Yes** to remove the HeadP_NAME_FULL_FORMATTEDSection.
3. Repeat the above steps to remove the FootP_NAME_FULL_FORMATTEDSection.Your layout should look similar to the following screen:



In the above steps you associated a layout section to a reportwriter section. However, it is not required to create an association between the layout and reportwriter section as they are not directly linked. Although you deleted the Head and FootP_NAME_FULL_FORMATTED layout section, the Head and

Foot P.NAME_FULL_FORMATTED Reportwriter Section are still selected. The Reportwriter sections are independent of the layout sections unless you create the association. You can associate the reportwriter sections to different layout sections. Keeping the Head and Foot P.NAME_FULL_FORMATTED group section can be important for possible code segments such as incrementing a counter.

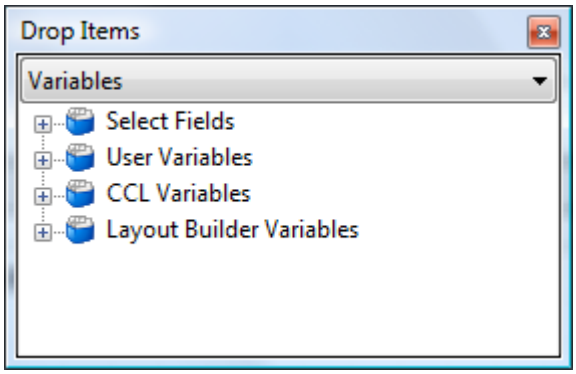
Adding Layout Sections

Layout sections can be added using Insert > **Section** on the Edit menu. When a new layout section is inserted, it needs to be added to a reportwriter section using Select/Modify Sections on the Tools menu. You will learn about this process later in this tutorial.

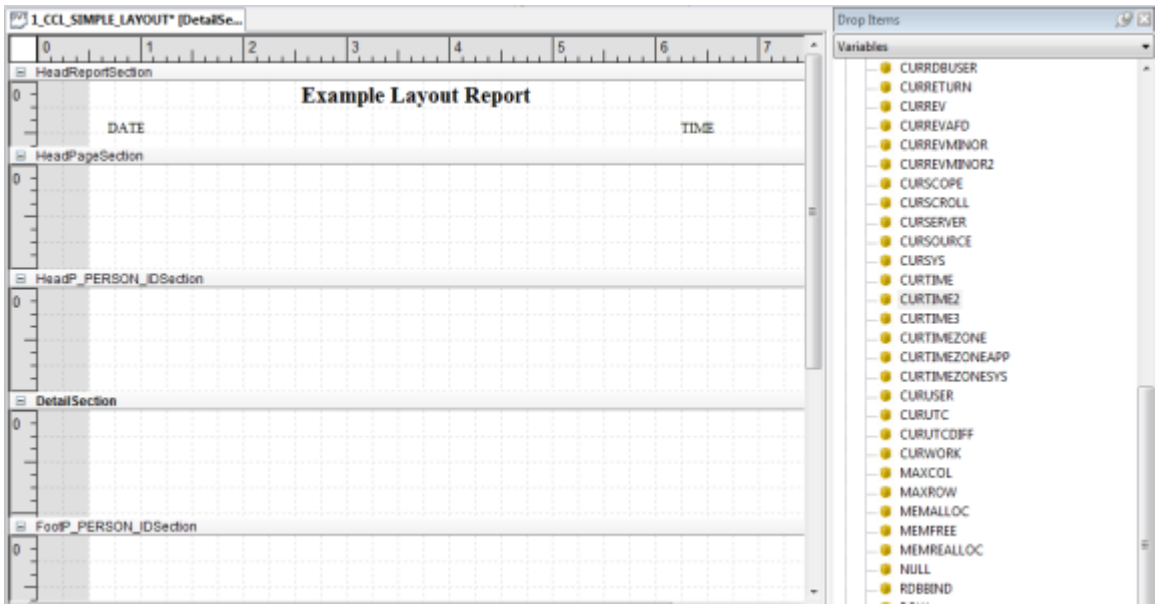
Adding Labels and Fields to Sections

You are ready to begin adding items to your layout to format the output from the query.

1. Using the Label tool  , add the title **Example Layout Report** to the HeadReportSection.
2. In the Properties window, set the Font Name to **Times**, the Font Size to **16** and the Font Bold to **Yes**. Move the title to the center of the section, towards the top.
3. Expand the CCL Variables by clicking the plus sign (+) from the Drop Items window. If the Drop Items window is not open, select **Drop Items** from the View menu. The Drop Items dialog is shown below.



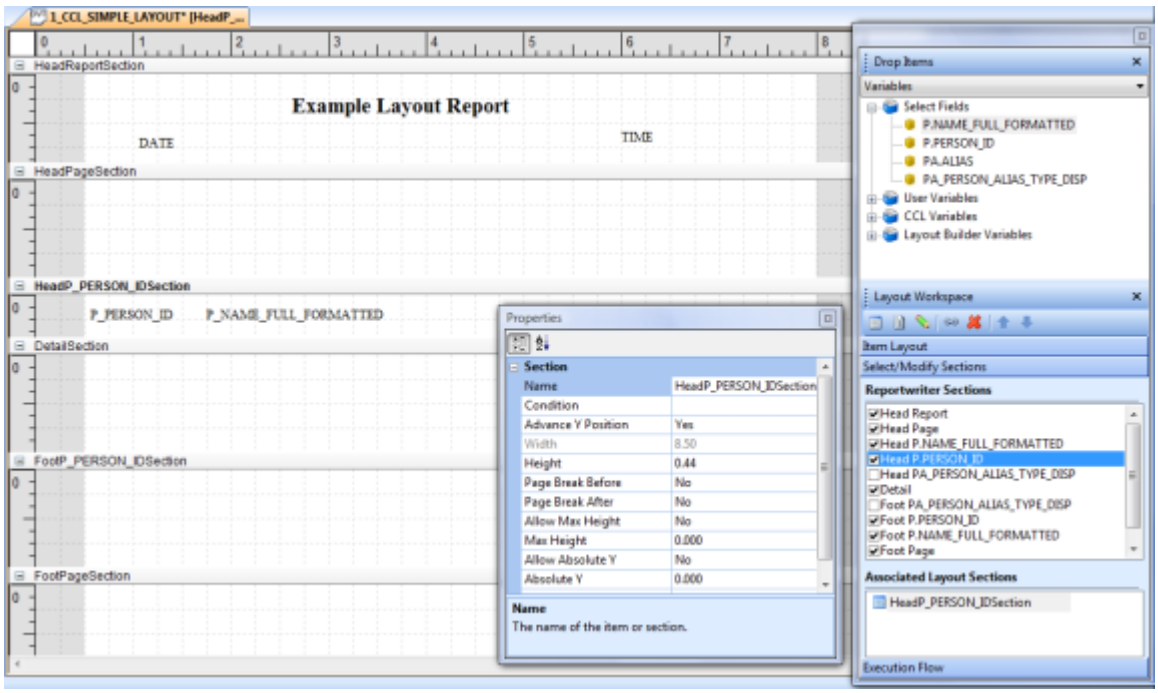
4. Drag the **CURDATE** variable from the CCL Variables list to the HeadReportSection under the title and to the left of the section. Use the handles to increase the size of the field as needed to display the entire field name. In the Properties dialog box, modify the Name property to **Date**.
5. Drag the **CURTIME2** variable from the CCL Variables list to the HeadReportSection under the title and to the right of the section. Use the handles to increase the size of the field as needed to display the entire field name. In the Properties dialog box, modify the Name property to **Time**.
6. Get rid of any extra spacing between the HeadReportSection and the HeadPageSection by slowly moving your pointer over the HeadPageSection title bar. At the top of the title bar the pointer changes to a Vertical Resize pointer. When the pointer changes, drag the HeadPageSection title bar up to the bottom of the date and time fields. Your layout should be similar to the following example:



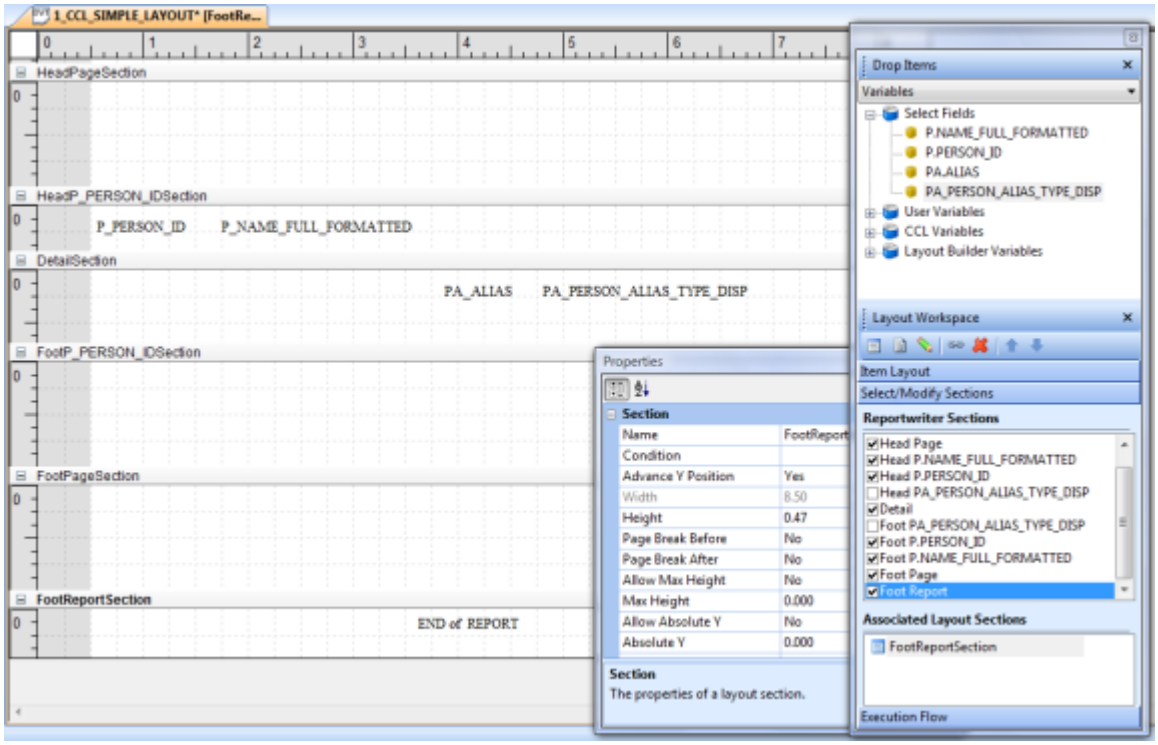
7. Expand the Select Fields list on the Drop Items dialog by clicking the plus sign (+) .
8. Drag the **P.Person_ID** field from the Select Fields to the HeadP_Person_IDSection to display the P.Person_ID field. Use the handles to increase the size of the field as needed to display the entire field name.
9. Click and drag the **P.Name_Full_Formatted** field from the Select Fields list and drop it in the HeadP_Person_IDSection to display the

P.Name_Full_Formatted field. Use the handles to increase the size of the field as needed to display the entire field name.

10. Using the vertical resize, click and drag DetailSection up to the bottom of the fields you just added. You layout should be similar to the following example:



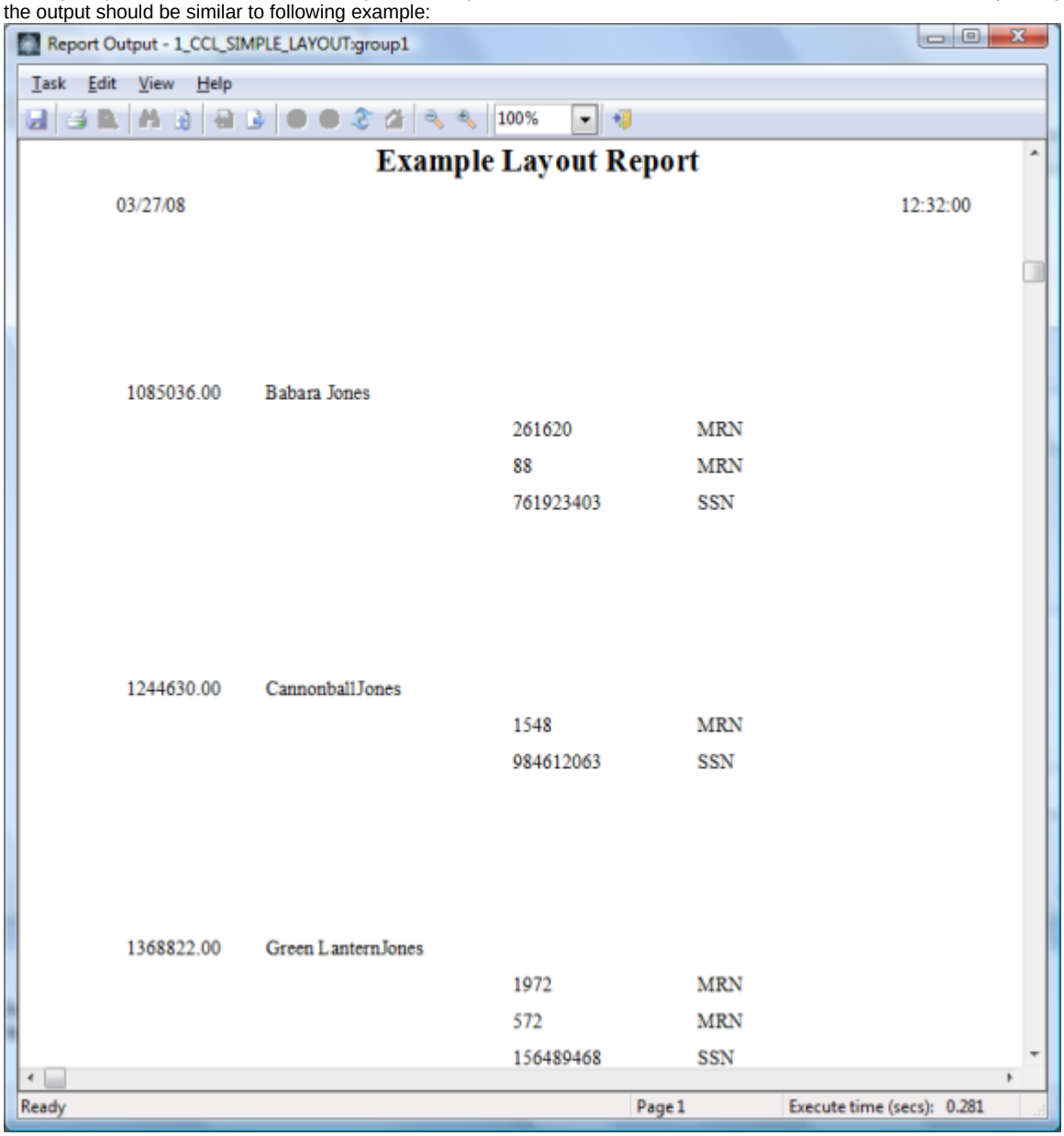
11. Click and drag the **PA.Alias** field from the Select Fields list and drop it in the DetailSection (towards the middle of the section). Use the handles to increase the size of the field as needed to display the entire field name.
12. Click and drag the **PA_Person_Alias_Type_Disp** field from the Select Fields list and drop it in the DetailSection to the right of the PA.ALIAS. Use the handles to increase the size of the field as needed to display the entire field name.
13. Using the vertical resize, click and drag FootPersonIDSection up to the bottom of the fields you just added.
14. Using the Label tool  , add the label **End of Report** to the FootReportSection.
15. Using the vertical resize, click and drag the bottom of the FootReportSection up to just below the End Report label you just added. Your layout should be similar to the following screen:



Next, test the layout program to see what the output will look like.

16. From the Build menu, select **Run "*Your_Layout_Program*"** or press CTRL+F5 to execute your layout program.
17. Click **Yes** when prompted to save the layout program.

When prompted, enter the last name of a person that you know has an MRN and or SSN and click **Execute**. Once your layout program has executed, the output should be similar to following example:

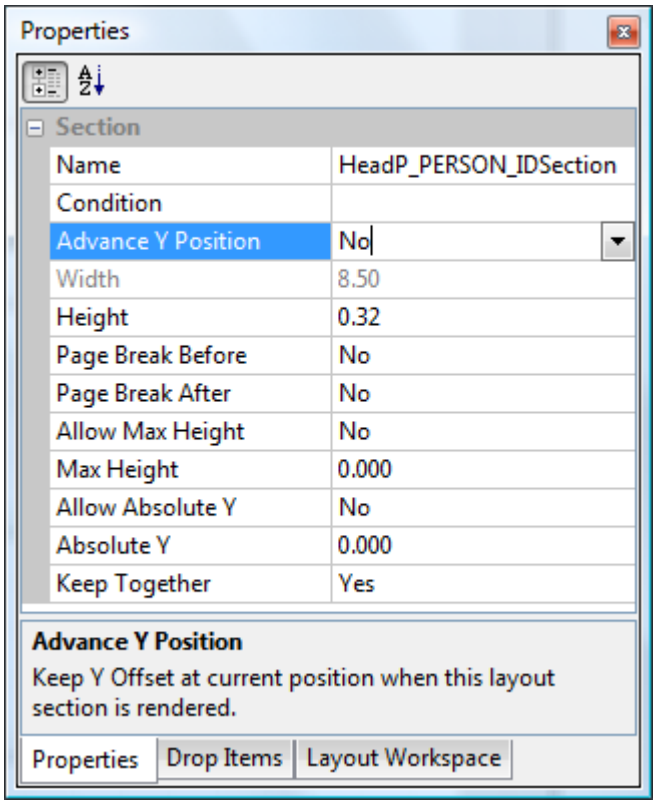


If you receive errors when you attempt to execute your layout program, remember this is the first time you have attempted to compile and execute the program. Any typos or errors you might have made in the preliminary steps while adding the code values, prompts, query, or the layout sections can result in errors at this point. Use the error messages and review the prior steps to correct any errors you receive.

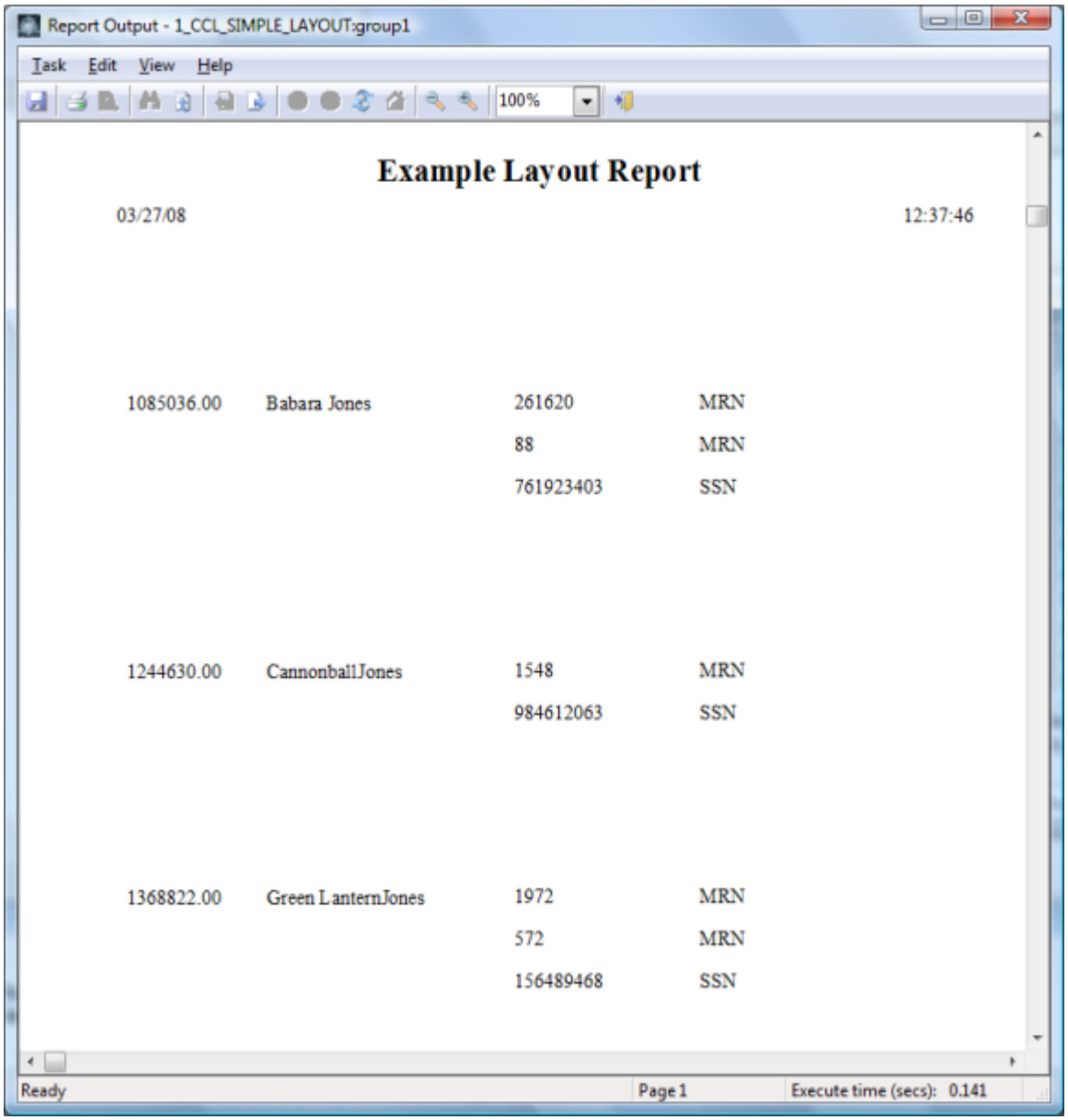
Looking at the output, note that there is a lot of white space. Most of the white space is caused by the empty layout sections. For example, the HeadPageSection, FootPageSection, and FootP_Person_IDSection all are empty. When the layout program is executed, any white space in a section is rendered as white space in the output. That is why you use the vertical resize pointer to drag the section title bar of the following section up to the bottom of the items you placed in a particular section. You will use and resize the empty sections that are currently in your layout later in this tutorial, so at this point do not worry about the white space.

You also might notice a person's first alias is not on the same line as their name and person ID. A layout program automatically moves down the page at the end of each section. You can modify the behavior of the section by modifying the section properties. To have the person's first alias display on the same line as their name and person ID, modify the properties on the HeadP_Person_IDSection.

18. Close the Report Output window and click the **HeadP_Person_IDSection** to ensure it is active.
19. In the Properties dialog box, modify the Advance Y Position from Yes to No. Your Properties dialog box should look similar to the following example:



20. From the Build menu, select **Run "*Your_Layout_Program*"** or press CTRL+F5 to execute your layout program.
21. Click **Yes** when prompted to save the layout program.
22. When prompted, enter the last name of a person that you know has an MRN or SSN and click **Execute**. Once your layout program is executed, the output should look similar to the following example:



23. Close the Report Output when finished.

Page of Page

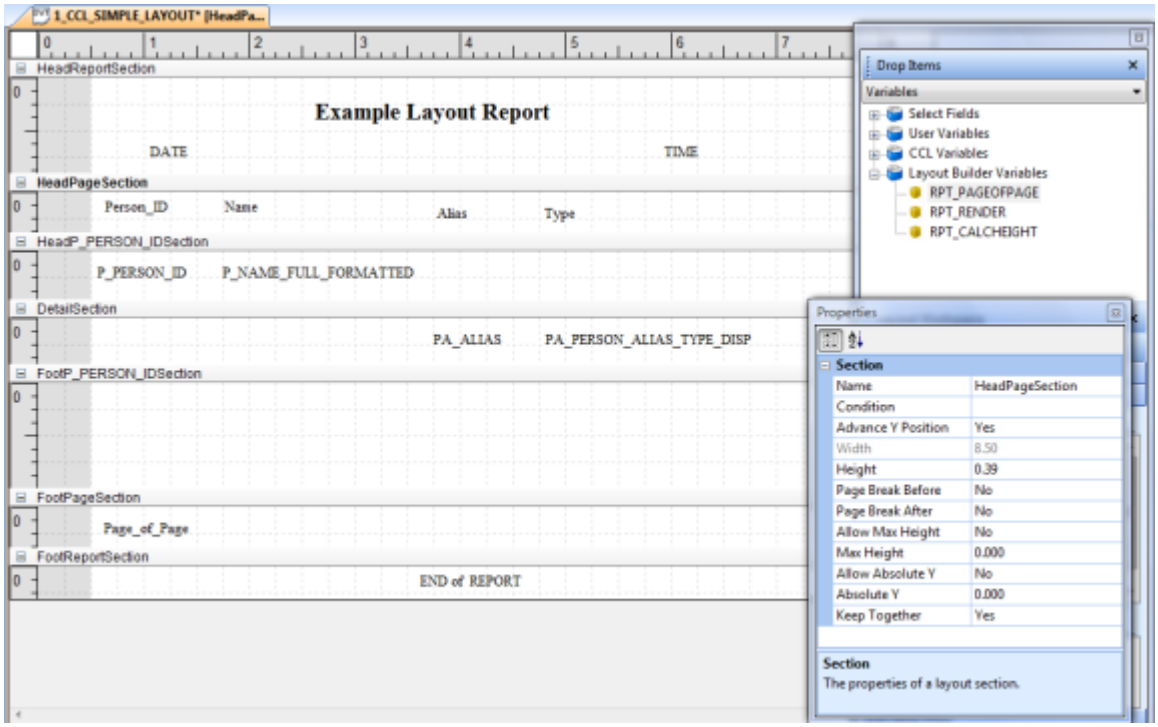
A common request is for reports to display the current page number and the total number of pages. Using only Discern Explorer reportwriter sections in a select command to provide this functionality requires a lot of custom programming. However, layout programs provide this functionality using the special RPT_PageOfPage variable. This variable is created by the layout program and only can be referenced in programs that use layouts.

1. Expand the Layout Builder Variables list on the Drop Items dialog by clicking on the plus sign (+) from the Drop Items.
2. Drag the RPT_PAGEOFPAGE variable from the list to the FootPageSection to the left of the section. Use the handles to increase the size of the field as needed to display the entire field name. In the Properties dialog box, modify the Name to **Page_Of_Page**.
3. Using the vertical resize, drag FootReportSection up to the bottom of the field you just added.

Column Headers

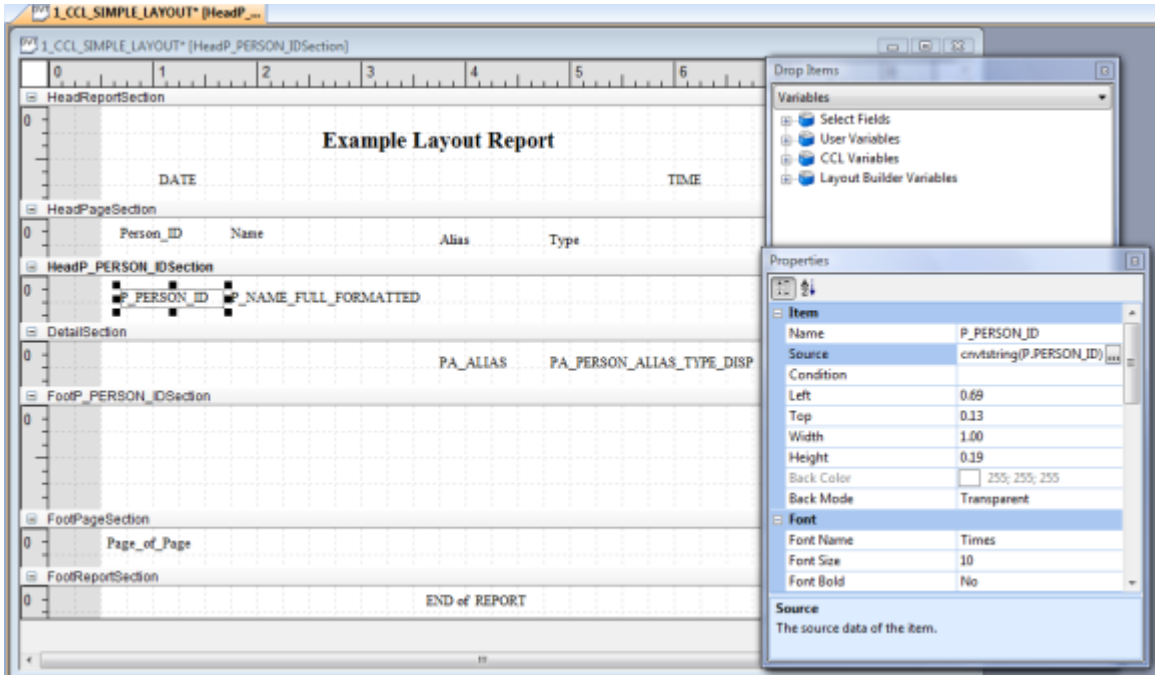
1. Use the Label tool  to add column headers to the HeadPageSection. Place the following items in the HeadPageSection in vertical alignment with the corresponding items in the HeadPersonIdSection and the DetailSection:
    1. Person ID
    2. Name
    3. Alias
    4. Type
2. Using the vertical resize, drag the HeadPersonIdSection up to the bottom of the labels you just added. Your layout should look similar to the following

example:



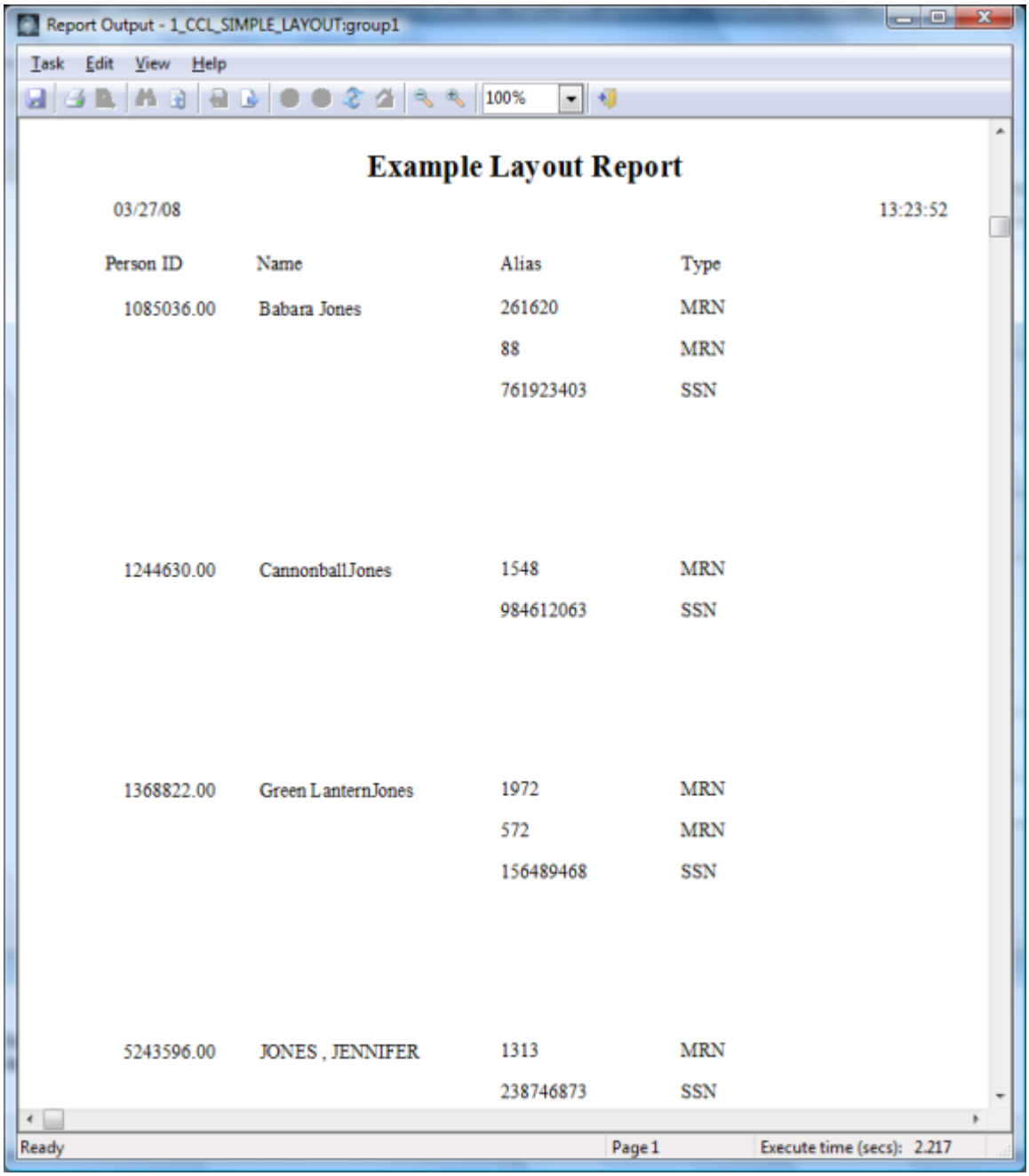
3. From the Build menu, select **Run "*Your_Layout_Program*"** or press CTRL+F5 to execute your layout program.
4. Click **Yes** when prompted to save the layout program.
5. When prompted, enter the last name of a person you know has an MRN or SSN and click **Execute**. Once your layout program is executed, the output should be similar to following example:

   Aligning data with different data types
   Notice in the output example above, the Person_ID: label and the actual person IDs are not aligned. Since the Person_ID: label is a character data type, it is left-justified within the layout field, and since the actual Person IDs are a numeric data type they are right-justified within the layout field. There are several ways to correct this apparent misalignment. One method is to ensure the layout fields are the same width and then click the **Right Justify** button  on the Formatting toolbar. to right-justify the label. Another issue with the display of the actual Person IDs is that because they are F8 data type fields, the default display format is to show two digits to the right of the decimal point. A simple method to eliminate the .00 from the actual person IDs and have them left-justified is to convert them to a string.
6. Click the **Person_ID** field in the HeadPersonIDSection and modify the Source from P.Person_ID to CNVTSTRING(P.Person_ID). Your layout should be similar to the following example:



7. From the Build menu, select **Run "*Your_Layout_Program*"** or press CTRL+F5 to execute your layout program.

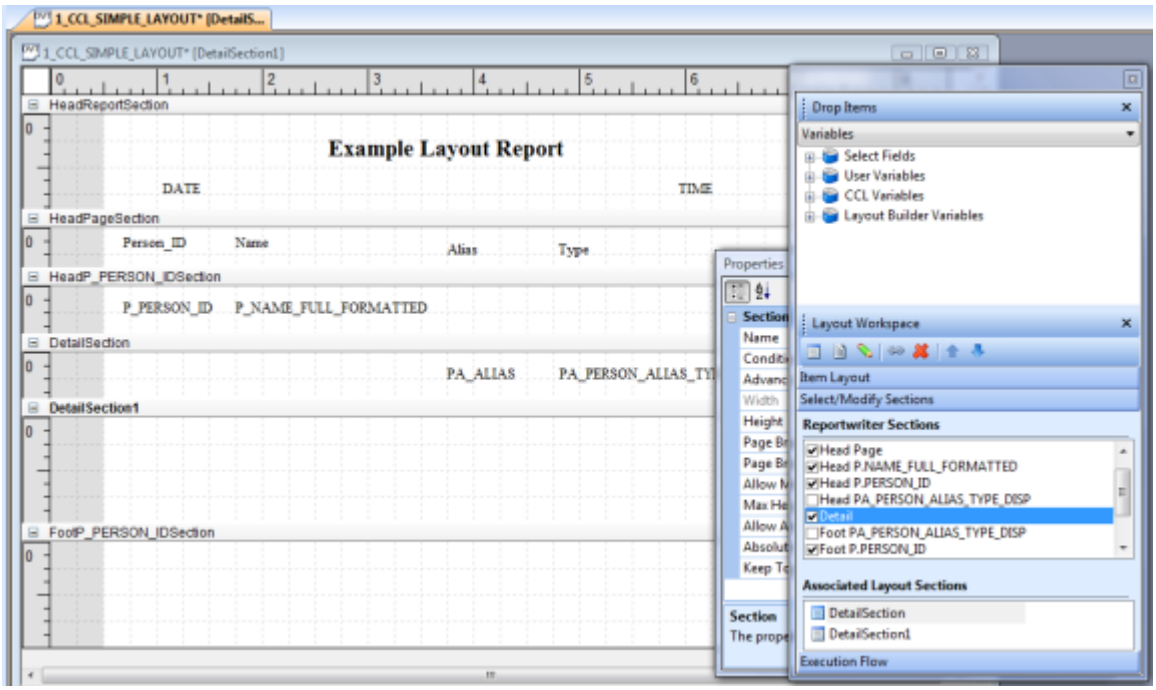
8. Click **Yes** when prompted to save the layout program.
9. When prompted, enter the last name of a person that you know has an MRN or SSN and click **Execute**. Once your layout program is executed, the output should be similar to following example:



Using Multiple Layout Sections in a Reportwriter Section

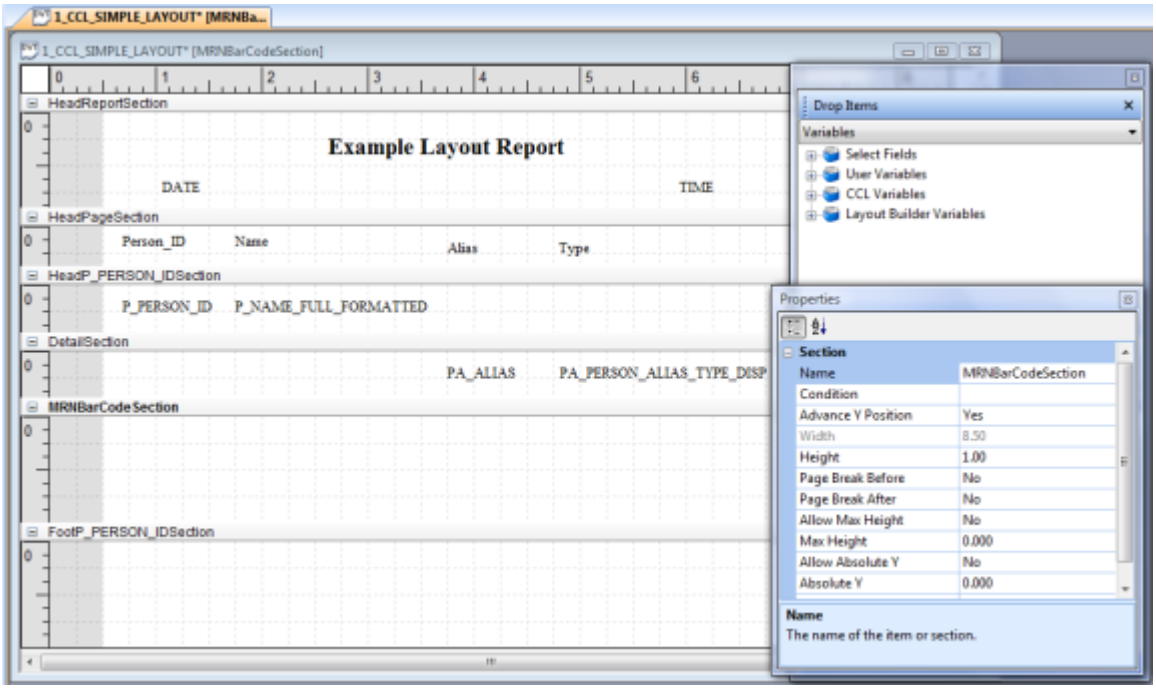
Layout programs allow you to use more than one layout section in a reportwriter section.
A common instance for using multiple layout sections within a reportwriter section is when you want to display information if a condition is true. For example, suppose in addition to displaying the MRN as text, you also want to display the MRN as a bar code below the text. You can do this by using the bar code tool to place the bar code below the alias and use a condition to only display the bar code if the alias is a MRN. A possible problem with this method is that when the alias is not an MRN, white space is displayed in the bar code area when the layout program is executed. To eliminate the extra white space when the alias is not an MRN, you can create a second layout section in the Detail reportwriter section. You then can place the bar code item in this layout section and use a condition on the layout section to only render when the alias is an MRN. Layout sections can be added and associated to the reportwriter section by using the New Layout Section icon on the Layout Workspace dialog box.

1. Click the **DetailSection** in your layout to ensure it is active.
2. Click the **New Layout Section** button on the Layout Workspace toolbar. If the Layout Workspace toolbar is not in view in your window pane, from the View menu, select **Layout Workspace**.

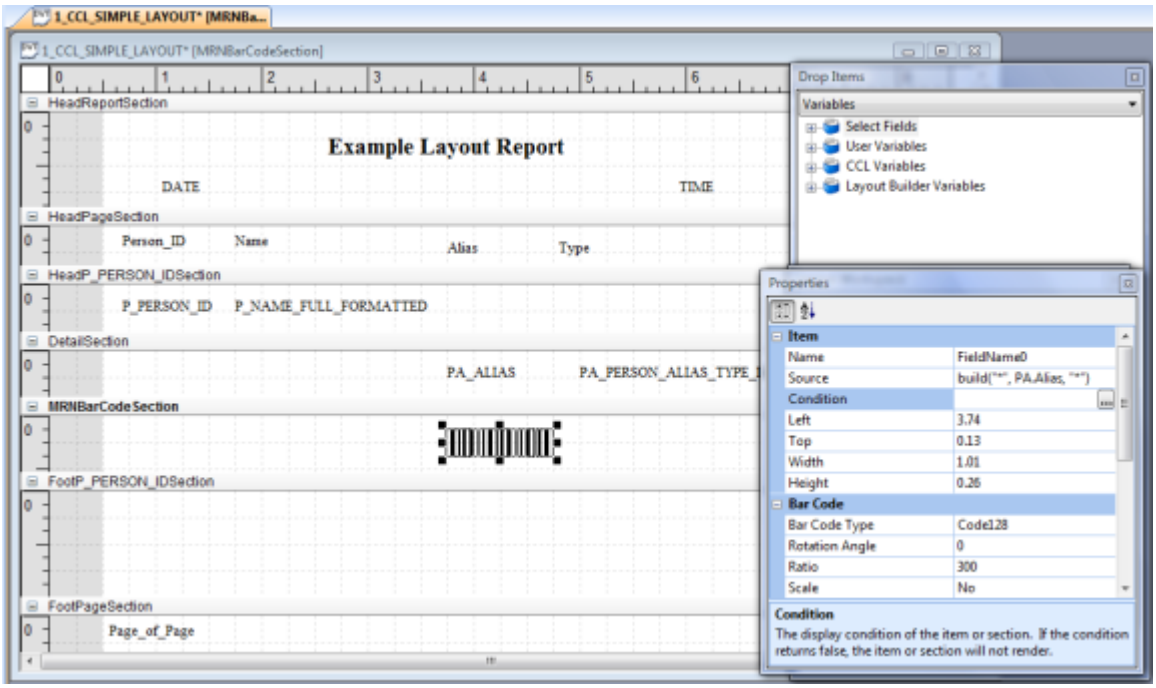


The new section is automatically inserted in the ordered position based on the selected Reportwriter section. In our example, the DetailSection1 is created directly below the DetailSection. As a layout section can be associated to a Reportwriter section, for each section, there is an Associated Layout Section which displays a list of associated layout sections. In the above screenshot, note that the DetailSection1 layout section is active. The Associated Layout Sections list both the DetailSection and the DetailSection1. Adding the new layout section below the DetailSection that currently is associated with the Detail reportwriter section helps keep the layout view looking like the output. When your layout program is executed, the query associated with the layout is executed and returns a result set. For each record returned by the query, the Detail reportwriter section is executed. Each time the Detail reportwriter section is executed, the DetailSection and DetailSection1 layout sections are also executed.

3. Use the Properties window to modify the name of your new layout section to **MRNBarCodeSection**. Your layout should look similar to the following example:

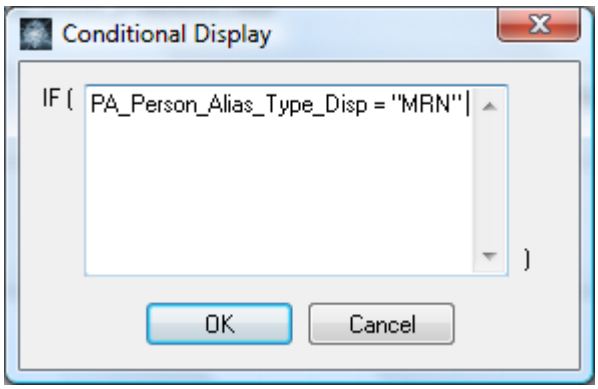


4. Use the bar code  tool to place a bar code field in the MRNBarCodeSection. Place the field so that it is vertically aligned with the Alias field in the DetailSection.
5. In the Properties window, enter **build(""**, PA.Alias, **"")** as the source. Since the default Bar Code Type is Code128, an asterisk (*) is added as start and stop characters to the PA.Alias field using the Build() function. Your layout should be similar to the following example:

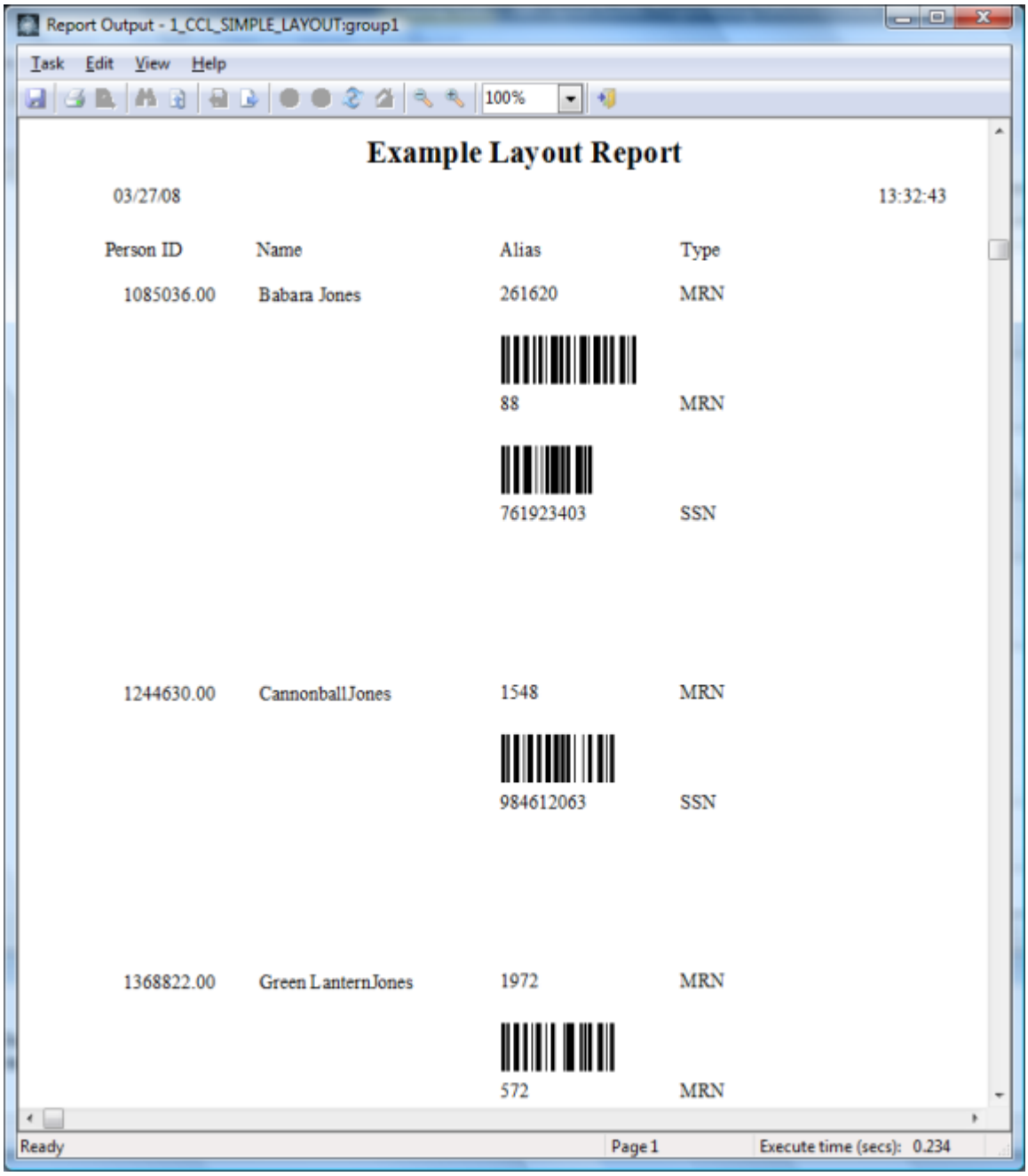


6. Use vertical resize to drag the FootP_Person_IDSection up to the bottom of the bar code field you just added.

   You now have created a second layout section (MRNBarCodeSection) that displays each alias as a bar code. You must add a condition to the MRNBarCodeSection so that it only executes when the alias is an MRN.
7. Click the **MRNBarCodeSection** bar and verify the Properties window is displaying the properties for the MRNBarCodeSection.
8. Click the **Condition** property and then the ellipsis  button to open the Conditional Display dialog box.
9. Enter **PA_Person_Alias_Type_Disp = "MRN"** in the IF statement.



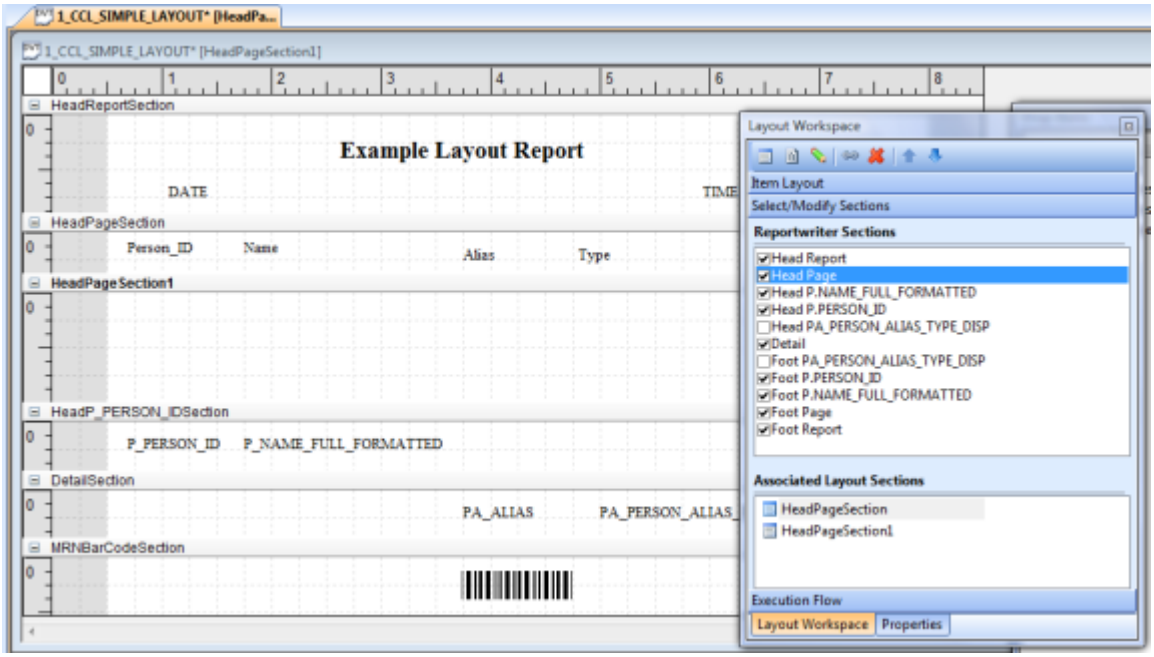
10. Click **OK** to close the Conditional Display dialog box. Using the conditional display causes the section to only be executed when the condition is true.
11. From the Build menu, select **Run "*Your_Layout_Program*"** or press CTRL+F5 to execute your layout program.
12. Click **Yes** when prompted to save the layout program.
13. When prompted, enter the last name of a person that you know has an MRN or SSN and click **Execute**. Once your layout program is executed, the output should look similar to following example:



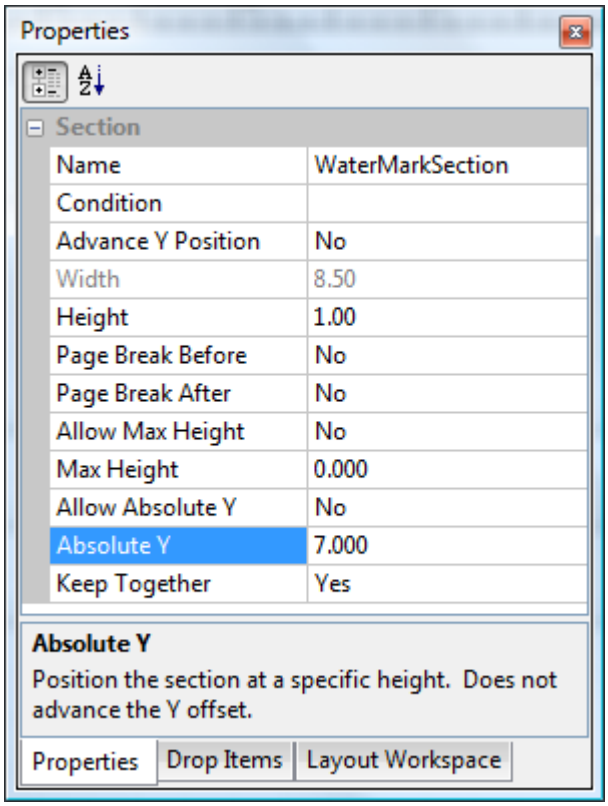
Another example of using multiple layout sections within a reportwriter section is when you want to display large or irregular items. For example, if you want to display some information on the side of each page rotated to a vertical position and some other information across the top of the page in a horizontal position, you can use one large layout section in either the head or foot page reportwriter section. However, using the large section might make the layout view cluttered and difficult to read. Using two layout sections, one for the vertical text and the other for the horizontal text, helps alleviate this problem. A similar example that is useful in your person alias report is to display a watermark diagonally across the page that says "Confidential" to remind the person reviewing the report that it contains confidential information. Using a separate layout section for the watermark allows it to be displayed in the background and display other items over it. To make the layout view easier to read you could place the watermark section at the end of the layout but associate it to the Head Page reportwriter section.

14. Click the **HeadPageSection** to ensure that it is active.
15. Click the **New Layout Section** button on the Layout Workspace toolbar. If the Layout Workspace toolbar is not in view in your window, from the View menu, select **Layout Workspace**. The new section is created directly below the HeadPageSection and is associated with the Head Page

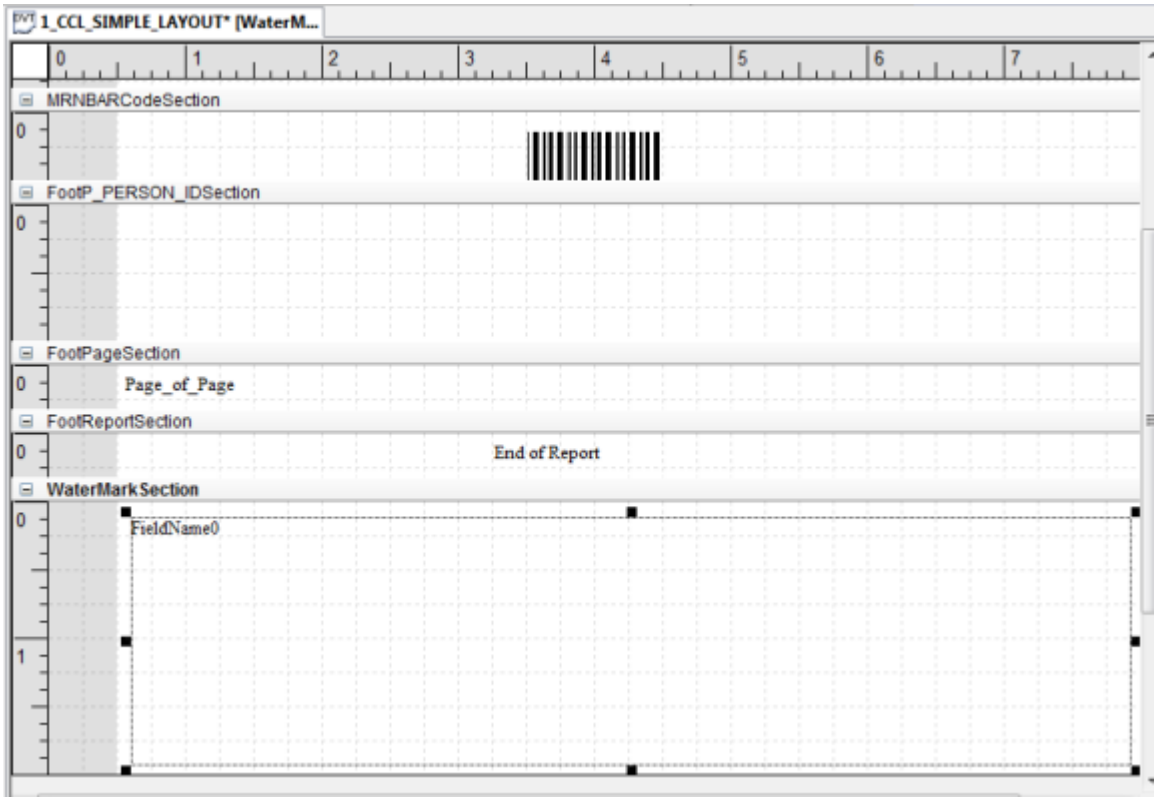
reportwriter section. Your layout should look similar to the following example:



16. Click the new section name (HeadPageSection1) listed in the Associated Layout Sections. Click the **Move Up** button  to move the new section to the top. Moving the new section (HeadPageSection1) to the top of the Selected Sections list enables it to be rendered before the HeadPageSection is rendered. Since these two layout sections are added to the Head Page reportwriter section, each layout section is rendered each time a page break is generated. Having the new section (HeadPageSection1) rendered as the first layout section on the page ensures that any other layout section is rendered over the watermark.
17. Move the new section to the bottom of all of the layout sections by selecting the section bar header or the ruler underneath the header and dragging the section down. Drop it once your cursor is in the middle of the FootReportSection. Placing the section at the bottom makes the layout view easier to read and appear less cluttered.
18. Use the Properties window to change the name of your new layout section to **WaterMarkSection**.
19. Modify the Advance Y Position to **No**. Not advancing the Y position allows the top of the next section to be rendered in the same location as the top of this section.
20. Modify Allow Absolute Y to **Yes**.
21. Modify Absolute Y to **7.0**. Allowing Absolute Y and setting Absolute Y to 7.0 causes the lower-left corner of this section to be rendered 7 inches down the physical page. Your Properties window should look similar to the following example:

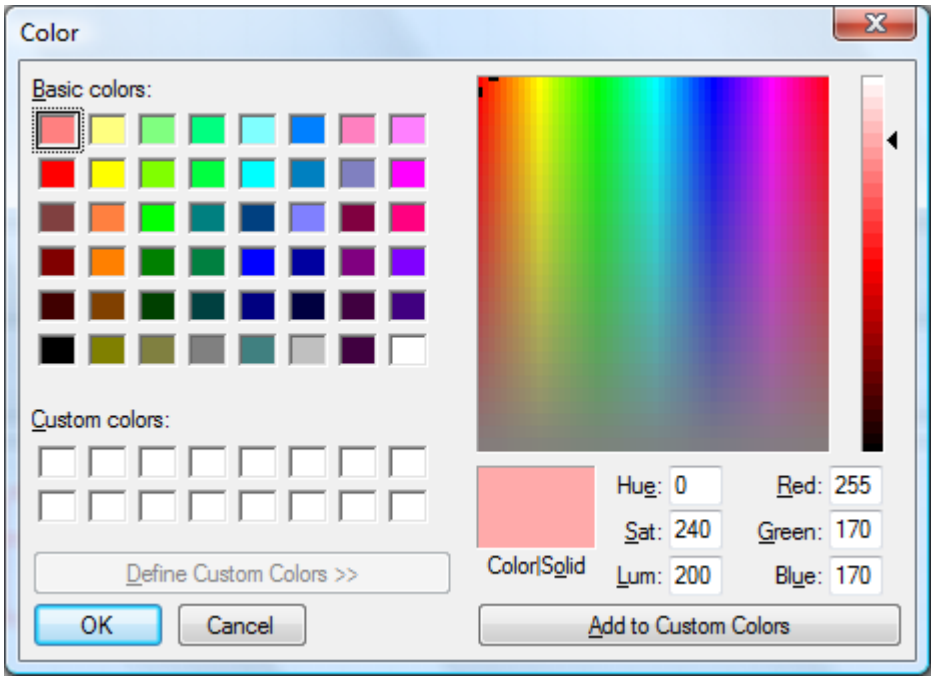


22. By default, the section is created with a height of one inch. Modify Height to **2.00**. You could also use the vertical resize to drag the bottom of the section down.
23. Use the Label tool  to add a field to the WaterMarkSection.
24. Use the handles to expand the size of the field until it is large enough to cover most of the WaterMarkSection.

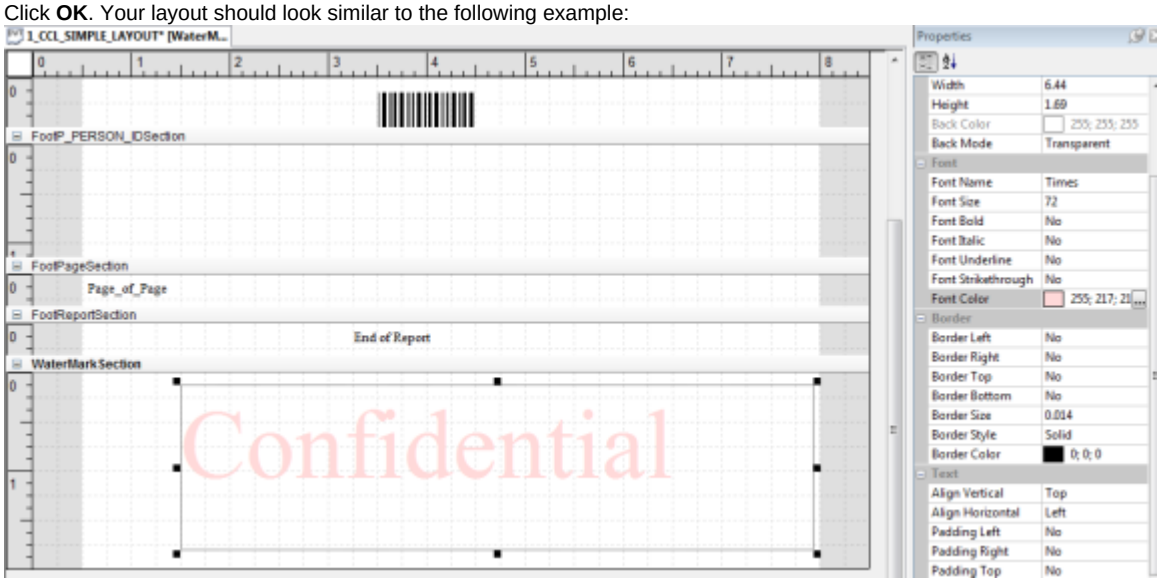


25. In the Properties window, enter **Confidential** as the source.
26. Set the Font Size to **72**.
27. Set the Font Color to a very light red.

    To get the color light enough for the watermark, use the color sliding scale by clicking the **Define Custom Colors >>** button on the Color dialog box.

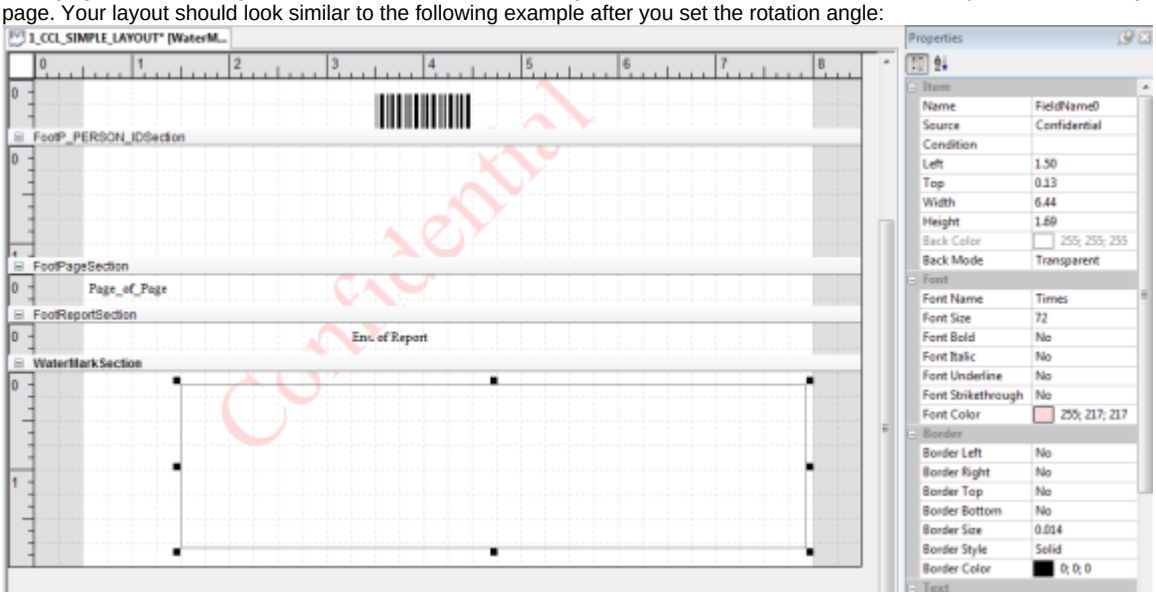


Click **OK**. Your layout should look similar to the following example:

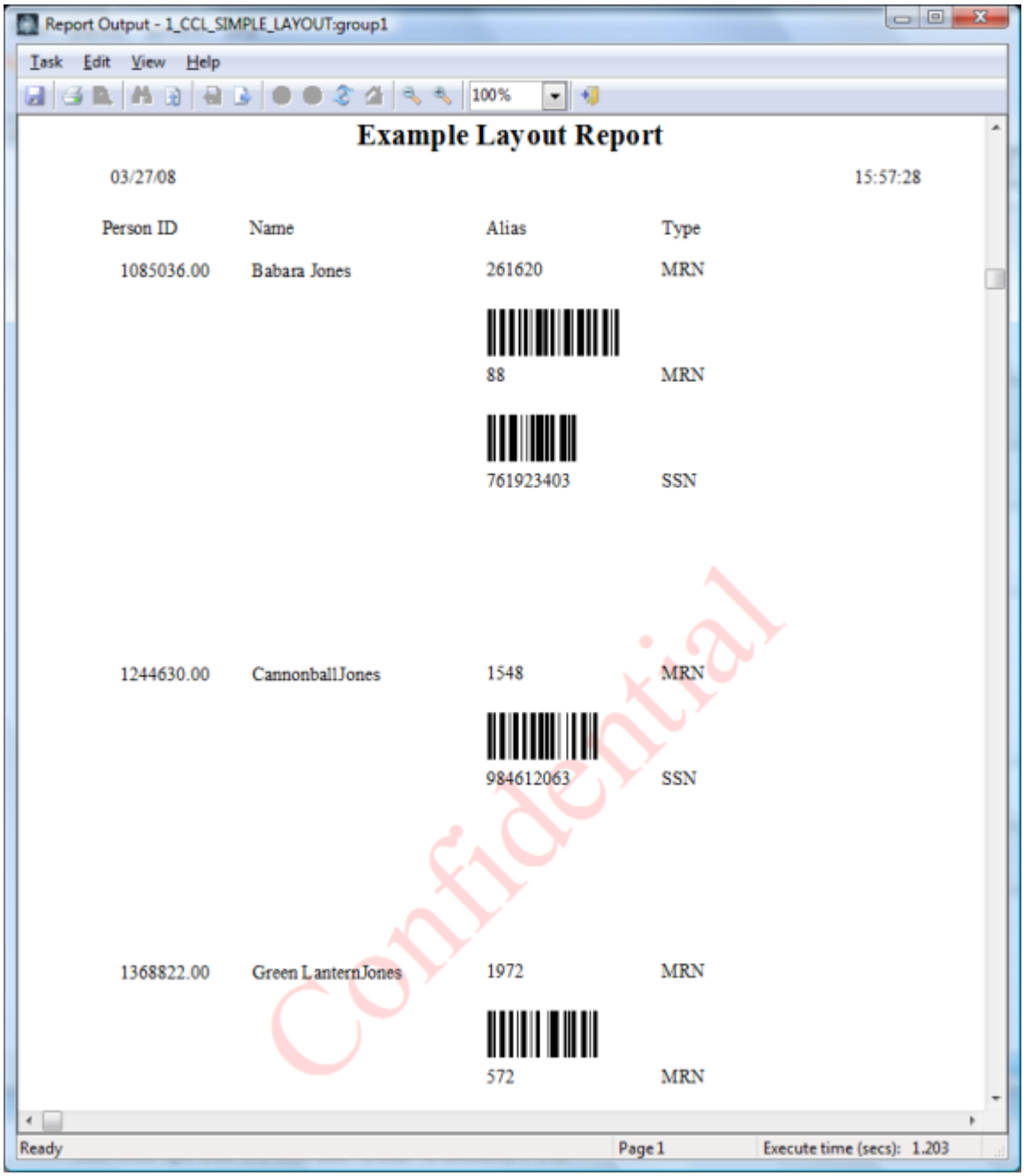


28. Set the Rotation Angle to **45**.

Changing the rotation angle rotates the text within the rectangular area. When the text is rendered it is placed at a 45-degree angle across and up the page. Your layout should look similar to the following example after you set the rotation angle:



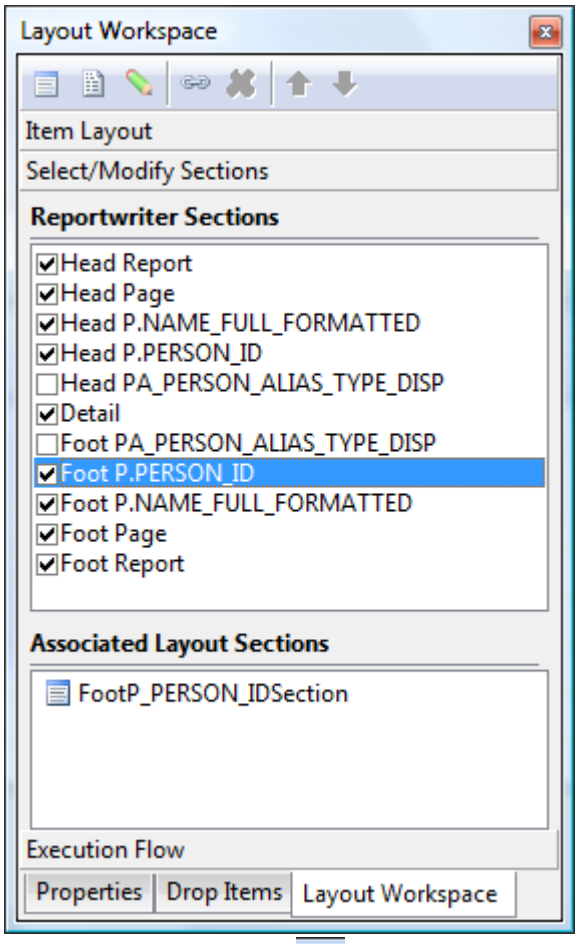
29. From the Build Menu, select **Run "*Your_Layout_Program*"** or press CTRL+F5 to execute your layout program.
30. Click **Yes** when prompted to save the layout program.
31. When prompted, enter the last name of a person that you know has an MRN or SSN and click **Execute**. Once your layout program is executed, the output should be similar to following example:



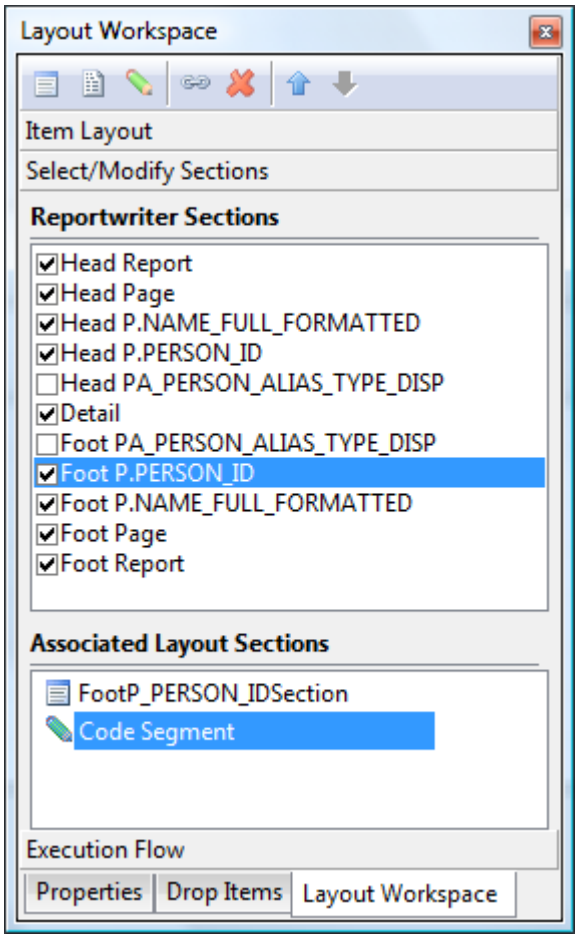
Using Programming Commands in Sections

It is often necessary to use programming commands in reportwriter sections. For example, you might want to use aggregate functions to display counts or averages of data fields, or you might want to manipulate variables in one section and then use or display them in another section. The example report you have been working on does not require the use of aggregate functions, however, to demonstrate this process and functionality you will use the Count() aggregate function to display the number of aliases for a person. The layout program enables you to add code to a section without having it displayed on the output. You can accomplish this by adding a New Code Segment on the Layout Workspace dialog box.

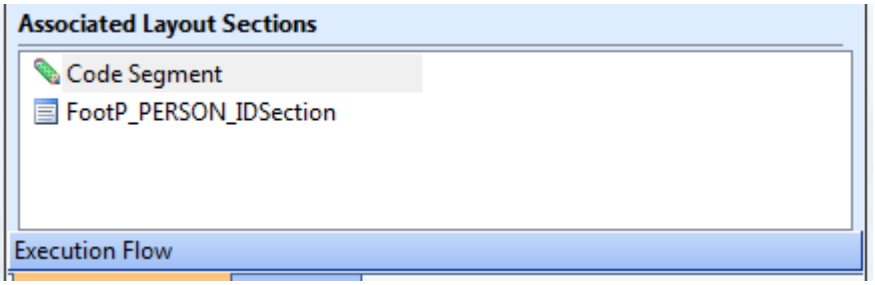
1. Within the Select/Modify Sections dialog box, select the **Foot P.Person_ID** section by clicking the text (not the check box). FootP_PERSON_IDSection is displayed in the Associated Layout Section box.



2. Click the **New Code Segment**  button on the Layout Workspace toolbar. The code segment is automatically inserted in to the Reportwriter Section.

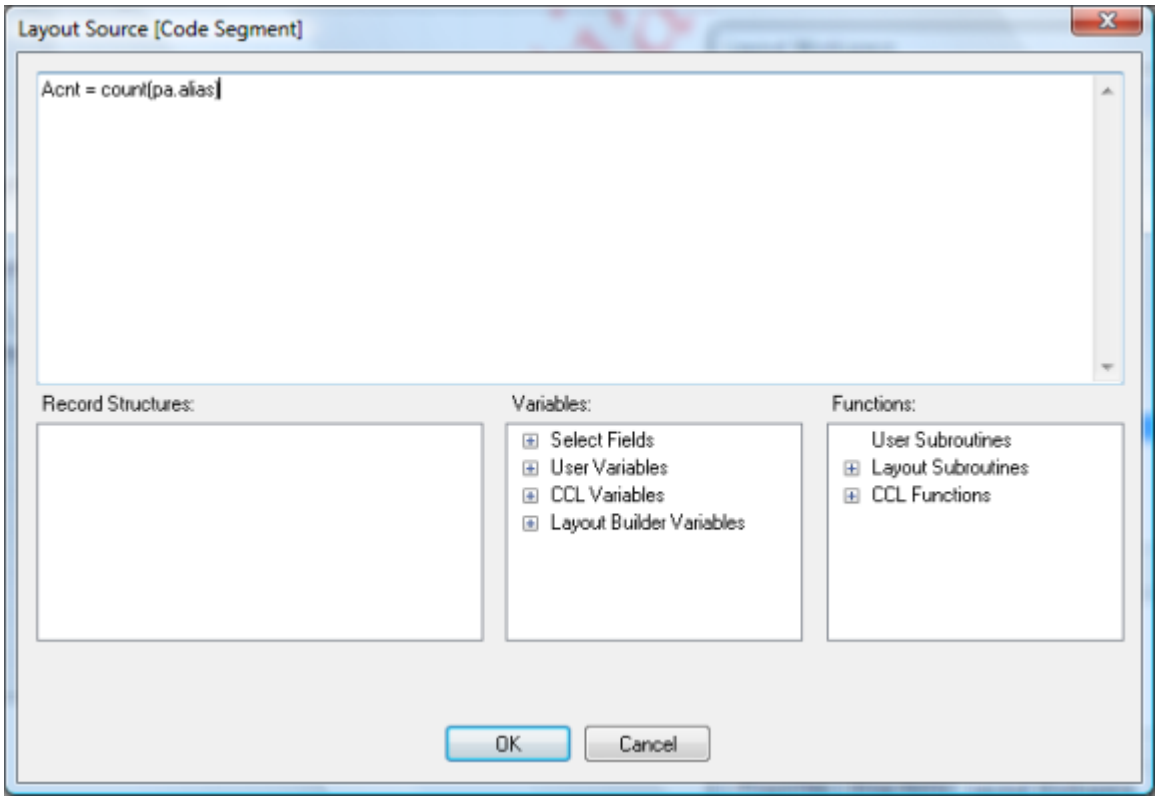


3. Click **Code Segment** in Associated Layout Section and click the **Up Arrow** button to move it to the top of the list. Code Segments and Layout Sections are executed in the order that they appear in the Associated Layout Sections list. Moving the Code Segment to the top of the list causes the commands in the Code Segment to be executed before the FootP_PPERSON_IDSection Layout Section is rendered.



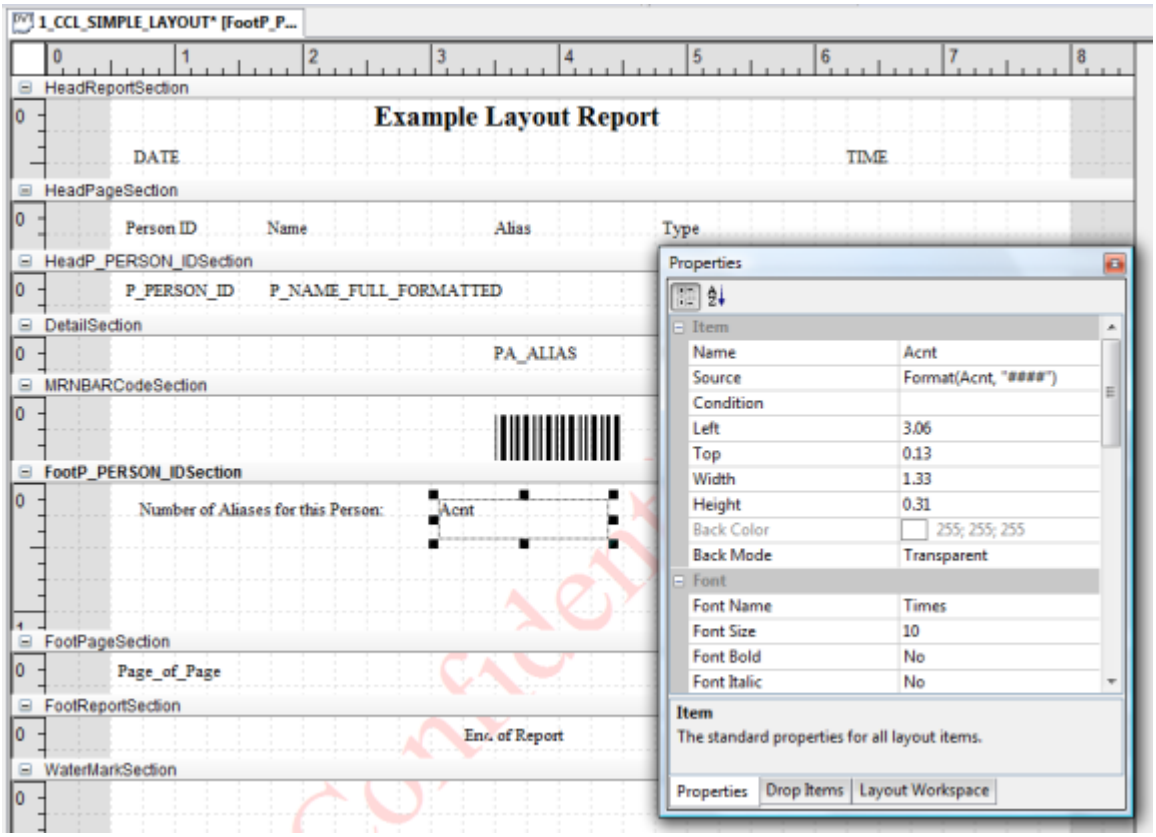
4. In the **Associated Layout Sections** double-click the Code Segment to open the Layout Source [Code Segment] dialog and enter the following command in the source window:

Note
You can use the CCL Functions list in the Functions window and the Select Fields list in the Variables window to build this command, or you can simply enter it.

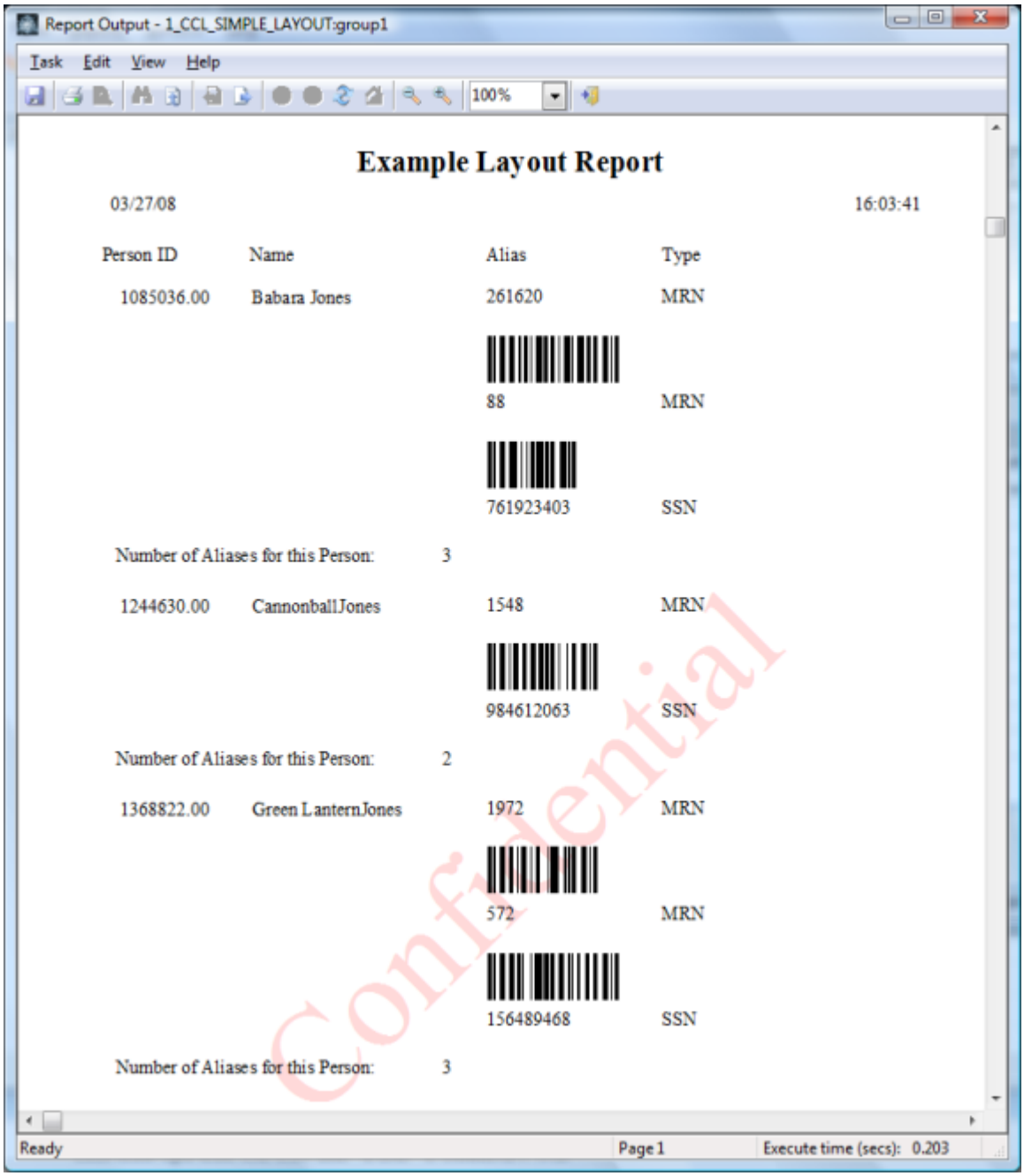


5. Click **OK** to close the Layout Source [Code Segment] dialog.
6. Using the Label tool  , add the label: **Number of Aliases for this Person:** to the FootP_Person_IDSection.
7. Using the Text tool  , add a field to the FootP_Person_IDSection to display the Acnt variable you created above. In the Properties dialog box, modify the Name to **Acnt** and the Source to **Format(Acnt, "####")**.
8. Because Acnt is created as a numeric data type, it is displayed in a right-justified format with several leading spaces when it is rendered by the layout. Using the Format() function with the "####" template converts Acnt to a string data type and displays it in four columns. The Format function is not required; however, using it significantly improves the look of the display. If the person had more than 9999 aliases, the count would be inaccurate because only four digits of the count are displayed. Although this is unlikely with our example, this issue could be encountered in other situations. Your

layout should look similar to the following example:



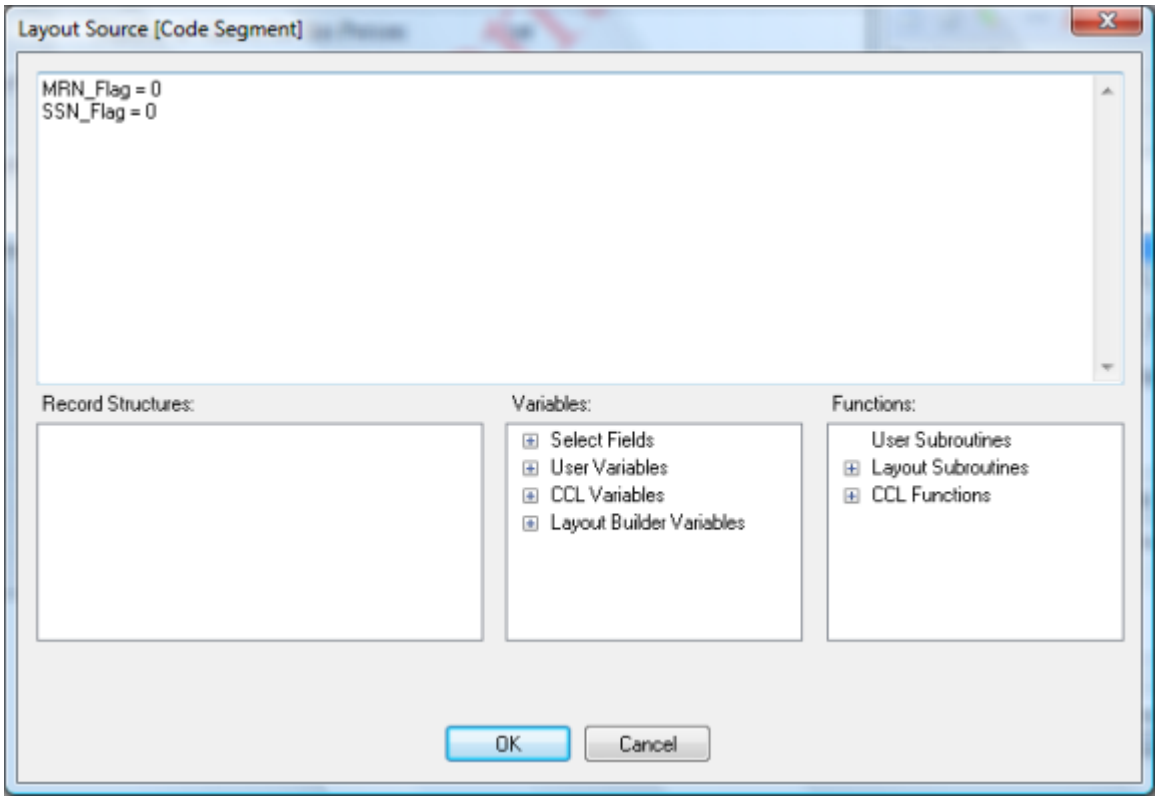
9. Use the vertical resize to drag the FootPageSection title bar up to the bottom of the label and field you just added.
10. From the Build menu, select **Run "*Your_Layout_Program*"** or press CTRL+F5 to execute your layout program.
11. Click **Yes** when prompted to save the layout program.
12. When prompted, enter the last name of a person that you know has an MRN or SSN and click **Execute**. Once your layout program is executed, the output should look similar to following example:



Again, displaying a count of the aliases is not something you would normally do in this simple report. However, you will use this concept in many of the real layout reports you create in the future. A more realistic example of using commands in the layout source for this simple report is to add something to the output to draw attention to the fact that a person is missing either an MRN or SSN. Providing this type of functionality requires adding commands to the layout source of several sections. For example, each time you encounter a new person you can use code in the Head P.Person_ID section to set a couple of flag variables to false to indicate the person does not have an MRN or SSN. Then in the Detail section you can use an IF statement to set the flags to true when a MRN or SSN is encountered. Finally, in the Foot P.Person_ID section, you can use the flag variables as a condition to display a specific warning if the person is missing one of the aliases.

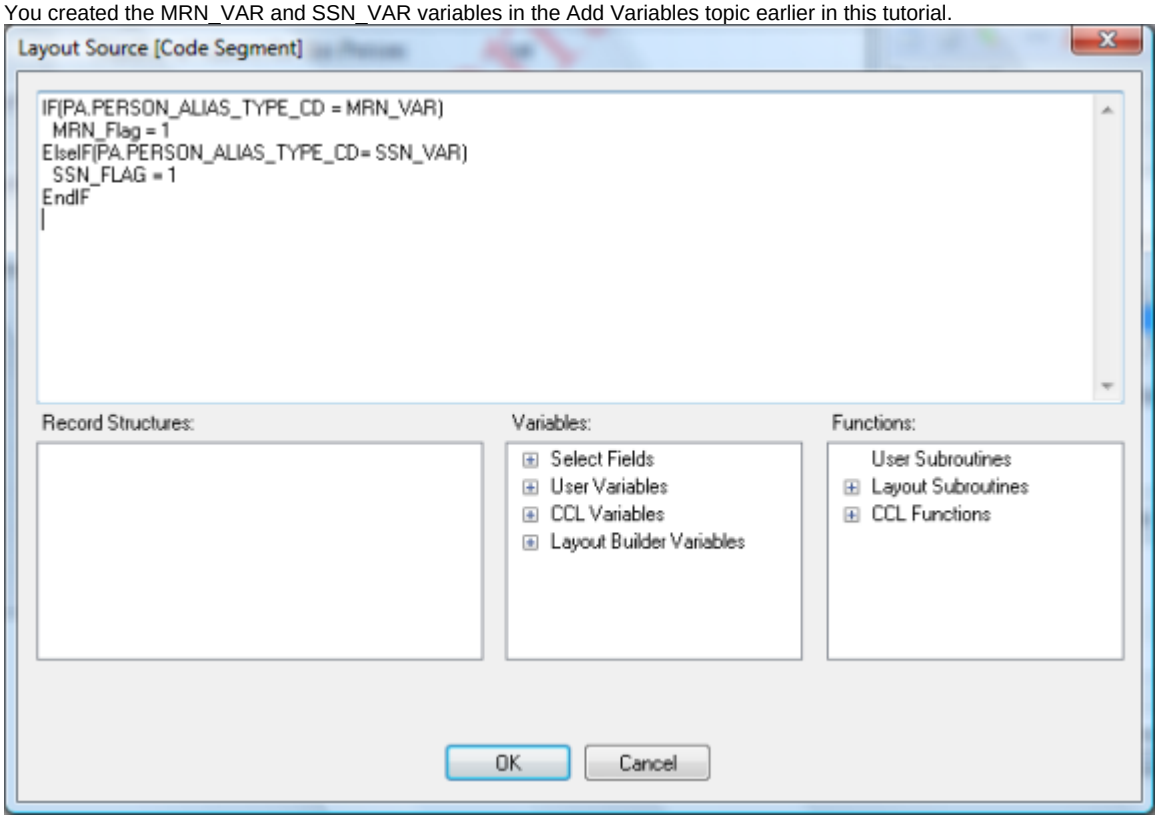
13. Within the Select/Modify Sections dialog box of the Layout Workspace, select the Head P.Person_ID section by clicking the text (not on the check box). Head P.Person_ID is displayed in the Associated Layout Section box.
14. Click the **New Code Segment** button on the LayoutWorkspace toolbar. The code segment is automatically inserted in to the Reportwriter Section.
15. Double-click the Code Segment to open the Layout Source [Code Segment] dialog and enter the following commands in the source window:

Your layout should look similar to the following example:

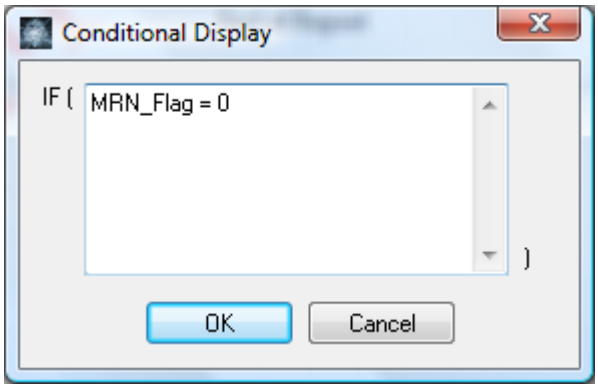


16. Click **OK** to close the Layout Source [Code Segment] dialog.
17. Within the Select/Modify dialog box, select the Detail section by clicking the text (not the check box). Detail is displayed in the Associated Layout Section box.
18. Click the **New Code Segment** button on the Layout Workspace toolbar to add to the Reportwriter Section.
19. In the Associated Layout Sections, double-click the Code Segment to open the Layout Source [Code Segment] dialog and enter the following commands in the source window:

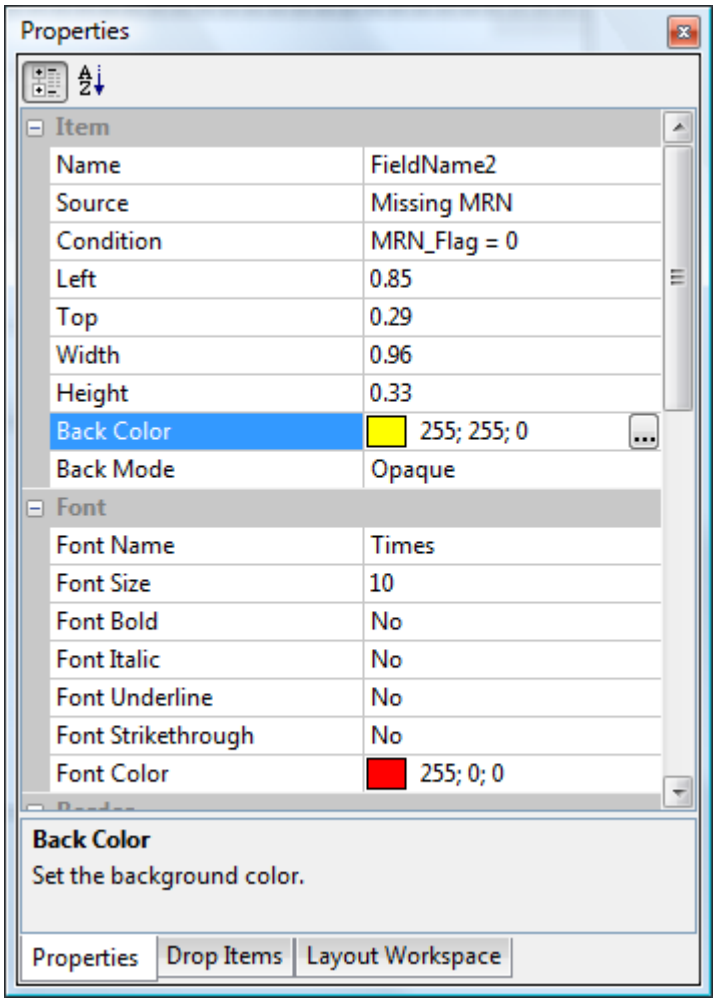
You created the MRN_VAR and SSN_VAR variables in the Add Variables topic earlier in this tutorial.



20. Click **OK** to close the Layout Source [Code Segment] dialog box.
21. Use the vertical resize to increase the height of the FootP_Person_IDSection.
22. Using the Label tool  add a Missing MRN label to the FootP_Person_IDSection.
23. In the Properties dialog box, click the **Condition** property to activate the ellipsis  button.
24. Click the **ellipsis**  button to open the Conditional Display dialog box.
25. Enter **MRN_Flag = 0** in the IF statement on the Conditional Display dialog box.

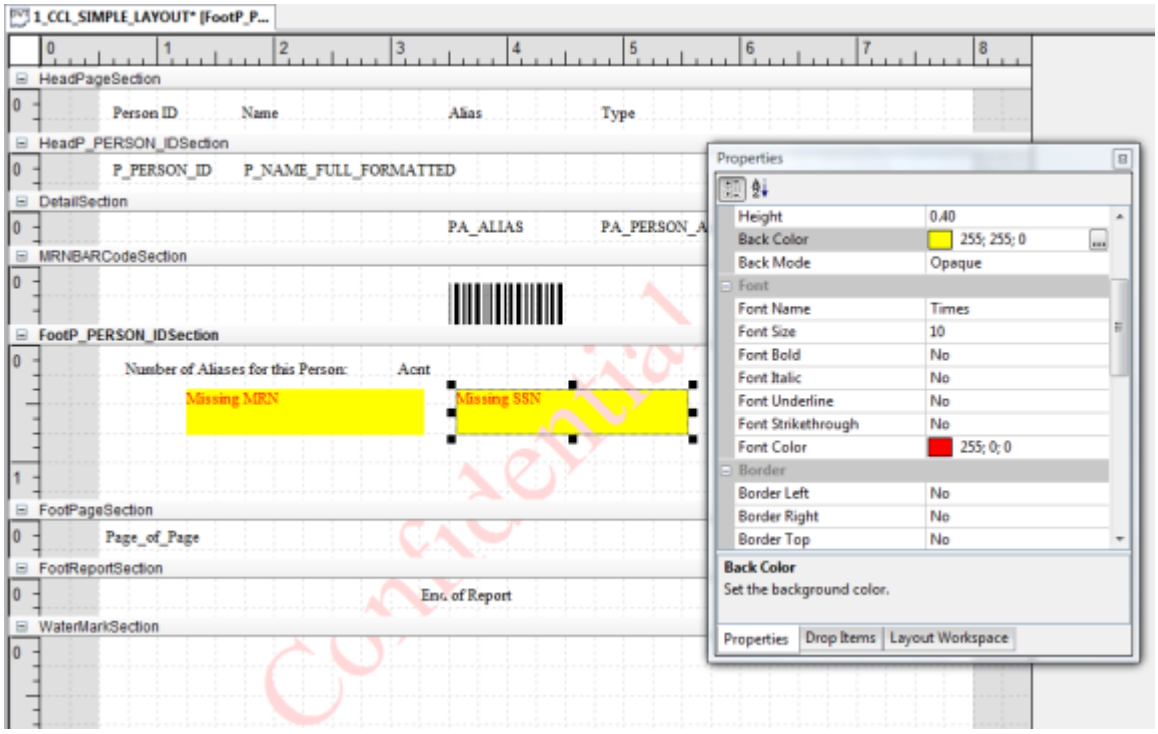


26. Click **OK** to close the Conditional Display dialog box and return to the Properties dialog box.
27. Modify the Font Color to **Red**.
28. Modify the Back Mode to **Opaque**.
29. Modify the Back Color to **Yellow**. Your Label Properties dialog box is displayed similar to the following example:

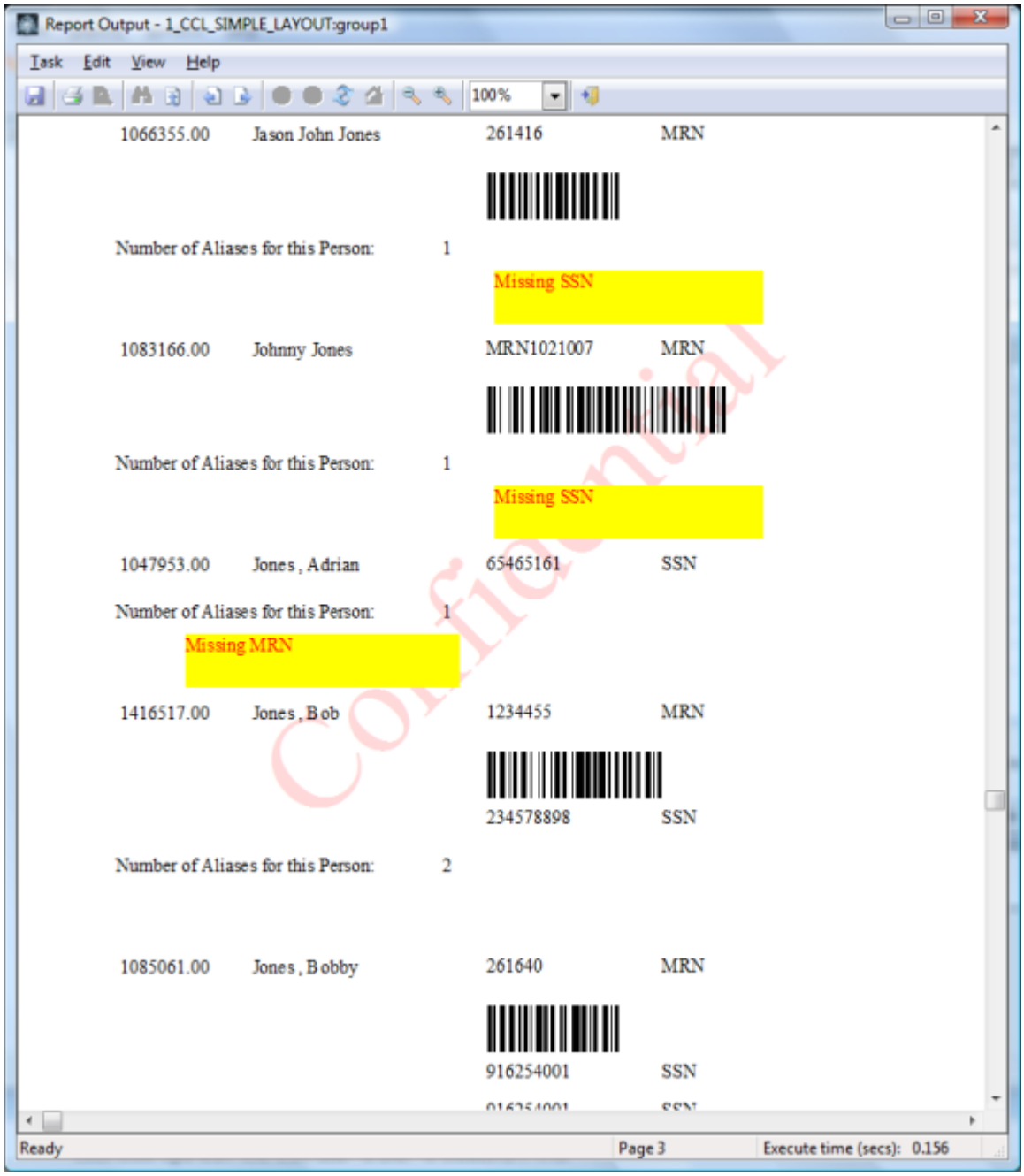


30. Using the Label tool  , add a Missing SSN label to the FootP_Person_IDSection.
31. In the Properties dialog box, click the **Condition** property to activate the ellipsis  button.

32. Click the **ellipsis**  button to open the Conditional Display dialog box.
33. Enter **SSN_Flag = 0** in the IF statement on the Conditional Display dialog box.
34. Click **OK** to close the Conditional Display dialog box and return to the Properties dialog box.
35. Modify the Font Color to **Red**.
36. Modify the Back Mode to **Opaque**.
37. Modify the Back Color to **Yellow**. Your layout should be similar to the following screen:



38. From the Build menu, select **Run "*Your_Layout_Program*"** or press CTRL+F5 to execute your layout program.
39. Click **Yes** when prompted to save the layout program.
40. When prompted, enter the last name of a person that you know has a MRN or SSN and click **Execute**. Once your layout program is executed, the output should look similar to following example:



Executing Layout Programs

You have executed the layout program in DVDev using the Run "*Your_Layout_Program*" option on the Build menu or CTRL+F5. Most likely you will create layout programs that need to be executed by people who do not have access to DVDev. When Layout Builder is used to create a layout program, it generates a Discern Explorer program in the object library. This program can be executed from Explorer Menu (ExplorerMenu.exe) like any other Discern Explorer program by simply using the name of your layout program when adding a program item to the Explorer Menu.

Moving Your Layout Program to Another Environment

Cerner recommends creating and testing all layout programs in a non-production environment. After the program has been created and tested, it can be moved into the production environment. Moving a layout program to a different environment requires you to export the layout program from a source environment into a target environment.

If you have a front-end file share that can be accessed from both environments, an easy way to move the layout program is to open it in DVDev and from the File menu select **Export** to export the layout program to the front-end file share. The export creates a *program_name*.DVT file. You then can close DVDev and reopen it in the target environment (the environment into which you want to move the program). From the File menu, select **Import** to import the *program_name* .DVT file from the common front-end file share. The import process uses the .DVT file to re-create the layout program. If the layout program has a prompt form

associated with it, the prompt form is re-created when the .DVT file is imported.
If you do not have a front-end file share that can be accessed from both environments, but do have access to a different front-end file share from each environment, the process is basically the same. You need to export the layout program, and then copy the .DVT file to the front-end file share that can be accessed from the target environment before performing the import.

If you cannot access front-end file shares you can move the Layout Program to a different environment using the back-end file structure. To use this method, from the Tools menu, select **Transfer Objects** to open the Transfer Objects dialog box. Ensure that the Layout Programs category is selected under Layouts in the tree on the left side of the Transfer Objects dialog. Enter the name of your Layout Program in the Source Object: field. From the **Task** menu, select **Save to Backend...** to save the Layout Program to a back-end file with a .DVT extension. Copy the .DVT file to a directory in the target environment. Open DVDev in the target environment and from the File menu, select Open > **Source** to open the .DVT file. Opening the .DVT file opens Layout Builder and imports the layout. The import process prompts you to import the prompt form. After the import process completes, from the File menu, select **Save** to save the layout or click **Save** on the toolbar. The .DPB file is a binary file, so FTP in binary mode must be used when copying the file.

Once you complete these steps, continue to the next part of Use Discern Layout Builder 2007.18, Using the Graph Tool.