Chapter Overview

This chapter shows you how to generate different kinds of reports. The SAS/ASSIST software report writing tasks enable you to produce reports of many different styles quickly and to customize your reports. For example, you can subset the data for the report; select the variables for the report; specify labels, subtotals, and page breaks; and add titles and footnotes, change the page dimensions, and select headings. In this chapter you will learn how to produce a listing report, a tabular report, and a frequency report.

Additional Information

For additional information about writing reports, refer to Chapter 15, "Using the Report Engine," on page 145 in this book. For additional information about the TABULATE procedure, refer to the SAS Guide to TABULATE Processing. For additional information about the PRINT and FREQ procedures, refer to SAS Procedures Guide.
Producing a Listing Report

A listing report displays data from a table. Using the Listing Report task, you can display all the data from a table, or a portion of the data, based on criteria that you specify. By following the instructions in this section, you can produce a report that shows the information for ranch-style homes from the HOUSES table. A listing report displays one line for each observation in the table.

Display 3.1 Information on Ranch Style Houses Report

<table>
<thead>
<tr>
<th>Style of homes</th>
<th>Square footage</th>
<th>Number of bedrooms</th>
<th>Number of bathrooms</th>
<th>Street address</th>
<th>Asking price</th>
</tr>
</thead>
<tbody>
<tr>
<td>RANCH</td>
<td>1250</td>
<td>2</td>
<td>1</td>
<td>Sheppard Avenue</td>
<td>$64,000</td>
</tr>
<tr>
<td>RANCH</td>
<td>1500</td>
<td>3</td>
<td>3</td>
<td>Kemble Avenue</td>
<td>$86,650</td>
</tr>
<tr>
<td>RANCH</td>
<td>1535</td>
<td>3</td>
<td>3</td>
<td>State Highway</td>
<td>$89,100</td>
</tr>
<tr>
<td>RANCH</td>
<td>720</td>
<td>1</td>
<td>1</td>
<td>Nicholson Drive</td>
<td>$34,590</td>
</tr>
</tbody>
</table>

A table is a collection of information arranged in columns and rows. A column is a set of data values that represents a particular type of data; for example, the price of all the houses. A row is a set of data values for the same item; for example, all the information about one house, such as price, style, square footage, and so on. Refer to Chapter 11, “Setting Up SAS Files,” on page 117 for more information about tables, rows, and columns.

Setting Up the Report

1. To create a listing report, you first set up the report by following this selection path:

   Tasks ► Report Writing ► Listing...

   The List a Table window appears.
2 If the active table is SASUSER.HOUSES, continue to the next step. Otherwise, select Table, and then select the SASUSER.HOUSES table. For more information on selecting tables, see “Selecting a Table” on page 22.

3 If there is an active Subset Data selection (indicated with BY, WHERE, or ROWS next to the Subset data button), clear the selection. For more information, see “Clearing a Subset Data Selection” on page 24.

4 If other report selections exist (for example, Columns is not -ALL-), follow this selection path to clear these selections:

5 To produce a report that lists all the data in the HOUSES table, follow this selection path:

The Listing Report appears in the Output window.
Display 3.3  Listing of HOUSES Table

<table>
<thead>
<tr>
<th>Style of homes</th>
<th>Square footage</th>
<th>Number of bedrooms</th>
<th>Number of bathrooms</th>
<th>Street address</th>
<th>Asking price</th>
</tr>
</thead>
<tbody>
<tr>
<td>RANCH</td>
<td>1250</td>
<td>2</td>
<td>1.0</td>
<td>Sheppard Avenue</td>
<td>$64,000</td>
</tr>
<tr>
<td>SPLIT</td>
<td>1190</td>
<td>1</td>
<td>1.0</td>
<td>Rand Street</td>
<td>$65,850</td>
</tr>
<tr>
<td>CONDO</td>
<td>1400</td>
<td>2</td>
<td>1.5</td>
<td>Market Street</td>
<td>$80,050</td>
</tr>
<tr>
<td>TWOSTORY</td>
<td>1810</td>
<td>4</td>
<td>3.0</td>
<td>Garris Street</td>
<td>$107,250</td>
</tr>
<tr>
<td>RANCH</td>
<td>1500</td>
<td>3</td>
<td>3.0</td>
<td>Kemble Avenue</td>
<td>$86,650</td>
</tr>
<tr>
<td>SPLIT</td>
<td>1675</td>
<td>4</td>
<td>3.0</td>
<td>West Drive</td>
<td>$94,450</td>
</tr>
<tr>
<td>SPLIT</td>
<td>1305</td>
<td>3</td>
<td>1.5</td>
<td>Graham Avenue</td>
<td>$73,650</td>
</tr>
<tr>
<td>CONDO</td>
<td>1390</td>
<td>3</td>
<td>2.5</td>
<td>Hampshire Avenue</td>
<td>$79,350</td>
</tr>
<tr>
<td>TWOSTORY</td>
<td>1040</td>
<td>2</td>
<td>1.0</td>
<td>Sanders Road</td>
<td>$55,850</td>
</tr>
<tr>
<td>CONDO</td>
<td>2105</td>
<td>4</td>
<td>2.5</td>
<td>Jeans Avenue</td>
<td>$127,150</td>
</tr>
<tr>
<td>RANCH</td>
<td>1535</td>
<td>3</td>
<td>3.0</td>
<td>State Highway</td>
<td>$89,100</td>
</tr>
<tr>
<td>TWOSTORY</td>
<td>1240</td>
<td>2</td>
<td>1.0</td>
<td>Fairbanks Circle</td>
<td>$69,250</td>
</tr>
<tr>
<td>RANCH</td>
<td>720</td>
<td>1</td>
<td>1.0</td>
<td>Nicholson Drive</td>
<td>$34,550</td>
</tr>
<tr>
<td>TWOSTORY</td>
<td>1745</td>
<td>4</td>
<td>2.5</td>
<td>Highland Road</td>
<td>$102,950</td>
</tr>
<tr>
<td>CONDO</td>
<td>1860</td>
<td>2</td>
<td>2.0</td>
<td>Arcata Avenue</td>
<td>$110,700</td>
</tr>
</tbody>
</table>

The listing report is a quick way to get a list of all the data in your table. Note the different styles of the houses. For the sample report shown in Display 3.1 on page 28, only the RANCH style houses are selected.

6 If the report is wider or longer than the window, use the scroll bars or the 
FORWARD, BACKWARD, LEFT, and RIGHT function keys to look at the rest of 
the report. Refer to “Using Function Keys” on page 13 for further information 
on function keys.

7 After you have finished looking at the report, return to the List a Table window by 
using one of the following methods, depending on your operating environment:

- Use the PREVWIND function key.
- Click on the SAS/ASSIST window.

Note: Under some operating environments, if you are using the Output window 
and the report is longer than one display, the last display of the report is shown 
after you select close once. In this case, select File and then Close again. The 
task window reappears. △

Subsetting the Data

To produce the report shown in Display 3.1 on page 28, you need to subset and 
customize the report. Subset the data as follows:

1 Select Subset data in the List a Table window. The Subset Data window appears.

```plaintext
1
```
You subset the data if you want to produce a report that uses only some of the data in the table. For example, to produce the sample report shown in Display 3.1 on page 28, you need to subset the data so that only data for ranch-style houses are used.

2 Select WHERE clause. The Build a WHERE Clause to Subset the Current Data window appears.

This window enables you to create a WHERE clause that specifies criteria for selecting rows. The rows that match the criteria in the WHERE clause are used in the report. For this example, you build a WHERE clause that selects only the houses where STYLE=RANCH.
You subset the data by using one of the following methods:

- You can type the WHERE clause directly by selecting **Edit the WHERE clause** and typing `STYLE='RANCH'` under **Edit the current WHERE clause**.
- You can build the WHERE clause by making selections from this window. The items that are available for selection are highlighted while you build the WHERE clause. For example, when the Build a WHERE Clause window appears, only the **Column**, **Constant**, **Function**, NOT, and **Opening parenthesis** items are highlighted because these are the only items that can begin a WHERE clause.

3 To build the WHERE clause using the items in the window, select **Column** from the Build a WHERE Clause window, and then select the STYLE column. For more information, see “Selecting a Column” on page 23.

4 Select **Comparison operator** from the Build a WHERE Clause window. A window with a list of valid comparison operators appears.

**Display 3.6** Select Data Window (Comparison Operators)

5 Select the **equal** operator from the Select Data window. The Build a WHERE Clause window reappears.

6 There are two ways to specify a constant value. Use one of the following methods:
   - Select **Look up constants**. SAS/ASSIST software searches the column and presents a list of unique values in the Select Data window.
Select RANCH and then select OK.

Note  Using Look up constants prevents you from making typing errors. However, it is more useful when there are a small number of possible values than when there are a large number of possible values.

Select Constant... from the Build a WHERE Clause window. The Enter a Character Constant window appears.

To select the ranch-style houses, type RANCH in the Value field. Make sure RANCH is in uppercase because all of the style values are in uppercase in this sample data.
Any time you use a character string for a constant value in a WHERE or BY clause, you need to make sure you use the exact case of the character string in the table. If the word ranch had been in lowercase in the HOUSES table, you would type `ranch`.

7 Select **OK**. The Build a WHERE Clause window reappears. The WHERE clause that you built is shown under the **WHERE clause being built** item as shown in the following display.

**Display 3.9** Completed WHERE Clause

![Completed WHERE Clause](image)

To make changes to the WHERE clause, select **Edit the WHERE clause**. You can then make changes to the column, comparison operator, and constant.

Note that in certain operating environments, there is an additional option to **Verify where clause against data**. If you select this option, SAS software checks to see if there are any rows that meet the conditions of your WHERE clause. If your table is very large, this verification can take a long time.

8 Select **OK** and then **Goback** to return to the List a Table window. Notice that the value for the Subset data field is **WHERE**. This indicates that a WHERE clause is being used to subset your data.

### Adding Titles

You can customize the report by adding titles and footnotes, changing the page dimensions, and selecting headings. Follow these directions to add a title to your report:

1. Follow this selection path:

   ![Edit Titles](image)

   The Titles window appears.
2 Select Title 1 from the Titles window. The Title 1 window appears.

3 In the Title 1 field, type the title exactly as you want it to appear on the report. For this report, type the title Information on Ranch Style Houses. Select OK twice to return to the List a Table window.

Note: Because the same set of titles and footnotes is used for all SAS/ASSIST tasks, the titles and footnotes most recently used in your SAS/ASSIST session are used unless you change or reset them. If a title already exists when you open the Titles window, type the new title over the old title.
Running the Report

After you have finished setting up the report, you can run the report.

1. Follow this selection path:
   - Run ➤ Submit

   The report appears in the Output window.

Display 3.12  Information on Ranch Style Houses Report

```
<table>
<thead>
<tr>
<th>Style of homes</th>
<th>Square footage</th>
<th>Number of bedrooms</th>
<th>Number of bathrooms</th>
<th>Street address</th>
<th>Asking price</th>
</tr>
</thead>
<tbody>
<tr>
<td>RANCH</td>
<td>1250</td>
<td>2</td>
<td>1</td>
<td>Sheppard Avenue</td>
<td>$64,000</td>
</tr>
<tr>
<td>RANCH</td>
<td>1500</td>
<td>3</td>
<td>3</td>
<td>Kemble Avenue</td>
<td>$86,650</td>
</tr>
<tr>
<td>RANCH</td>
<td>1535</td>
<td>3</td>
<td>3</td>
<td>State Highway</td>
<td>$89,100</td>
</tr>
<tr>
<td>RANCH</td>
<td>720</td>
<td>1</td>
<td>1</td>
<td>Nicholson Drive</td>
<td>$34,550</td>
</tr>
</tbody>
</table>
```

This report shows all the data for the ranch-style houses in the HOUSES table.

2. If the report is wider or longer than the window, use the scroll bars or the FORWARD, BACKWARD, LEFT, and RIGHT function keys to look at the report.

Printing the Report

If you do not want to print the report, go to the next section. To print the report, follow these instructions.

1. Follow this selection path from the Output window:
   - File ➤ Print

   Depending on your operating environment, the output may be sent directly to your default printer, or you may see the Print window, where you can select printing options.
2 Make sure the name of your default printer (or some other printer of your choosing) appears in the Default Printer field in the Print window. If it does not, select Setup... and choose your printer from the list that appears. If you do not know which printer to choose, contact the SAS Support Consultant at your site.

3 To print the current report, select Print in the Print window. The report is sent to your printer, and a message appears in the Output window indicating how many lines were printed.

Note If you are generating HTML output, you can view the report in your HTML browser and print using the browser’s print function. See “Setting Up HTML Output” on page 183 for details on HTML output with SAS/ASSIST software.

Exiting This Task

When you have finished viewing or printing your report, return to the List a Table window by using one of the following methods, depending on your operating environment:

• Use the PREVWIN function key.
• Click on the SAS/ASSIST window.

To return to the WorkPlace menu or move on to another task, follow the directions in “Exiting a Task” on page 24.

Producing a Tabular Report

A tabular report displays descriptive statistics in a table format. A tabular report lets you place data into classes or categories for analysis and calculate statistics, such as counts, sums, means, and percentages on these classes. By following the instructions in this section, you can produce a tabular report that shows the mean, minimum, and maximum prices of the houses classified by style.
Setting Up the Report

1. To produce a tabular report like the one shown in the previous display, follow this selection path:

   Tasks ➤ Report Writing ➤ Tabular reports ➤ All tabular reports...

   The Select a Tabular Report window appears.

Display 3.14  Select a Tabular Report Window

The Select a Tabular Report window shows the layout for four types of tabular reports: Statistics, Simple Group 1, Simple Group 2, and 2-D Group. To see the
Multiple Group and Advanced types, select Additional Reports. To return to the first four types, select Goback at the bottom of the display.

2 Select Simple Group 1 from the Select a Tabular Report window. The Simple group 1 window appears.

Display 3.15 Simple Group 1 Window

3 If the active table is SASUSER.HOUSES, continue to the next step. Otherwise, select Table, and then select the SASUSER.HOUSES table. For more information on selecting tables, see “Selecting a Table” on page 22.

4 If there is an active Subset Data selection (indicated with BY, WHERE, or ROWS next to the Subset data button), clear the selection. For more information, see “Clearing a Subset Data Selection” on page 24.

5 If other report selections exist (for example, a column name is listed under Class), follow this selection path to clear these selections:

File ➤ New

6 Select Column from the Simple group 1 window, and then select the PRICE column. For more information, see “Selecting a Column” on page 23.

7 Select Statistics from the Second Report Style window. A list of statistics that you can choose for the report appears.
The number of statistics that you can select is listed at the top of the statistics list. Each time you select a statistic, an asterisk appears next to the statistic to indicate that the statistic has been selected. As each statistic is selected, it moves to the top of the list. The order of the chosen statistics in the list is the order of the statistics on the report.

To de-select a statistic, select it again; the asterisk disappears.

8 Select the **MEAN**, **MIN**, and **MAX** statistics from the Select Statistics window. Select **OK**. The Simple Group 1 window reappears.

9 Select **class** from the Simple group 1 window, and then select the **STYLE** column as your classification column. A classification column is a column you want to use to classify the data into groups or categories of information.

---

**Adding Titles**

You can customize the report by adding titles and footnotes, changing the page dimensions, and selecting headings. Refer to “Adding Titles” on page 34 for instructions on adding titles to the report. Add the title **Mean, Min, and Max Price of Houses by Style** as Title 1 to this report.

Because the same set of titles and footnotes is used for all SAS/ASSIST tasks, the titles and footnotes most recently used in your SAS/ASSIST session are used unless you change or reset them in the Titles and Footnotes windows.

---

**Running the Report**

After you have finished setting up the report, run the report.

1 Follow this selection path:

   ![Run Submit]

---

**Display 3.16  Select Statistics Window**

![Select Statistics Window Image]
The report appears in the Output window.

**Display 3.17** Tabular Report of Houses by Style

This report shows the mean, minimum, and maximum price for the different styles of houses in the HOUSES table.

1. If the report is wider or longer than one display, use the scroll bars or the FORWARD, BACKWARD, LEFT, and RIGHT function keys to look at the report.

---

**Printing the Report**

If you do not want to print the report, go to the next section. To print the report, follow the directions in “Printing the Report” on page 36.

---

**Exiting This Task**

When you have finished viewing or printing your report, return to the Simple group window by using one of the following methods, depending on your operating environment:

- Use the PREVWIND function key.
- Click on the SAS/ASSIST window.

To return to the WorkPlace menu or move on to another task, follow the directions in “Exiting a Task” on page 24.

---

**Producing a Frequency Report**

A frequency report summarizes data by showing how it falls into different categories. By following the instructions in this section, you can produce a
crosstabulation frequency report that shows how many, and what percentage, of each style of house has one, two, three, and four bedrooms.

**Display 3.18** Style of Houses vs. Number of Bedrooms Frequency Report

![Style of House vs. Number of Bedrooms Frequency Report](image)

---

**Setting Up the Report**

1. To produce a frequency report like the one shown in the previous display, follow this selection path:

   ```plaintext
   Tasks ► Report Writing ► Counts...
   ```

   The Select a Style of Report window appears.
Display 3.19  Select a Style of Report Window

2  Select **Crosstabulation**. The Two-Way Crosstabulation window appears.

Display 3.20  Two-Way Crosstabulation Window

3  If the active table is SASUSER.HOUSES, continue to the next step. Otherwise, select **Table**, and then select the SASUSER.HOUSES table. For more information on selecting tables, see “Selecting a Table” on page 22.

4  If there is an active Subset Data selection (indicated with **BY, WHERE, or ROWS** next to the **Subset data** button), clear the selection. For more information, see “Clearing a Subset Data Selection” on page 24.

5  If other report selections exist (for example, column names exist for **Row specification** or **Column specification**), follow this selection path to clear these selections:

   File ▶️ New
6 Select **Row specification** from the Two-Way Crosstabulation window, and then select the STYLE column. For more information, see “Selecting a Column” on page 23.

7 Select **Column specification**, and then select the BEDROOMS column.

---

**Adding Titles**

You can customize the report by adding titles and footnotes, changing the page dimensions, and selecting headings. Refer to “Adding Titles” on page 34 for instructions on adding titles to the report. Add the title **Style of House vs. Number of Bedrooms Frequency Report** as Title 1 to this report.

---

**Running the Report**

After you have finished setting up the report, run the report.

1 Follow this selection path:

   ![Selection Path](image)

   The report appears in the Output window.

**Display 3.21** Style of House vs. Number of Bedrooms Frequency Report

This report shows the frequency of one, two, three, and four bedroom houses in each style.

2 If the report is wider or longer than the window, use the scroll bars or the FORWARD, BACKWARD, LEFT, and RIGHT function keys to look at the report.
Printing the Report

If you do not want to print the report, go to the next section. To print the report, follow the directions in “Printing the Report” on page 36.

Exiting This Task

When you have finished viewing or printing your report, return to the Two-Way Crosstabulation window by using one of the following methods, depending on your operating environment:

- Use the PREVWIN function key.
- Click on the SAS/ASSIST window.

To return to the WorkPlace menu or move on to another task, follow the directions in “Exiting a Task” on page 24.