

CHAPTER

3

Report Writing

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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.

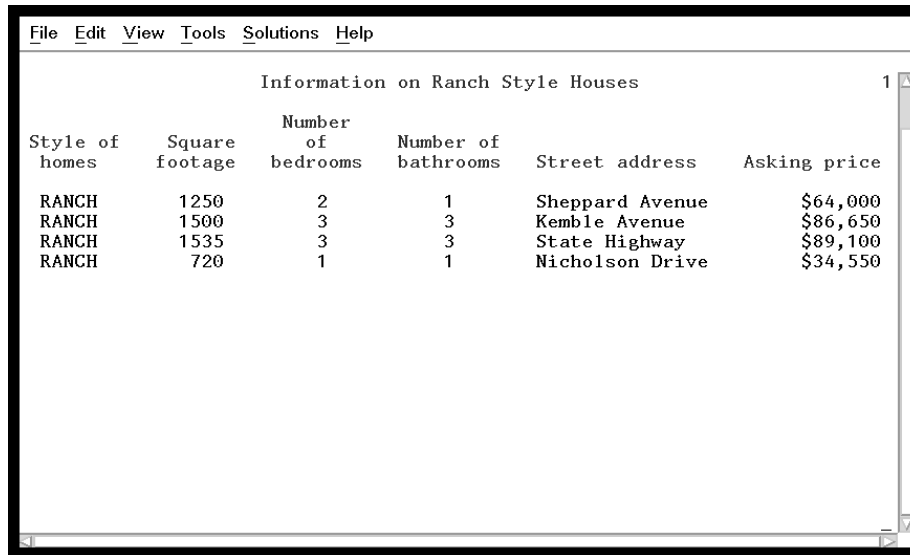
Additional Information

For additional information about writing reports, refer to Chapter 15, “Using the Report Engine,” on page 141 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



Style of homes	Square footage	Number of bedrooms	Number of bathrooms	Street address	Asking price
RANCH	1250	2	1	Sheppard Avenue	\$64,000
RANCH	1500	3	3	Kemble Avenue	\$86,650
RANCH	1535	3	3	State Highway	\$89,100
RANCH	720	1	1	Nicholson Drive	\$34,550

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 113 for more information about tables, rows, and columns.

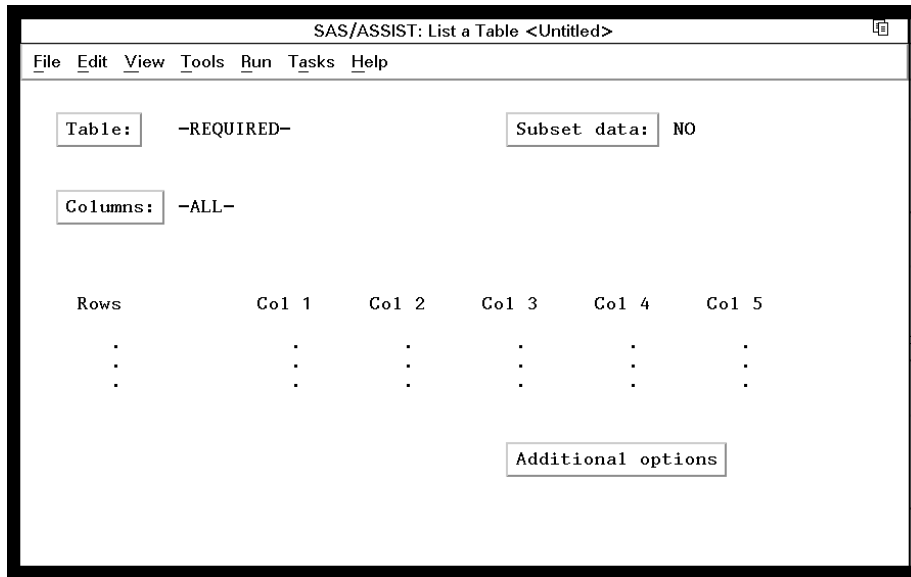
Setting Up the Report

- 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.

Display 3.2 List a Table Window



- 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 24.
- 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 26.
- 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

Style of homes	Square footage	Number of bedrooms	Number of bathrooms	Street address	Asking price
RANCH	1250	2	1.0	Sheppard Avenue	\$64,000
SPLIT	1190	1	1.0	Rand Street	\$65,850
CONDO	1400	2	1.5	Market Street	\$80,050
TWOSTORY	1810	4	3.0	Garris Street	\$107,250
RANCH	1500	3	3.0	Kemble Avenue	\$86,650
SPLIT	1615	4	3.0	West Drive	\$94,450
SPLIT	1305	3	1.5	Graham Avenue	\$73,650
CONDO	1390	3	2.5	Hampshire Avenue	\$79,350
TWOSTORY	1040	2	1.0	Sanders Road	\$55,850
CONDO	2105	4	2.5	Jeans Avenue	\$127,150
RANCH	1535	3	3.0	State Highway	\$89,100
TWOSTORY	1240	2	1.0	Fairbanks Circle	\$69,250
RANCH	720	1	1.0	Nicholson Drive	\$34,550
TWOSTORY	1745	4	2.5	Highland Road	\$102,950
CONDO	1860	2	2.0	Arcata Avenue	\$110,700

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 30, 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 15 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.

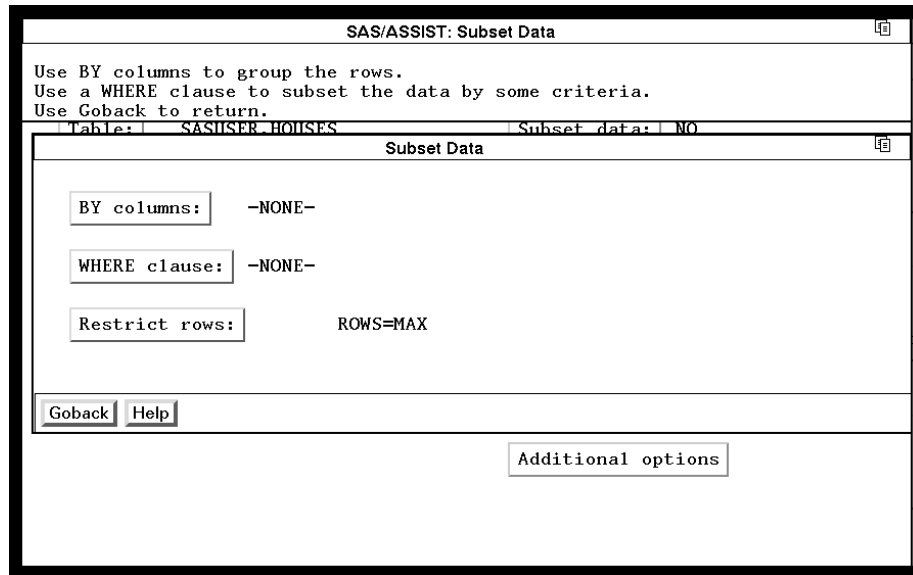
Note: Under some operating environments, if you are using the Output window and the report is longer than one display, the last display of the report is shown after you select **C**lose once. In this case, select **F**ile and then **C**lose again. The task window reappears. \triangle

Subsetting the Data

To produce the report shown in Display 3.1 on page 30, 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.

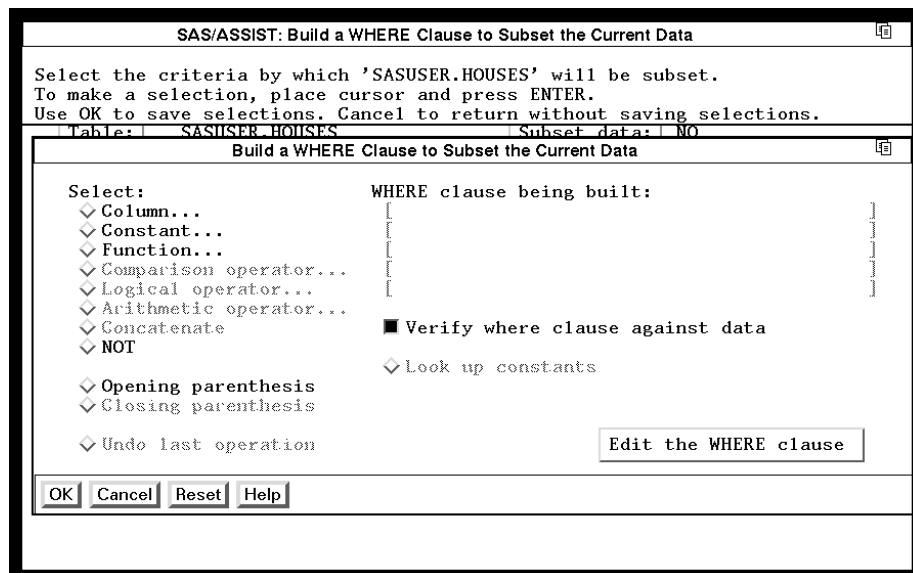
Display 3.4 Subset Data Window



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 30, 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.

Display 3.5 Build a WHERE Clause to Subset the Current Data Window

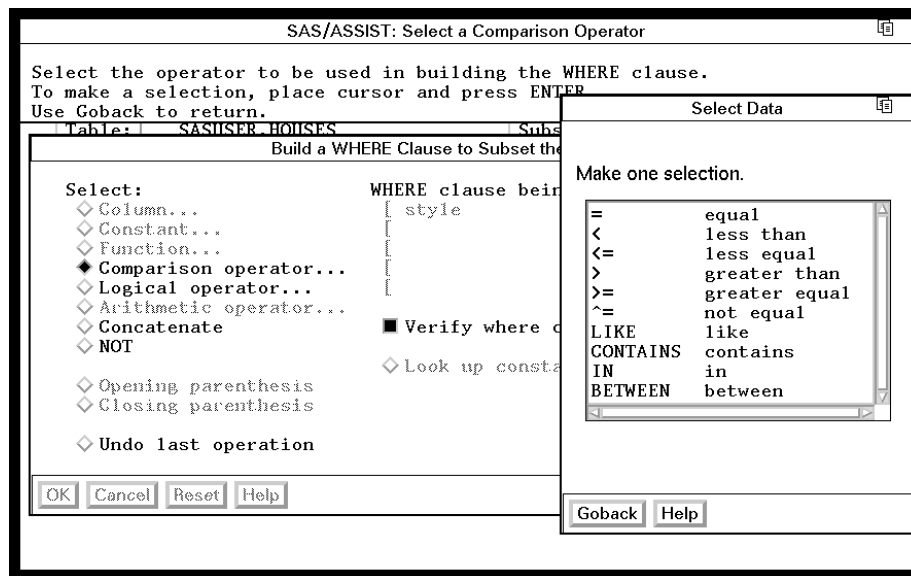


This window enables you to create a WHERE clause that specifies criteria for selecting rows. The rows that match the criteria in the WHERE clause are used in the report. For this example, you build a WHERE clause that selects only the houses where `STYLE=RANCH`.

You subset the data by using one of the following methods:

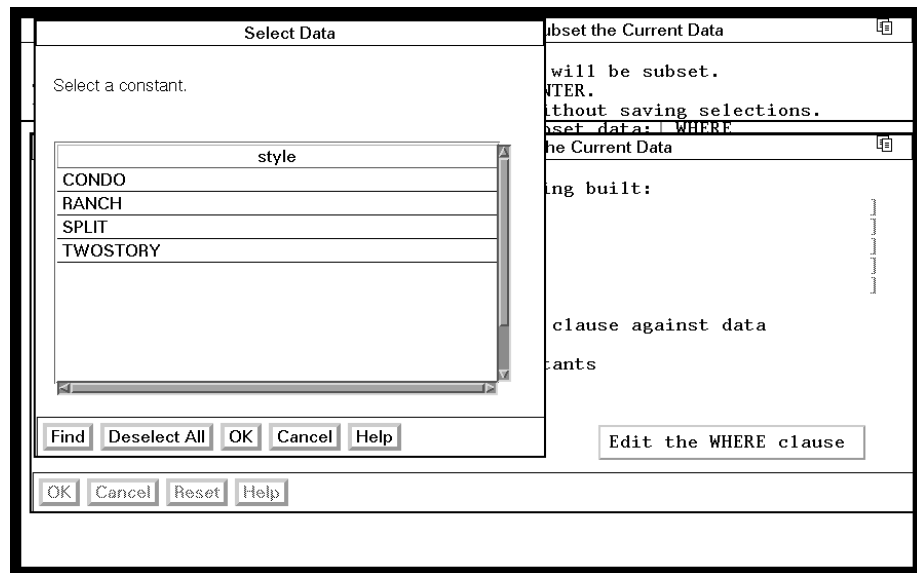
- You can type the WHERE clause directly by selecting **Edit the WHERE clause** and typing **STYLE='RANCH'** under **Edit the current WHERE clause**.
 - You can build the WHERE clause by making selections from this window. The items that are available for selection are highlighted while you build the 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 25.
 - 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.

Display 3.7 Select Data Window (Look Up Constants)

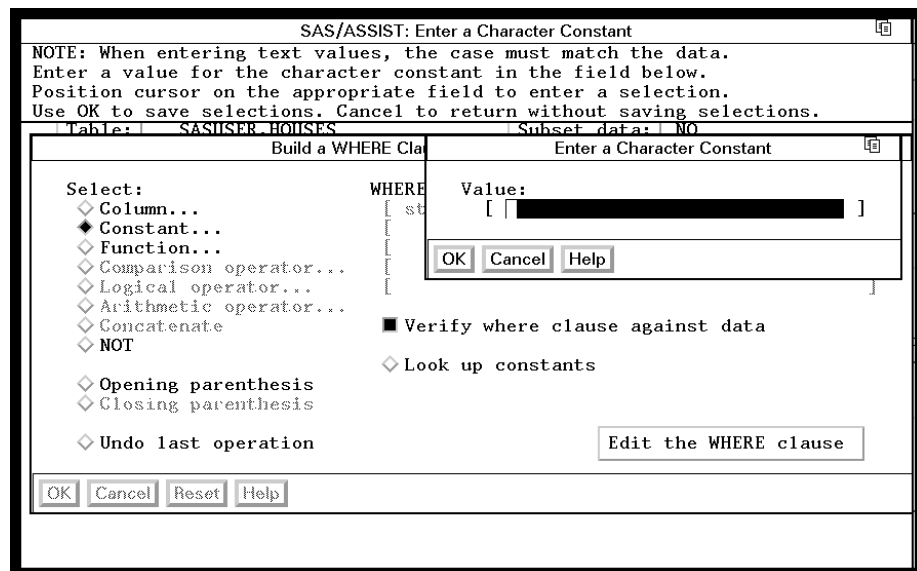


Select **RANCH** and then select **OK**.

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. Δ

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

Display 3.8 Enter a Character Constant Window

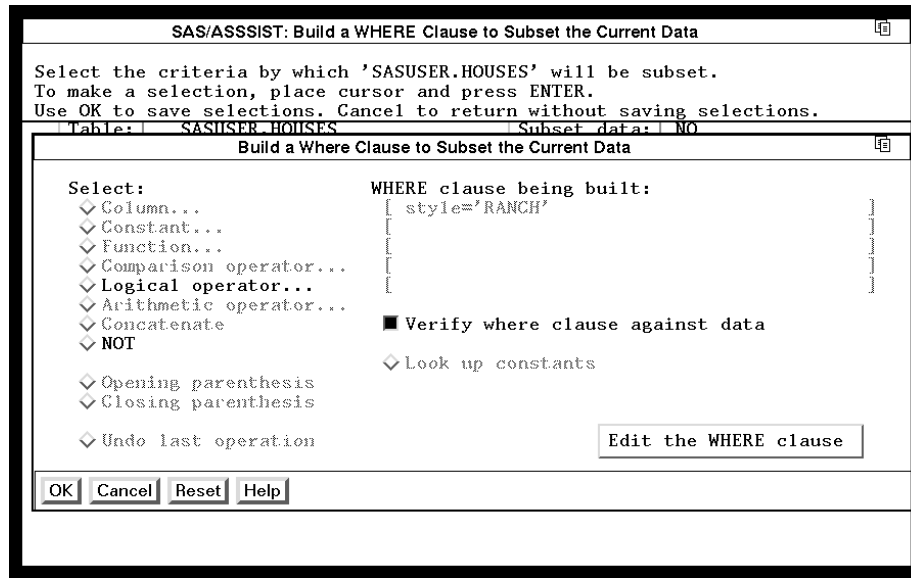


To select the ranch-style houses, type **RANCH** in the **value** field. Make sure **RANCH** is in uppercase because all of the style values are in uppercase in this sample data.

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



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

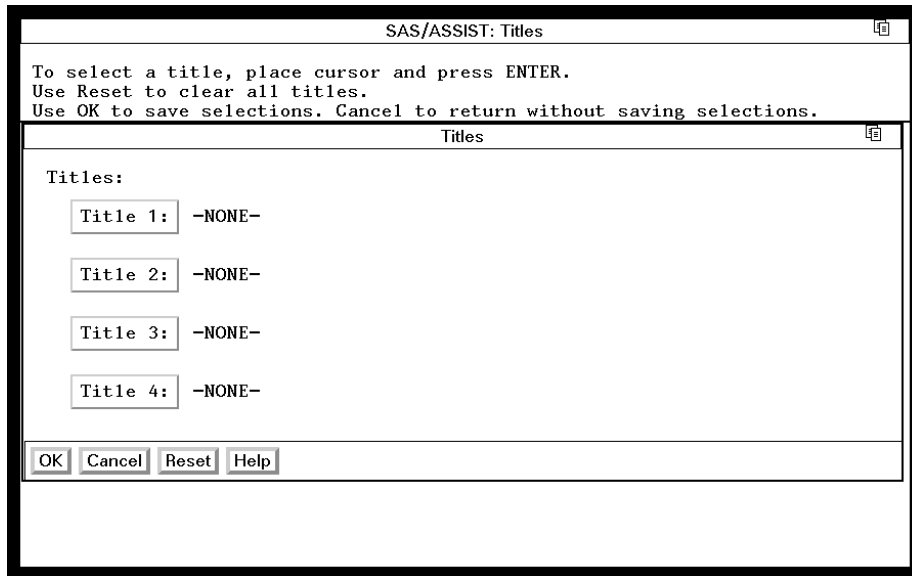
You can customize the report by adding titles and footnotes, changing the page dimensions, and selecting headings. Follow these directions to add a title to your report:

- 1 Follow this selection path:

Edit ► **Titles...**

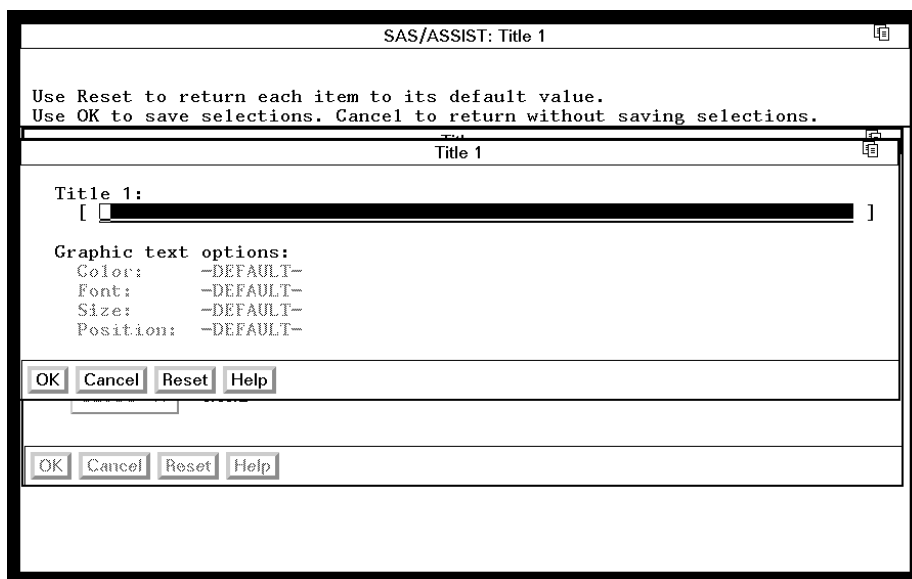
The Titles window appears.

Display 3.10 Titles Window



- 2 Select **title 1** from the Titles window. The Title 1 window appears.

Display 3.11 Title 1 Window



- 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:

►

The report appears in the Output window.

Display 3.12 Information on Ranch Style Houses Report

Style of homes	Square footage	Number of bedrooms	Number of bathrooms	Street address	Asking price
RANCH	1250	2	1	Sheppard Avenue	\$64,000
RANCH	1500	3	3	Kemble Avenue	\$86,650
RANCH	1535	3	3	State Highway	\$89,100
RANCH	720	1	1	Nicholson Drive	\$34,550

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

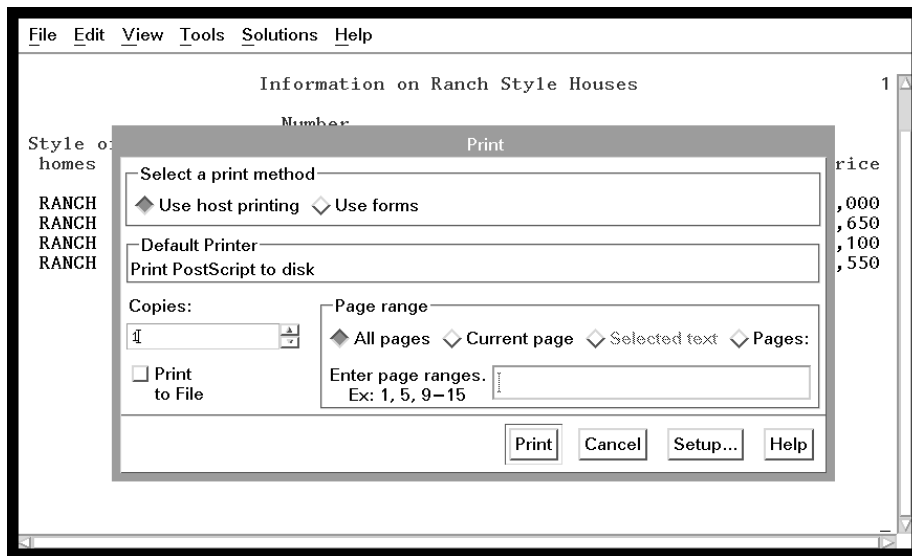
If you do not want to print the report, go to the next section. To print the report, follow these instructions.

- 1 Follow this selection path from the Output window:

►

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.

Display 3.13 Print Window



- 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 177 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 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 26.

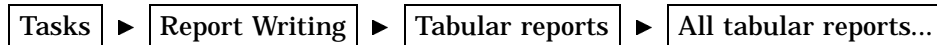
Producing a Tabular Report

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.

Style of homes	Asking price		
	Mean	Min	Max
CONDO	99312.50	79350.00	127150.00
RANCH	68575.00	34550.00	89100.00
SPLIT	77983.33	65850.00	94450.00
TWOSTORY	83825.00	55850.00	107250.00

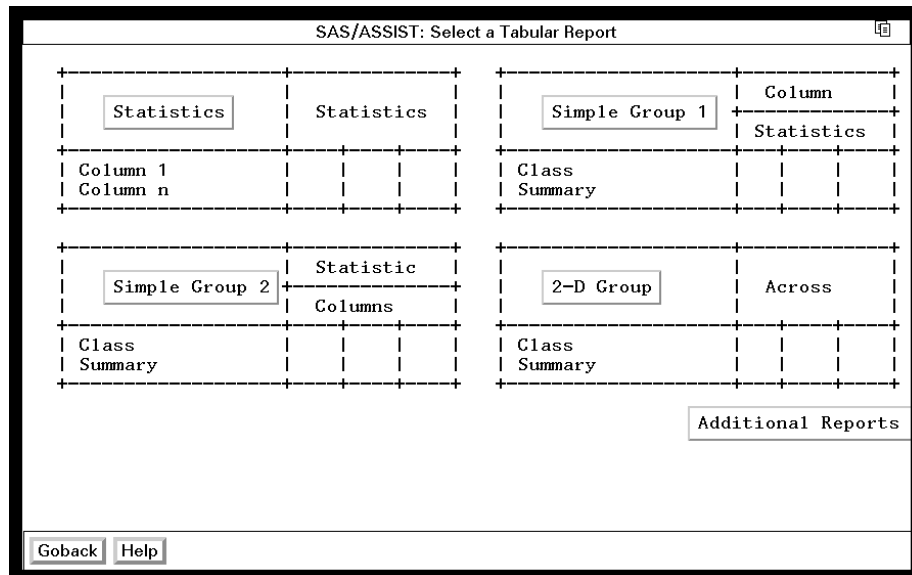
Setting Up the Report

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



The Select a Tabular Report window appears.

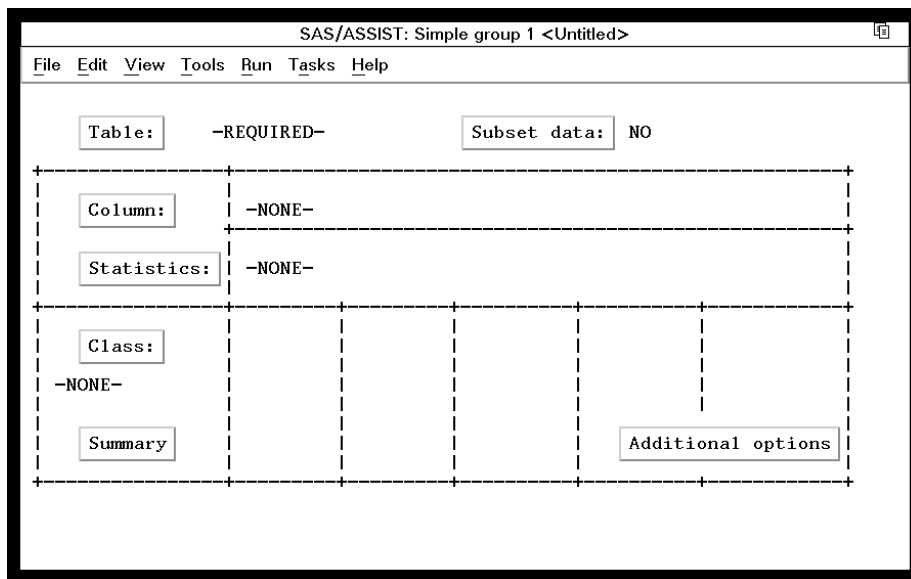
Display 3.14 Select a Tabular Report Window



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.

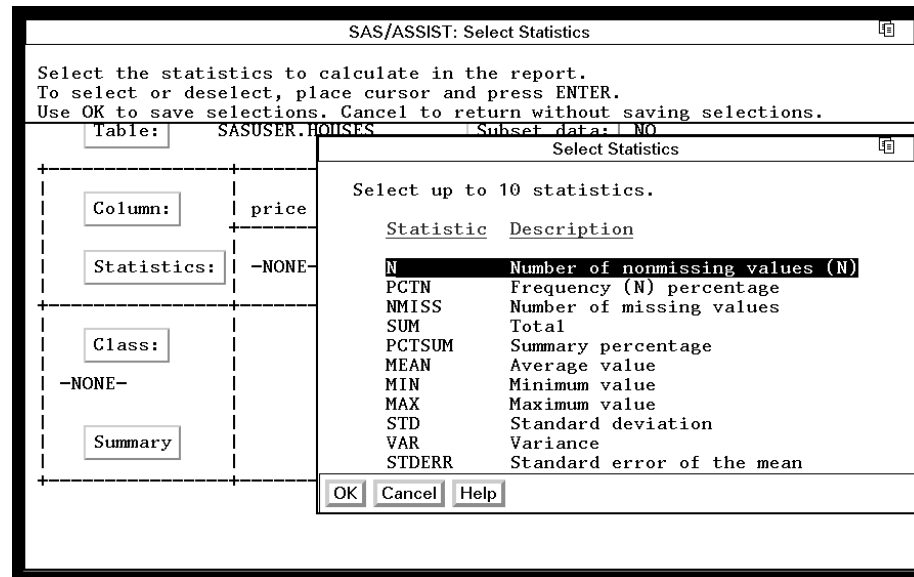
Display 3.15 Simple Group 1 Window



- 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 24.
- 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 26.
- 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 25.
- 7 Select **Statistics** from the Second Report Style window. A list of statistics that you can choose for the report appears.

Display 3.16 Select Statistics Window



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 36 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:



The report appears in the Output window.

Display 3.17 Tabular Report of Houses by Style

Style of homes	Asking price		
	Mean	Min	Max
CONDO	99312.50	79350.00	127150.00
RANCH	68575.00	34550.00	89100.00
SPLIT	77983.33	65850.00	94450.00
TWOSTORY	83825.00	55850.00	107250.00

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

- 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 38.

Exiting This Task

When you have finished viewing or printing your report, return to the Simple group 1 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 26.

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

The FREQ Procedure

Table of style by bedrooms

```

style(Style of homes)      bedrooms(Number of bedrooms)
Frequency|
Percent  |      1|      2|      3|      4| Total
-----+-----+-----+-----+-----
CONDO    |      0|      2|      1|      1|      4
          | 0.00| 13.33|  6.67|  6.67| 26.67
-----+-----+-----+-----+-----
RANCH    |      1|      1|      2|      0|      4
          |  6.67|  6.67| 13.33|  0.00| 26.67
-----+-----+-----+-----+-----
Total    |      2|      5|      4|      4|     15
          | 13.33| 33.33| 26.67| 26.67| 100.00
(Continued)
    
```

Setting Up the Report

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



The Select a Style of Report window appears.

Display 3.19 Select a Style of Report Window

SAS/ASSIST: Select a Style of Report

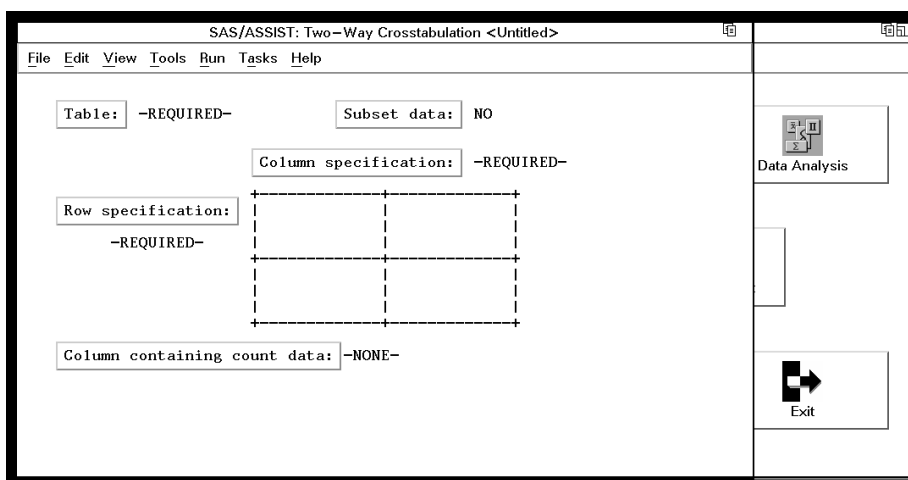
Select report type:

Column specification

Row specification			
-------------------	--	--	--

Frequency	Percent	Cumulative Frequency	Cumulative Percent
--	--	--	--
--	--	--	--
--	--	--	--

- 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 24.
- 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 26.
- 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 25.
- 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 36 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:

Run

▶

Submit

The report appears in the Output window.

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

```

File Edit View Tools Solutions Help
Style of House vs. Number of Bedrooms Frequency Report 1
The FREQ Procedure
Table of style by bedrooms
style(Style of homes) bedrooms(Number of bedrooms)
Frequency|
Percent | 1| 2| 3| 4| Total
-----|-----|-----|-----|-----|-----
CONDO | 0 | 2 | 1 | 1 | 4
| 0.00 | 13.33 | 6.67 | 6.67 | 26.67
-----|-----|-----|-----|-----|-----
RANCH | 1 | 1 | 2 | 0 | 4
| 6.67 | 6.67 | 13.33 | 0.00 | 26.67
-----|-----|-----|-----|-----|-----
Total | 2 | 5 | 4 | 4 | 15
| 13.33 | 33.33 | 26.67 | 26.67 | 100.00
(Continued)

```

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

- 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 38.

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 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 26.

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