Getting Started with the SAS® Interfaces

Course Notes

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Getting Started with the SAS® Interfaces Course Notes

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Course Description

This material is for SAS programmers who want to learn how to navigate the SAS interfaces from a programming perspective. SAS Studio, SAS Enterprise Guide, and the SAS windowing environment are the three interfaces that are included.

To learn more…

For information on other courses in the curriculum, contact the SAS Education Division at 1-800-333-7660, or send e-mail to training@sas.com. You can also find this information on the Web at support.sas.com/training/ as well as in the Training Course Catalog.

For a list of other SAS books that relate to the topics covered in this Course Notes, USA customers can contact our SAS Publishing Department at 1-800-727-3228 or send e-mail to sasbook@sas.com. Customers outside the USA, please contact your local SAS office.

Also, see the Publications Catalog on the Web at support.sas.com/pubs for a complete list of books and a convenient order form.

Prerequisites

Before attending this course, you should have experience using computer software. Specifically, you should be able to

- understand file structures and system commands on your operating systems
- access data files on your operating systems.

No prior SAS experience is needed.

Chapter 1 SAS® Studio

1.1 Using the Primary Interface Tabs 1-3

1.2 Using the CODE Tab Features 1-6

1.3 Using the RESULTS Tab Features 1-8

1.4 Accessing Help and Documentation 1-9

1.5 Diagnosing Syntax Errors 1-11

1.6 Working Interactively with Libraries 1-13

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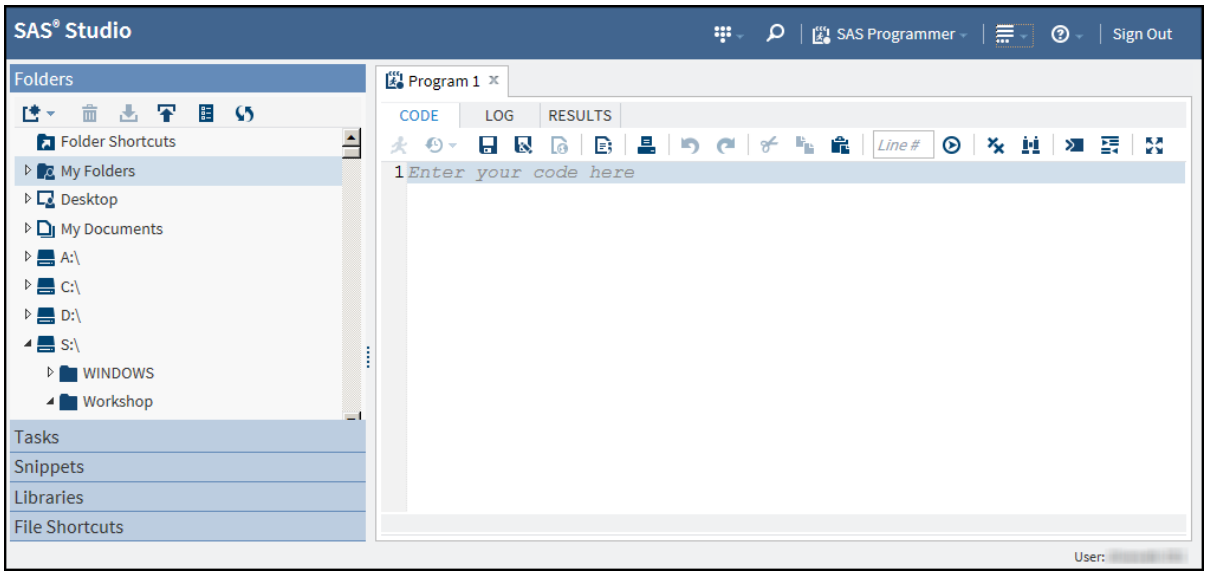
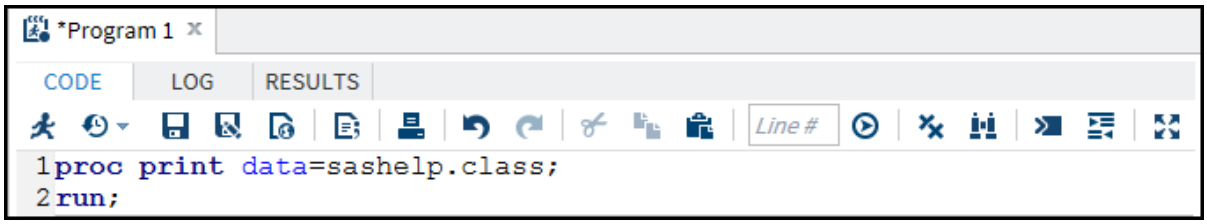
1.1 Using the Primary Interface Tabs

1. Start SAS Studio. The main window of SAS Studio consists of a navigation pane on the left and a work area on the right. The work area is used to display your CODE, LOG, and RESULTS tabs.



2. On the CODE tab of the Program 1 tab, enter the PROC PRINT step shown below.



3. On the CODE tab, click (**Run**) or press F3 to submit the program. If the program runs successfully, the RESULTS tab automatically opens and shows the PROC PRINT output.

4. Click the **LOG** tab and check the log for the two notes below. If you see any warnings or errors, return to the CODE tab, fix any mistakes, and rerun the program.

```
NOTE: There were 19 observations read from the data set SASHELP.CLASS.
NOTE: PROCEDURE PRINT used (Total process time):
```

5. Click the **RESULTS** tab. Notice that the PROC PRINT output contains an **Obs** column.

Obs	Name	Sex	Age	Height	Weight
1	Alfred	M	14	69.0	112.5
2	Alice	F	13	56.5	84.0
3	Barbara	F	13	65.3	98.0
4	Carol	F	14	62.8	102.5
5	Henry	M	14	63.5	102.5

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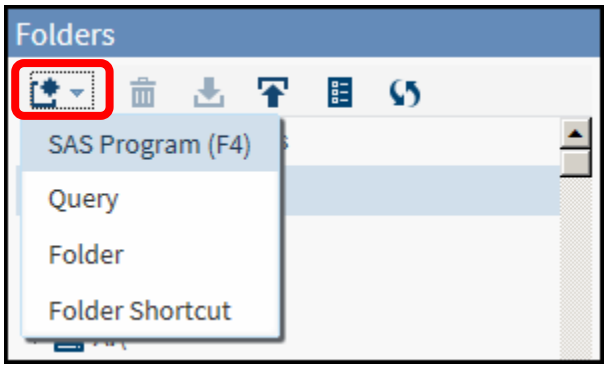
6. Click the **CODE** tab and add the NOOBS option to eliminate the **Obs** column.

```
1proc print data=sashelp.class noobs;
2run;
```

The NOOBS option is in the PROC PRINT statement before the semicolon.

7. On the CODE tab, click (**Run**) or press F3 to submit the program.
8. View the new information on the RESULTS tab and the LOG tab.
9. Create another program. In the Folders section of the navigation pane, click (**New**) ⇨ **SAS Program (F4)** or press F4.



10. On the CODE tab of the Program 2 tab, enter the PROC PRINT step and the PROC MEANS step shown below.

11. On the CODE tab, click (**Run**) or press F3 to submit the program. If the program runs successfully, the RESULTS tab automatically opens and shows the PROC PRINT and PROC MEANS output.
12. Click the **LOG** tab. Check the log for notes. If you see any warnings or errors, return to the CODE tab, fix any mistakes, and rerun the program.
13. Click the **CODE** tab and click (**Save As**) to save the program.

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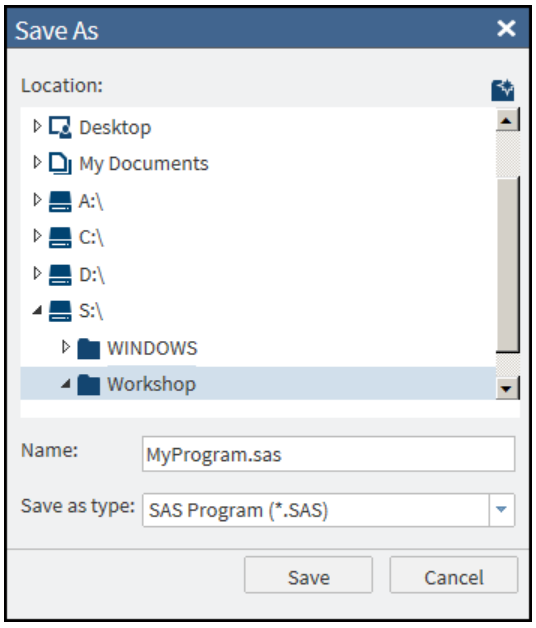
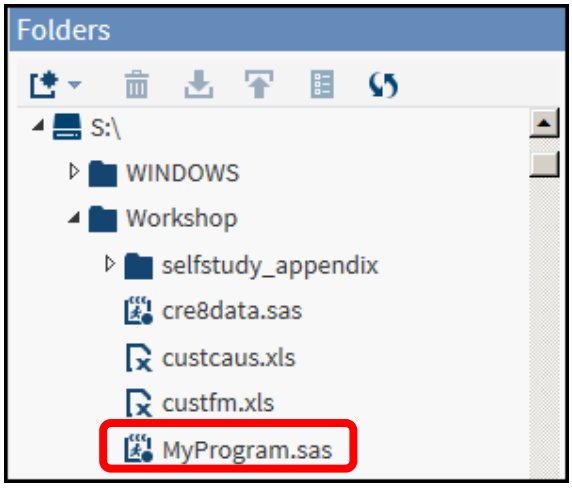
14. In the Save As window, choose a file location such as **s:\workshop**, name the file **MyProgram**, and click **Save**.



15. Notice that the Program 2 tab now appears with the program name. Close the program tab for **MyProgram** by clicking the **X** next to the name.

An asterisk (*) in front of a filename means that the program was not saved.

16. Open the program that you saved and closed. In the Folders section of the navigation pane, navigate to the file location for **MyProgram.sas**.



17. Double-click **MyProgram.sas** to open the program. Instead of double-clicking, you can drag the program into the work area.

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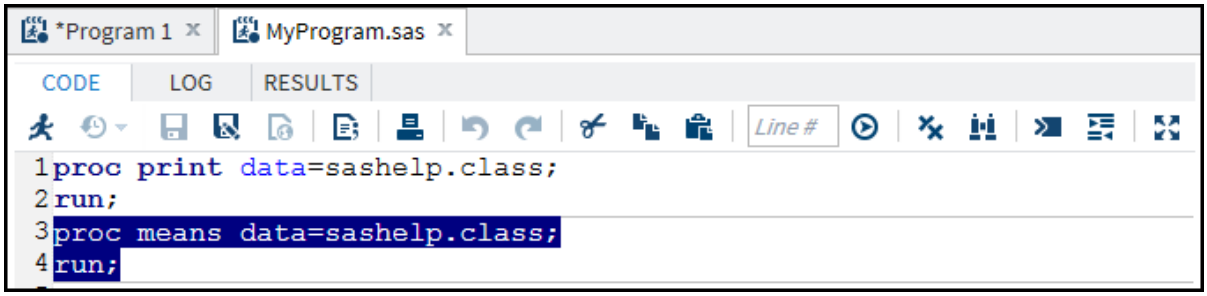
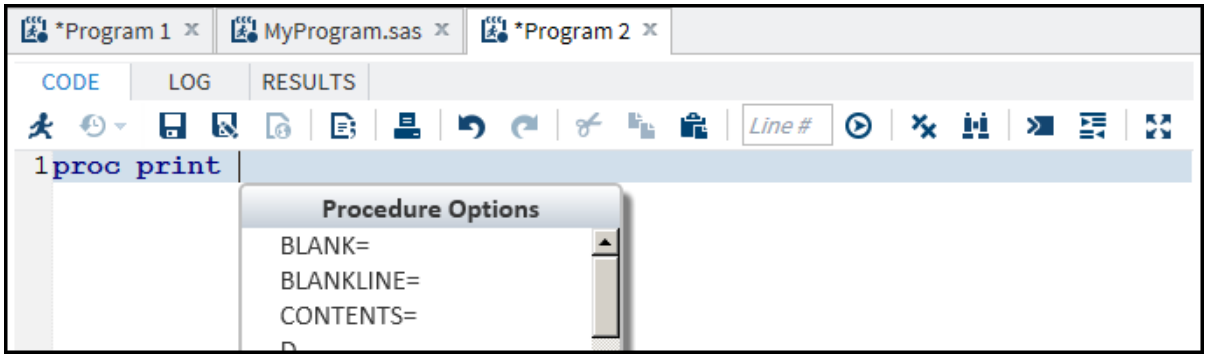
18. Submit a portion of the program. On the CODE tab, highlight the PROC MEANS step (two lines of code) and click (**Run**) or press F3 to submit the highlighted code.



19. View the RESULTS tab and the LOG tab. Notice that the information on the tabs pertains only to the PROC MEANS step.

1.2 Using the CODE Tab Features

1. On the CODE toolbar, click (**Maximize View**) to maximize the work area and hide the navigation pane.
2. After you maximize the window, click (**Exit Maximize View**) to unhide the navigation pane.
3. In the Folders section of the navigation pane, click (**New**) ⇨ **SAS Program (F4)** or press F4 to start a new program.
4. On the CODE tab of Program 2, start to enter a PROC PRINT step. Notice the autocomplete feature as you type. The autocomplete feature gives you a window of possible keywords that might come next in your program. For example, after you type **proc print**, a pop-up window appears. The window contains procedure options that pertain to the PRINT procedure.



To navigate to the desired keyword in the window, scroll through the list by using the up and down arrow keys, the Page Up or Page Down keys, or drag the scroll bar with your mouse pointer. To add the keyword to your program, double-click the keyword or press the Enter key.

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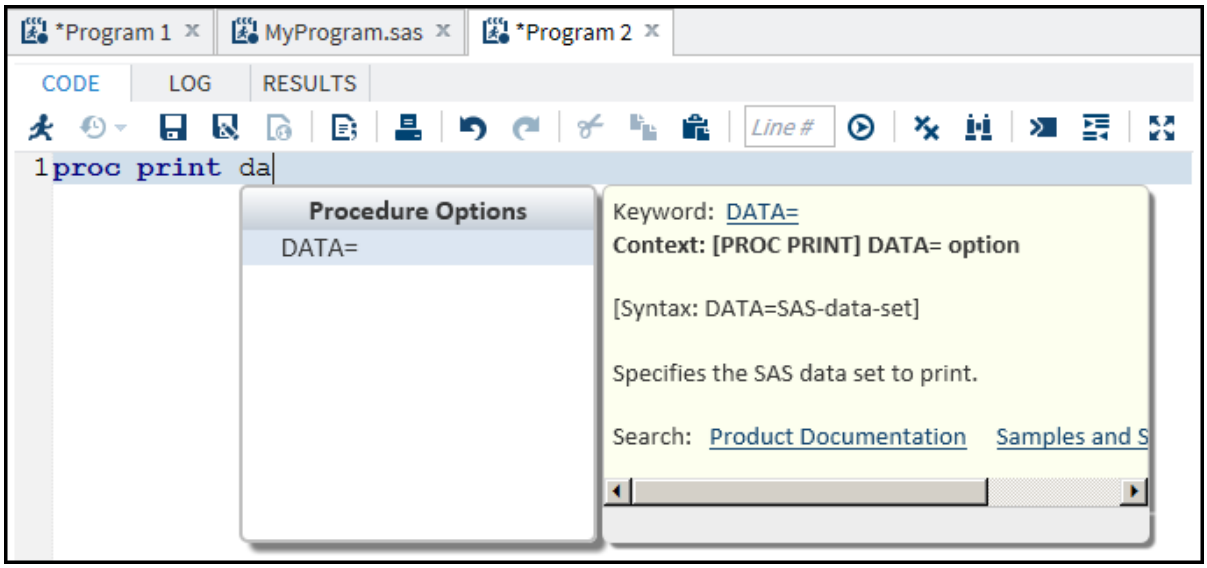
5. Start to type the DATA= option. Syntax Help appears as you narrow the list of keywords. Syntax Help also appears if you right-click a keyword in the program and select **Syntax Help**.



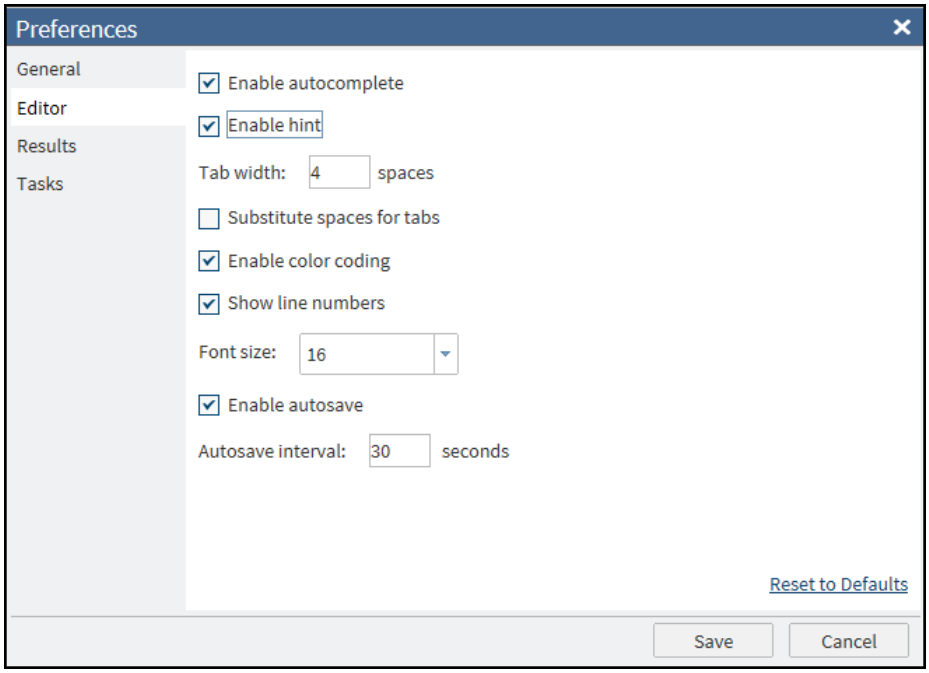
6. Complete the PROC PRINT step. Notice the autocomplete feature and Syntax Help as you type.

```
proc print data=sashelp.class;
run;
```

7. You can also access Syntax Help by positioning the mouse pointer on a valid keyword in your program, if you enable the feature in the editor preferences. To enable the option, click (**More Application Options**) on the main toolbar.

8. Select **Preferences** ⇨ **Editor** and notice the list of editor preferences.

9. Select the **Enable hint** check box and click **Save**.



10. Position your mouse pointer on the word **print** in your program to see the Syntax Help.

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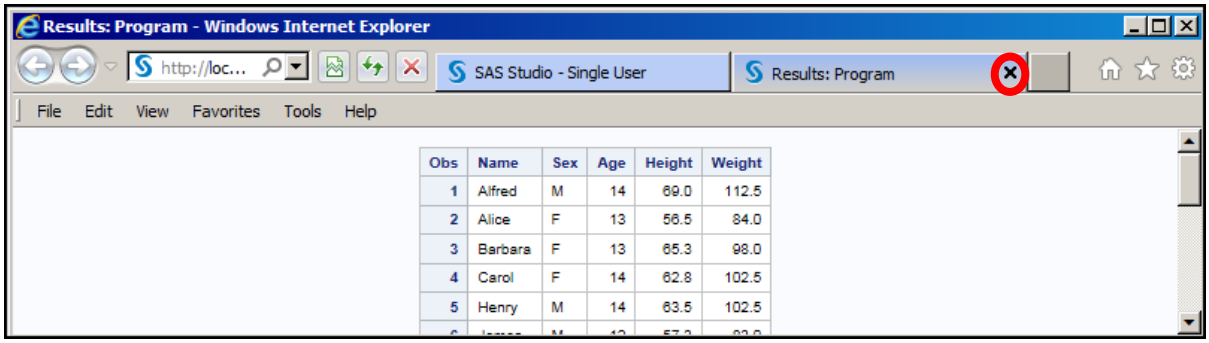
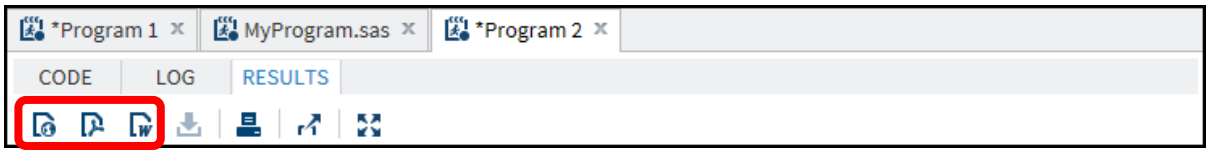
1.3 Using the RESULTS Tab Features

1. On the CODE tab of Program 2, click (**Run**) or press F3 to submit the PROC PRINT step. If the program runs successfully, the RESULTS tab automatically opens and shows the PROC PRINT output.
2. By default, the results created on the RESULTS tab are HTML5 output. On the RESULTS toolbar, click (**Open In A New Browser Tab**) to open the HTML5 output in another browser tab.
3. After viewing the output in the new browser tab, close the browser tab.



Obs	Name	Sex	Age	Height	Weight
1	Alfred	M	14	69.0	112.5
2	Alice	F	13	56.5	84.0
3	Barbara	F	13	65.3	98.0
4	Carol	F	14	62.8	102.5
5	Henry	M	14	63.5	102.5

4. PDF output and RTF output are created by default in addition to HTML5 output. PDF output and RTF output are not displayed on the RESULTS tab. You can download the HTML5, PDF, and RTF output to a file by clicking the appropriate button.



5. Click (**Download Results As A PDF File**) or (**Download Results As An RTF File**) to download the PDF or RTF output. Follow the prompts to open the file. After viewing the file, close the file.
6. You can change results preferences in the Preferences window. To access the results preferences, click (**More Application Options**).

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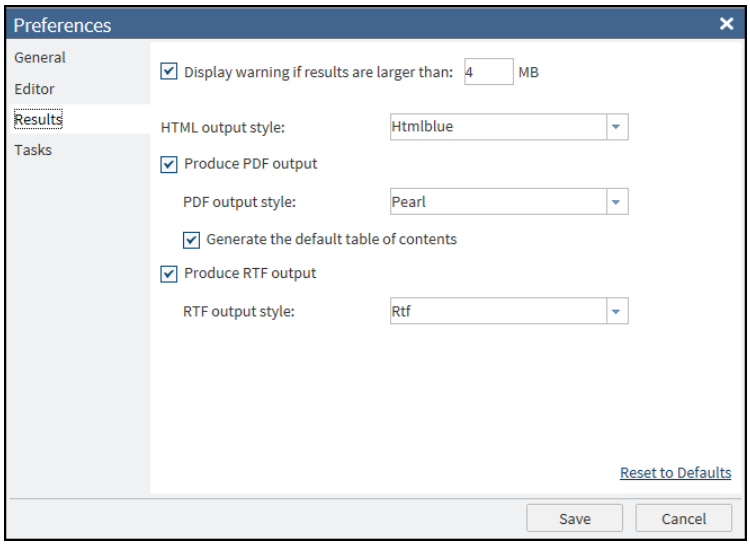
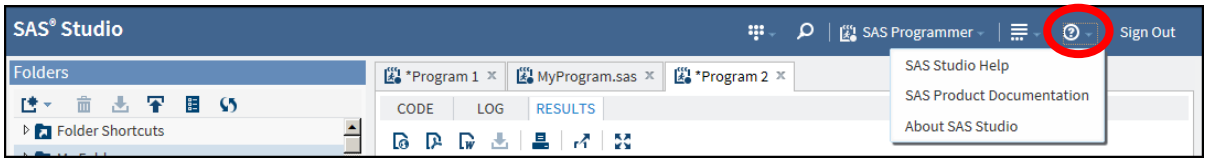
7. Select **Preferences** ⇨ **Results** and notice the list of results preferences.



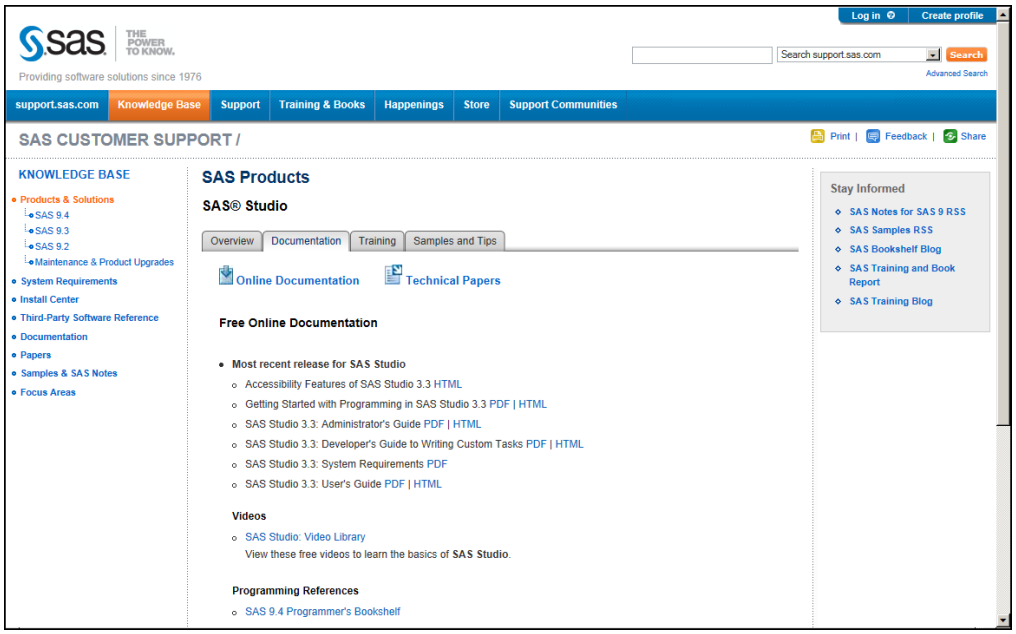
8. Click **Cancel** to close the Preferences window.

1.4 Accessing Help and Documentation

1. You can access SAS Help and documentation from the main toolbar.



2. Click ⇨ **SAS Studio Help** to be directed to the SAS Studio documentation web page. This web page is useful for assistance with navigating the SAS Studio interface. After you view the web page, close the window.



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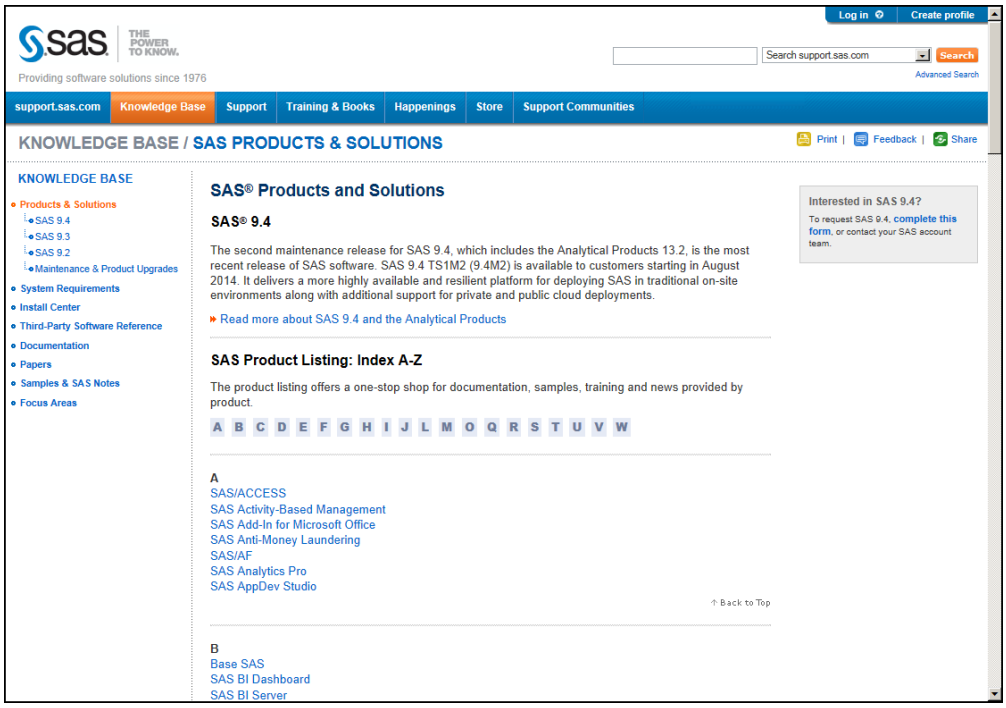
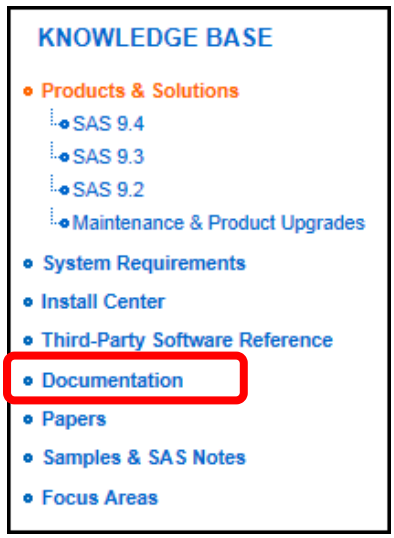
External address to the SAS Studio page:
http://support.sas.com/software/products/sasstudio/

3. Click ⇨ **SAS Product Documentation** to be directed to the SAS Products & Solutions web page. This web page is useful for learning information about a SAS product.



External address to the SAS Products page: **http://support.sas.com/software/**

4. From the above web page, select **Documentation** in the KNOWLEDGE BASE navigation pane.



5. The SAS Product Documentation web page is now displayed. This web page is useful for viewing the syntax documentation related to a SAS product.

External address to the SAS Product Documentation page:
http://support.sas.com/documentation/

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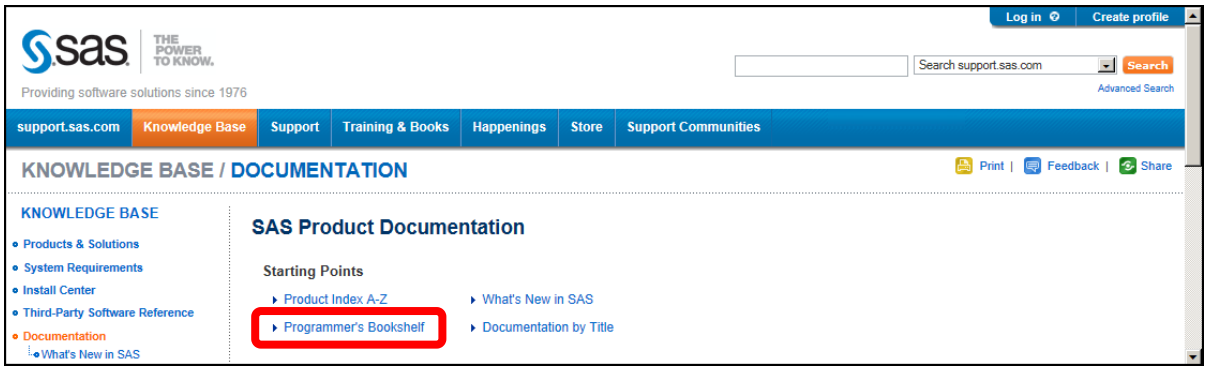
6. From this web page, select **Programmer's Bookshelf**. Then select the link for your version of SAS.



The Programmer's Bookshelf contains selected documentation for SAS products such as Base SAS.

7. Browse the Programmer's Bookshelf web page. Close the window when you are finished browsing.

1.5 Diagnosing Syntax Errors

1. In the Folders section of the navigation pane, click (**New**) ⇨ **SAS Program (F4)** or press F4 to start a new program.
2. On the CODE tab, enter the following program with the formatting as shown:

```
proc print data=  sashelp.class; run; proc  means
data=sashelp.class; run;
```

3. On the CODE toolbar, click (**Format Code**) to make your program easier to read. This button automatically formats your code by adding line breaks and indenting at appropriate nesting levels.
4. Add two mistakes to the program. Remove the letter **o** from the first PROC step and remove the semicolon after the last reference to **sashelp.class**.

```
prc print data=sashelp.class;
run;
proc means data=sashelp.class
run;
```

5. On the CODE tab, click (**Run**) or press F3 to submit the program. The program tab shows an icon in front of the program name if the program contains errors, warnings, or both.

Errors or Errors and Warnings:	*Program 3
Warnings with no Errors:	*Program 3

6. On the RESULTS tab, notice that there is PROC PRINT output but no PROC MEANS output.
7. On the LOG tab, scroll through the log. Notes appear as blue text, warnings as green text, and errors as red text.

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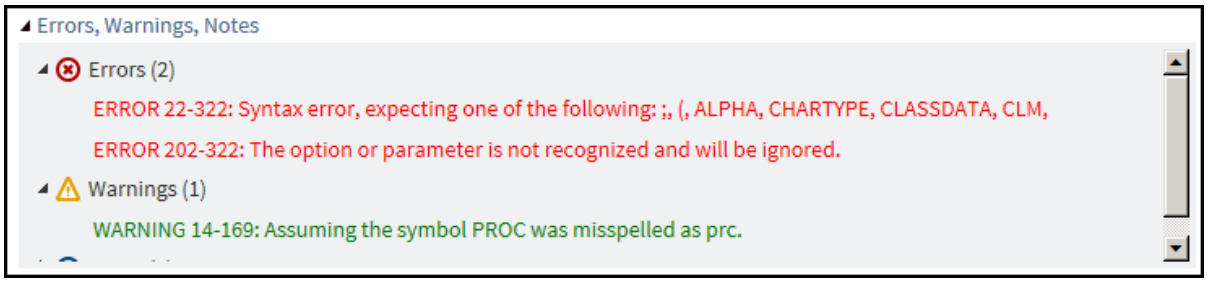
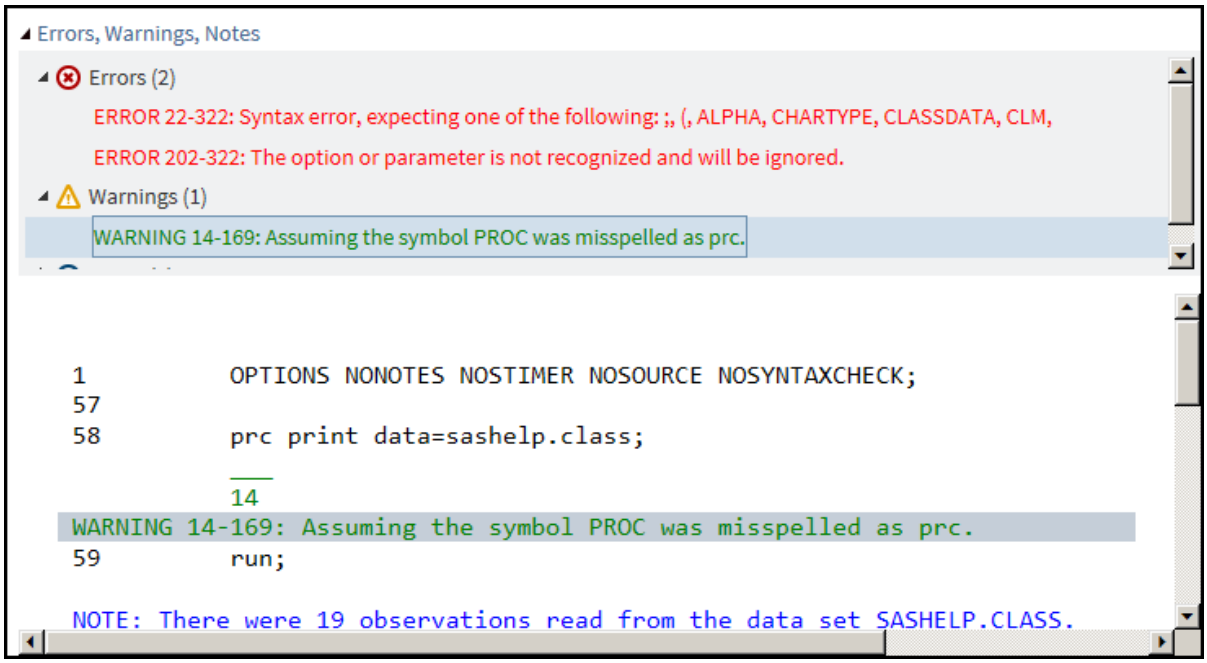
8. Expand the Errors, Warnings, and Notes sections to view the messages at the beginning of the Log window.



9. Click on a message in an Errors, Warnings, or Notes section. The message is highlighted in the log farther down.



10. Return to the CODE tab and fix the two mistakes. Submit the program and verify that there are no errors or warnings in the log.
11. In the log, notice the OPTIONS statement at the beginning and ending of the program. SAS Studio automatically includes these statements before and after your program. In addition, SAS Studio includes supplemental code before and after your program. By default, this code is not visible in the log.
12. To view the complete program executed by SAS, including the generated code, click (**More Application Options**) ⇨ **Preferences** ⇨ **General**.

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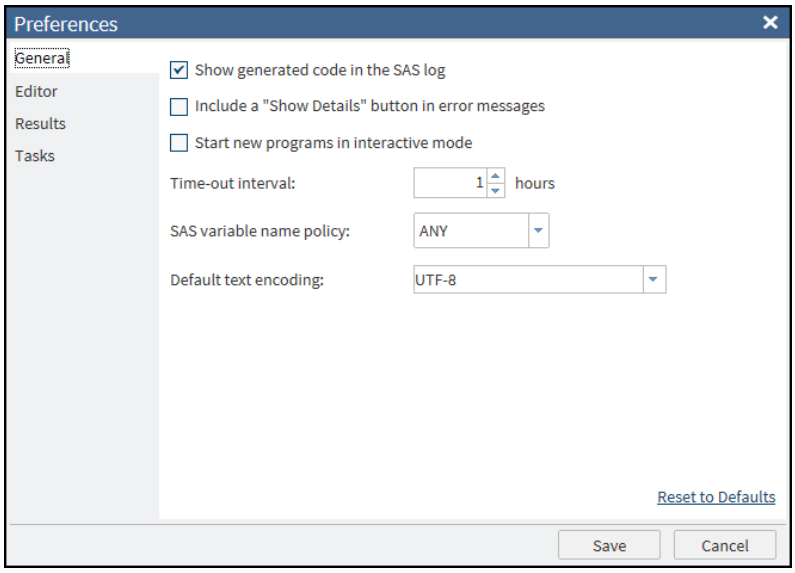
13. Select the **Show generated code in the SAS log** check box and click **Save**.



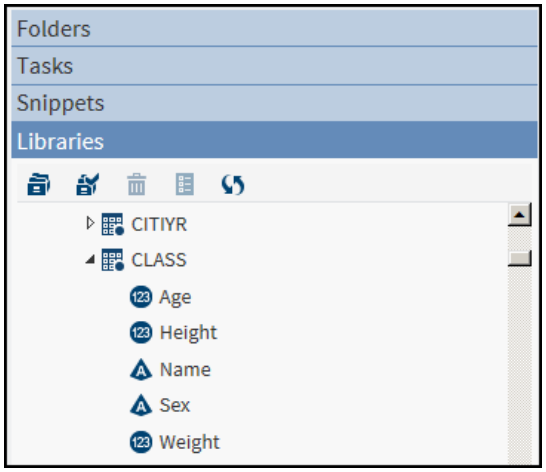
14. Submit the program and view the supplemental code in the log.

15. Return to the Preferences window and clear the **Show generated code in the SAS log** check box. Click **Save**.

1.6 Working Interactively with Libraries

1. In the navigation pane, go to the Libraries section.

2. Click the arrow in front of **My Libraries** to expand it. Also, expand the library **SASHELP** and the data set **CLASS**. After expanding a data set, you see a list of the variables in the data set.



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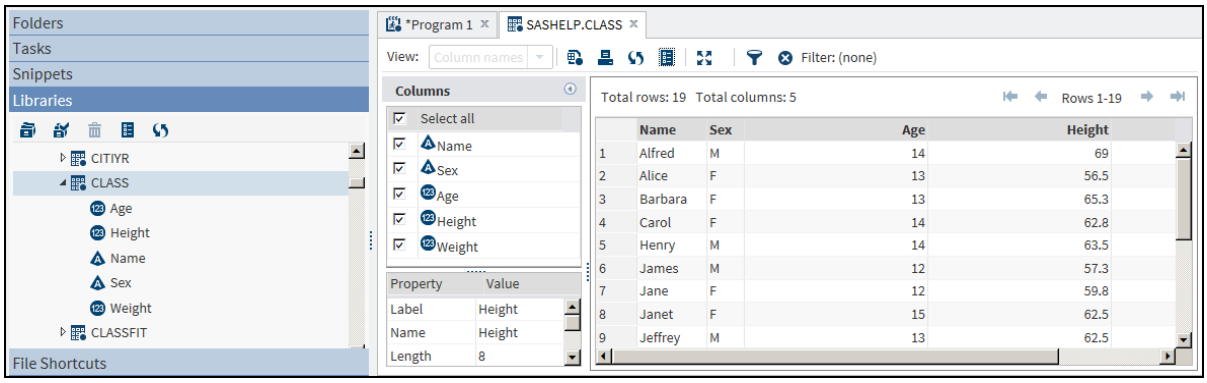
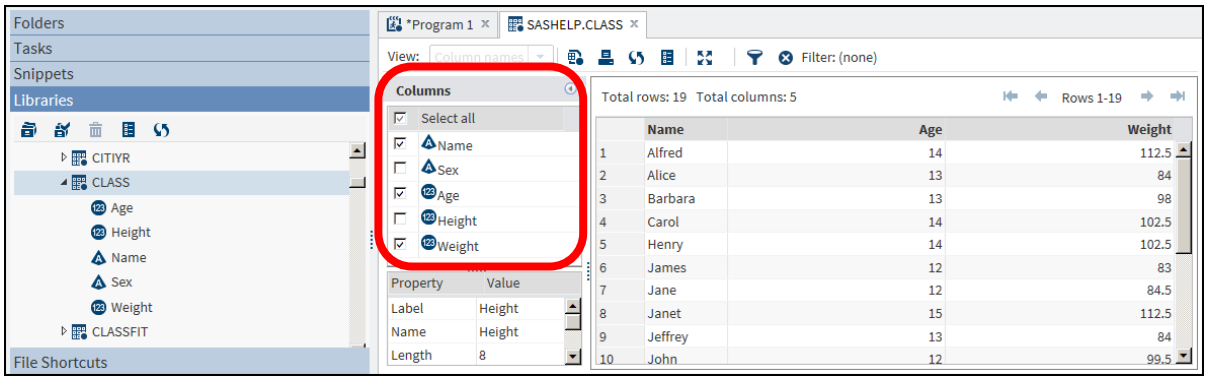
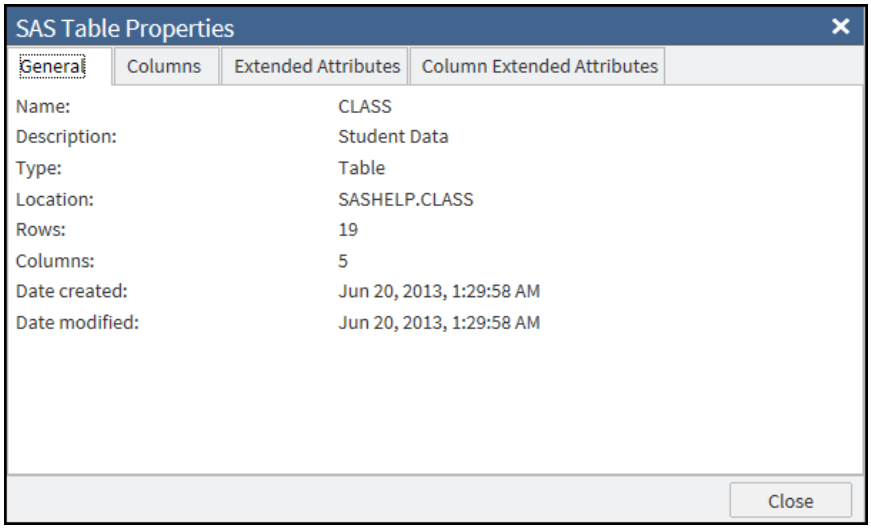
3. Open the **SASHELP.CLASS** data set in the Table Viewer by double-clicking **CLASS**. The Table Viewer displays as many as the first 100 rows of a table.



4. By default, all columns in the table are displayed. Use the Columns area to specify which columns you want to include in the Table Viewer.



5. On the Table Viewer toolbar, click (**Table Properties**) to view the properties of the table.



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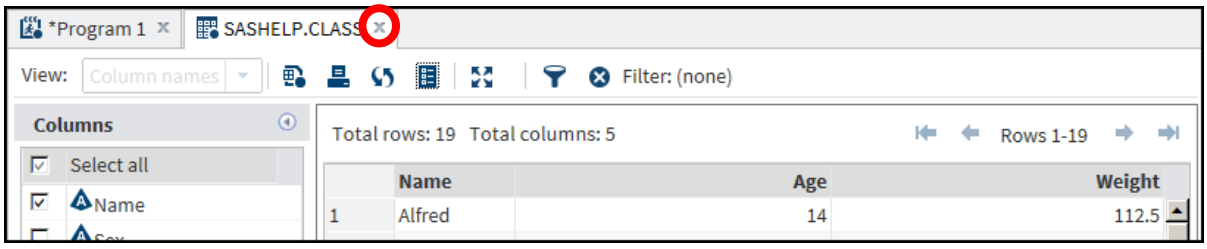
6. Click **Close** to close the SAS Table Properties window and click the **X** to close the Table Viewer.

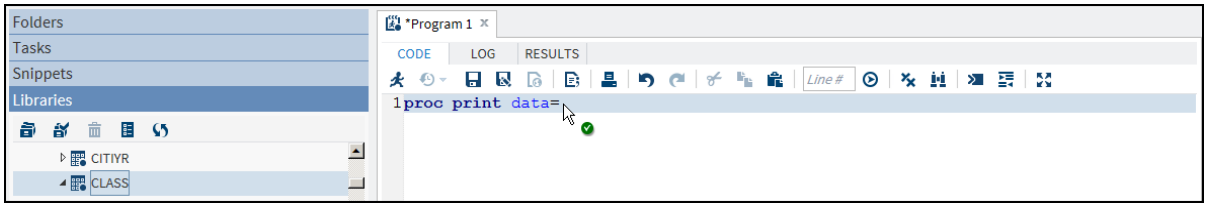


7. In the Folders section of the navigation pane, click (**New**) ⇨ **SAS Program (F4)** or press F4 to start a new program.

8. On the CODE tab, enter the following:

```
proc print data=
```

9. In the Libraries section of the navigation pane, you can use a drag-and-drop operation to move table names and column names into your program. Drag the **CLASS** data set from the Libraries section to the DATA= option in the PROC PRINT statement.



10. Finish entering the program as follows:

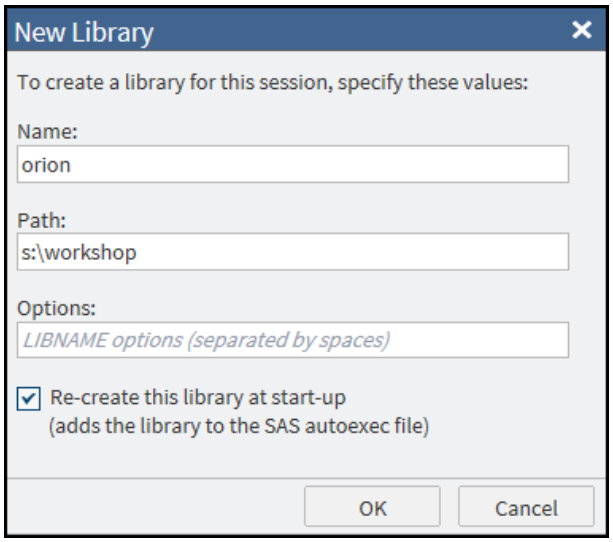
```
proc print data=SASHELP.CLASS;
run;
```

11. Submit the program. Verify the information on the RESULTS tab and the LOG tab.

12. Return to the Libraries section of the navigation pane.

13. A new library can be assigned interactively by clicking (**New Library**).

14. In the New Library window, complete the fields as needed and click **OK**.



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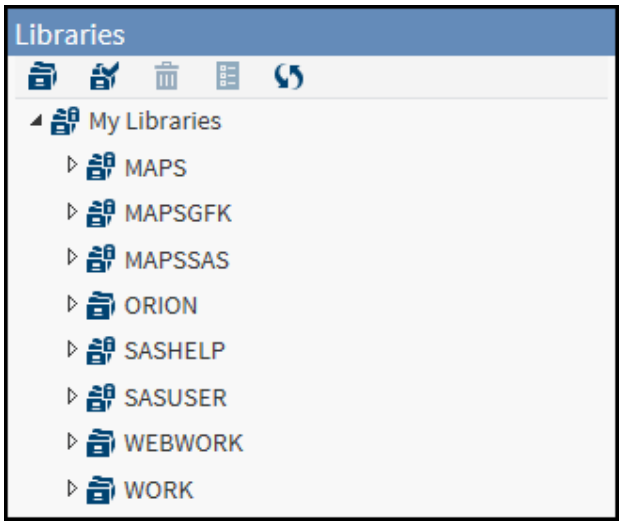
15. The new library appears in the Libraries section.



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Chapter 2 SAS® Enterprise Guide®

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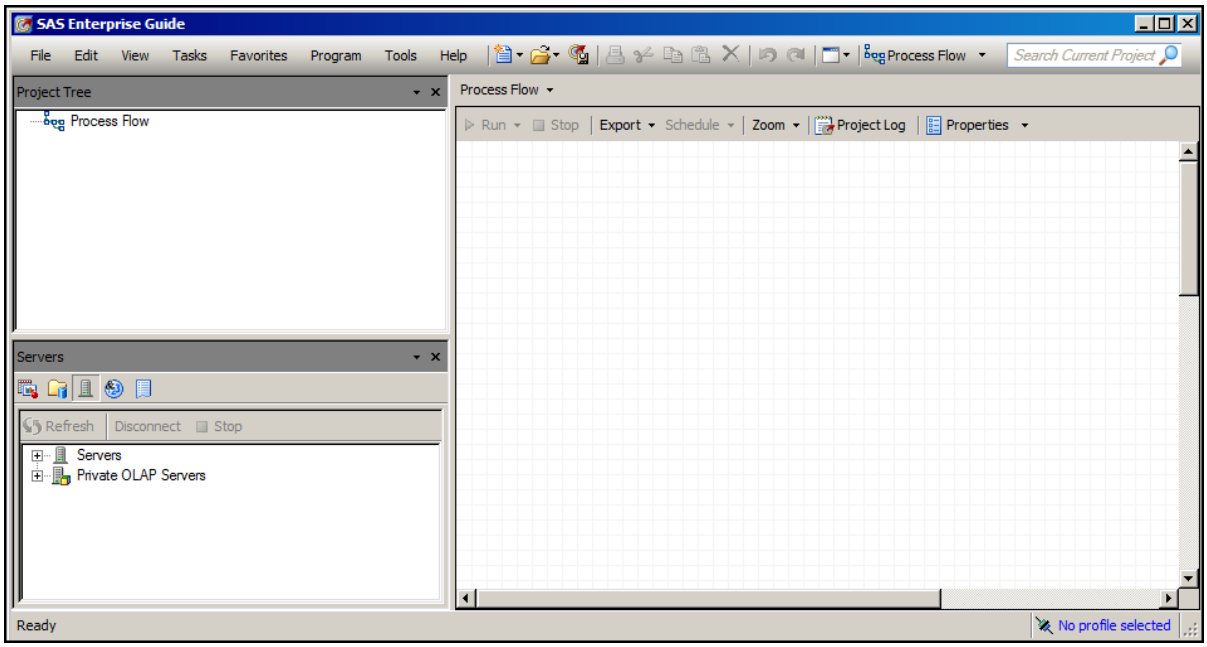
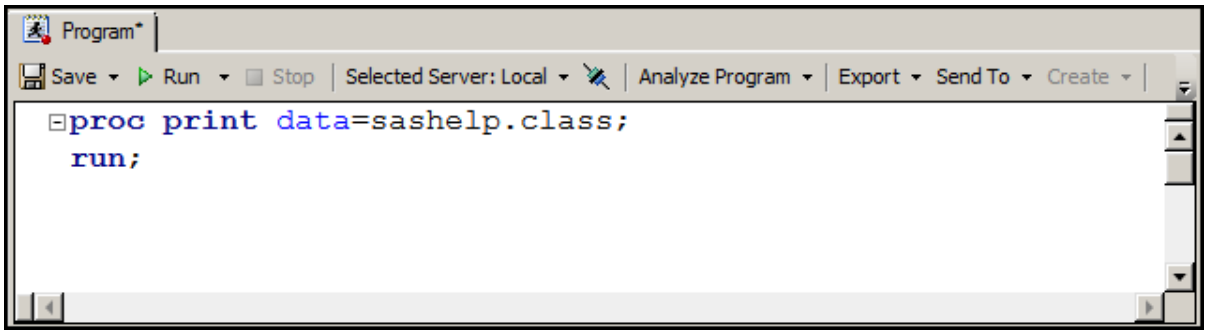
2.1 Using the Primary Interface Tabs

1. Start SAS Enterprise Guide. Close the Welcome to SAS Enterprise Guide window by clicking the **X** in the right corner of the window. By default, SAS Enterprise Guide contains a Project Tree window and Servers window. They are docked on the left side. The Process Flow window is docked on the right side.



2. Start a new program by selecting **File** ⇨ **New** ⇨ **Program** or by clicking (**New**) ⇨ **Program**.

3. On the Program tab, enter the PROC PRINT step shown below.



4. On the Program tab, click **Run** or press F3 to submit the program. If the program runs successfully, the Results tab automatically opens and shows the PROC PRINT output.

5. Click the **Log** tab and check the log for the two notes shown below. If you see any warnings or errors, return to the Program tab, fix any mistakes, and rerun the program.

```
NOTE: There were 19 observations read from the data set SASHELP.CLASS.
NOTE: PROCEDURE PRINT used (Total process time):
```

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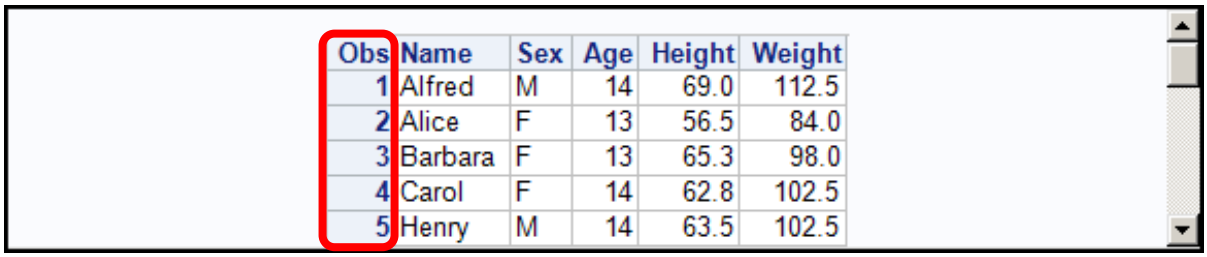
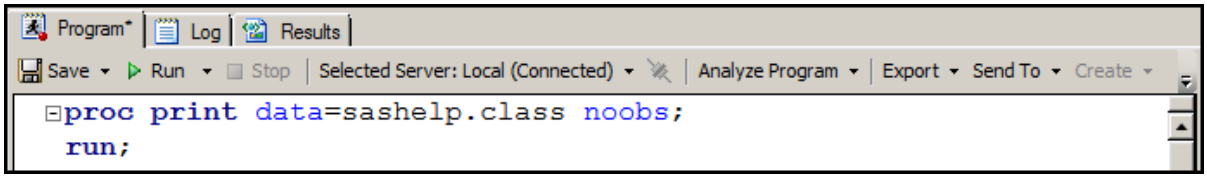
6. Click the **Results** tab. Notice that the PROC PRINT output contains an **Obs** column.



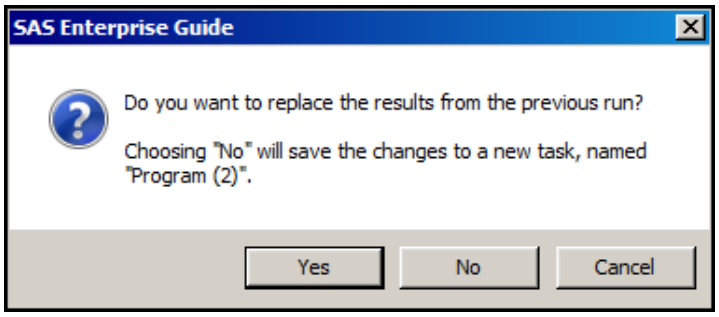
Obs	Name	Sex	Age	Height	Weight
1	Alfred	M	14	69.0	112.5
2	Alice	F	13	56.5	84.0
3	Barbara	F	13	65.3	98.0
4	Carol	F	14	62.8	102.5
5	Henry	M	14	63.5	102.5

7. Click the **Program** tab and add the NOOBS option to eliminate the **Obs** column.

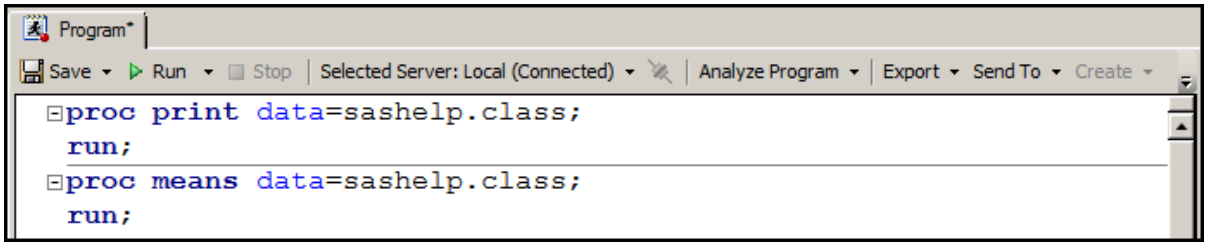


The NOOBS option is in the PROC PRINT statement before the semicolon.

8. On the Program tab, click the **Run** button or press F3 to submit the program.
9. Click **Yes** to replace the results from the previous run.



10. View the new information on the Results tab and the Log tab.
11. Create another program. Select **File** ⇨ **New** ⇨ **Program** or click (**New**) ⇨ **Program**.
12. On the new Program tab, enter the PROC PRINT step and the PROC MEANS step as shown.



An asterisk (*) after the word **Program** on the Program tab means that the program was not saved.

13. On the Program tab, click the **Run** button or press F3 to submit the program. If the program runs successfully, the Results tab automatically opens and shows the PROC PRINT and PROC MEANS output.
14. Click the **Log** tab. Check the log for notes. If you see any warnings or errors, return to the Program tab, fix any mistakes, and rerun the program.

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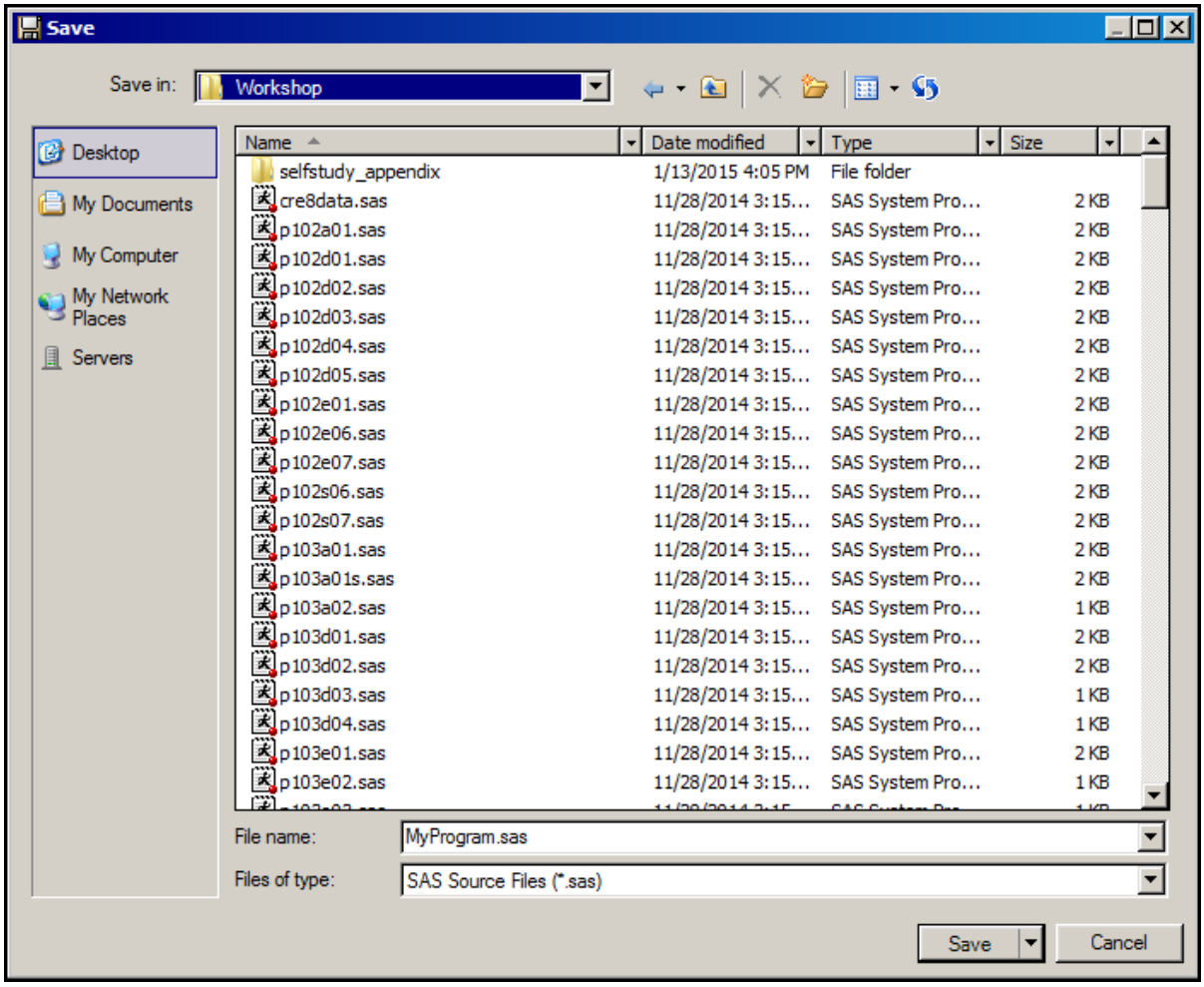
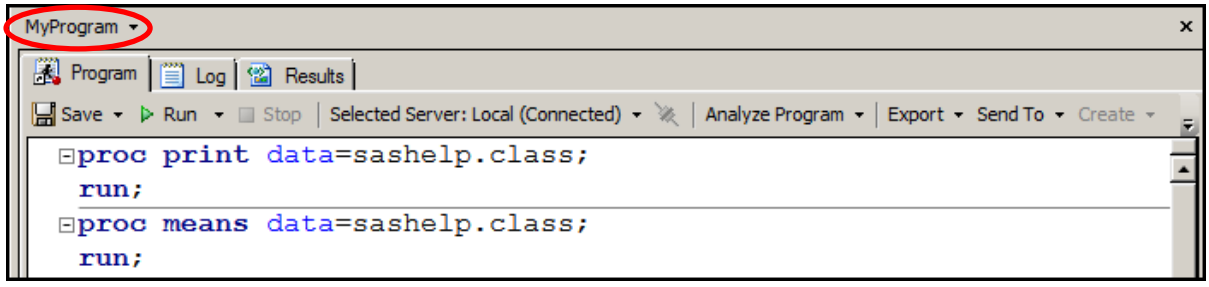
15. Click the **Program** tab. Select **File** ⇨ **Save Program (2) As** or click the **Save** button and then select **Save As** to save the program.

16. In the Save window, choose a file location such as **s:\workshop**, name the file **MyProgram**, and click **Save**.



17. Notice that the workspace area contains the program name above the Program, Log, and Results tabs.



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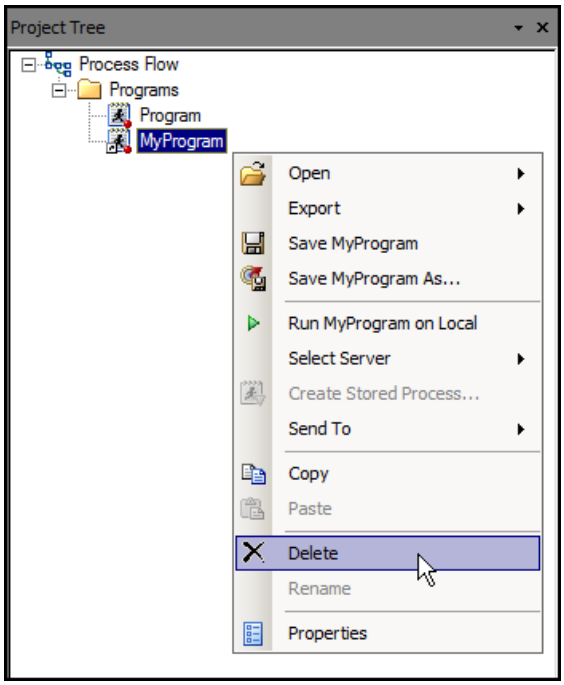
18. Remove **MyProgram** from the project. Right-click **MyProgram** in the Project Tree window and select **Delete**. Click **Yes** to delete all the items when you are prompted.

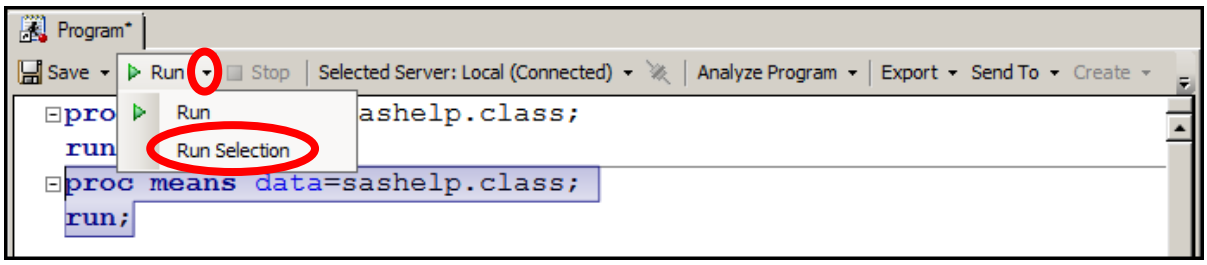


This action deletes the program from the project. However, the program still exists.

19. Open the program that you saved and removed. Select **File** ⇨ **Open** ⇨ **Program** or click (**Open**) ⇨ **Program**.

20. In the Open Program window, navigate to the file location to find **MyProgram** and click **Open**.

21. Submit a portion of the program. On the Program tab, highlight the PROC MEANS step (two lines of code). Click the drop-down arrow next to the Run button and select **Run Selection** or press F3 to submit the highlighted code.



22. View the Results tab and the Log tab. Notice that the information on the tabs pertains only to the PROC MEANS step.

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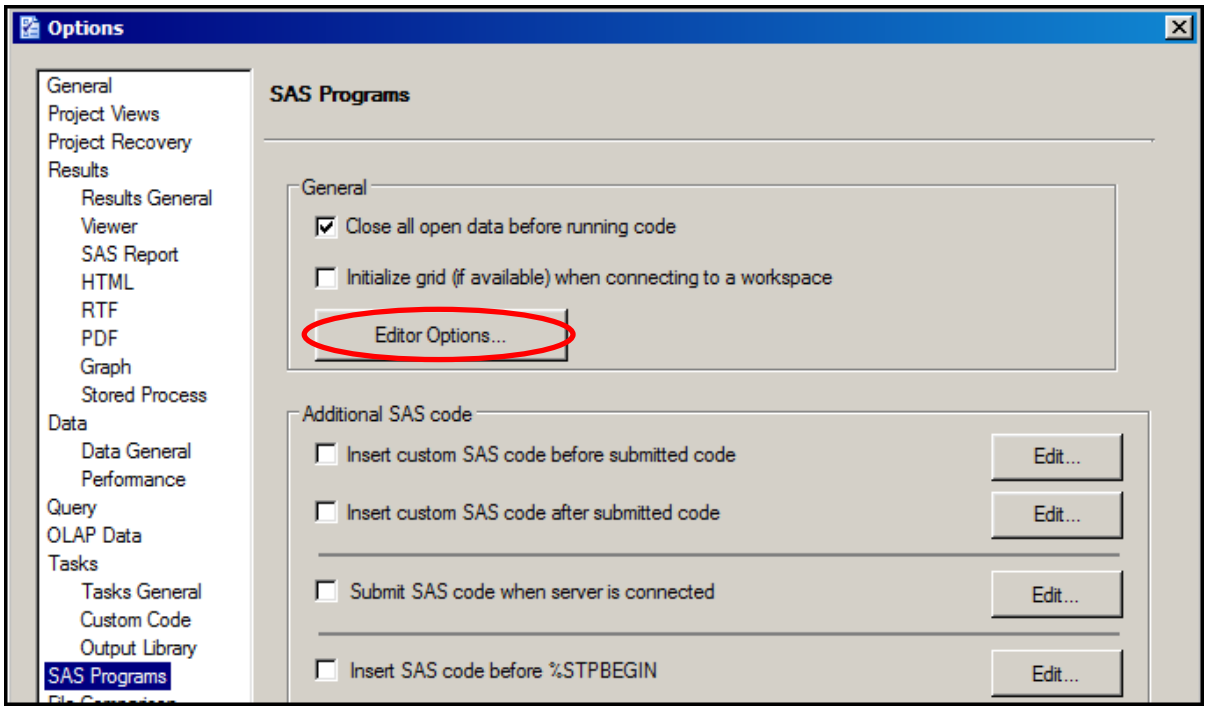
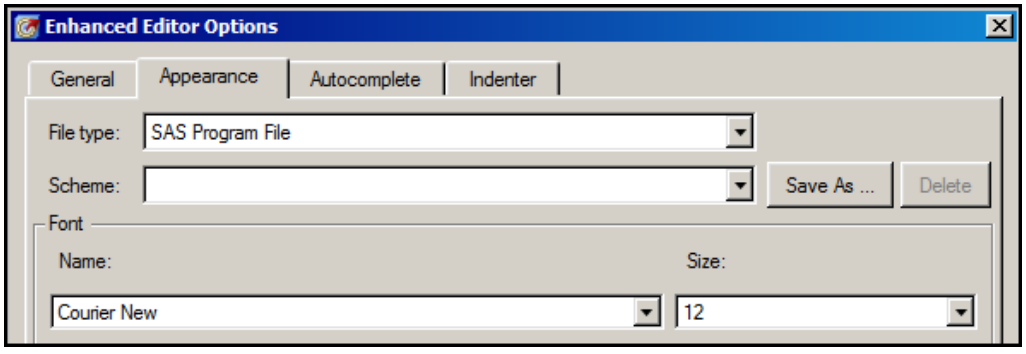
2.2 Using the Program Tab Features

1. Select **View** ⇨ **Maximize Workspace** to maximize the Program window and hide the Project Tree and Servers windows.
2. To unhide the Project Tree and Servers windows, select **View** ⇨ **Maximize Workspace** again.
3. Click the **Program** tab for **MyProgram**.
4. The appearance and functionality of the Program tab can be customized. To customize it, select **Tools** ⇨ **Options** ⇨ **SAS Programs**. Then click **Editor Options**.



5. In the Enhanced Editor Options window, four tabs contain editor options. On the Appearance tab, increase the font size and click **OK**. Click **OK** to close the Options window. Notice the change in the text's font size on the Program tab.



6. Start a new program. Select **File** ⇨ **New** ⇨ **Program** or click (**New**) ⇨ **Program**.

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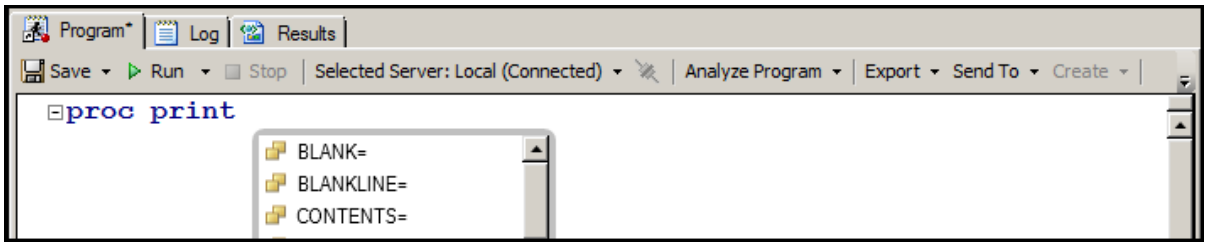
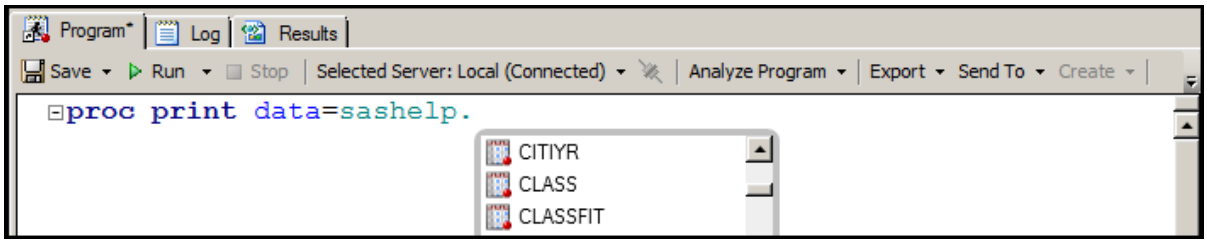
7. On the Program tab, start entering a PROC PRINT step. Notice the autocomplete feature as you type. The autocomplete feature gives you a window of possible keywords that can come next in your program. For example, after you type **proc print**, a pop-up window appears with procedure options that pertain to the PRINT procedure.





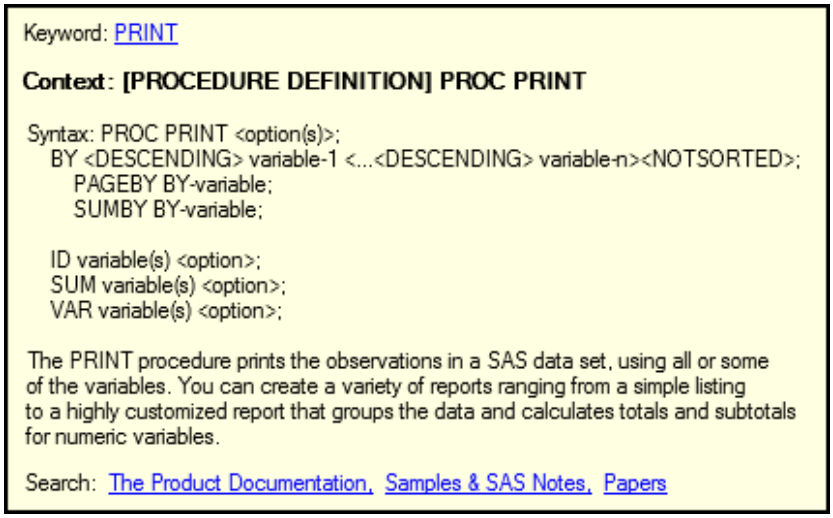
To navigate to the desired keyword in the window, scroll through the list by using the up and down arrow keys, the Page Up or Page Down keys, or the scroll bar. To add a keyword to a program, double-click the keyword or press the Enter key or the spacebar.

In addition to displaying possible keywords, autocomplete can display libraries, data sets, and variables.

8. Complete the PROC PRINT step. Notice the autocomplete feature as you type.

```
proc print data=sashelp.class;
run;
```

9. You can access syntax Help by positioning the mouse pointer on a valid keyword in your program. Position your mouse pointer on the word **print** in the program to see the syntax Help.



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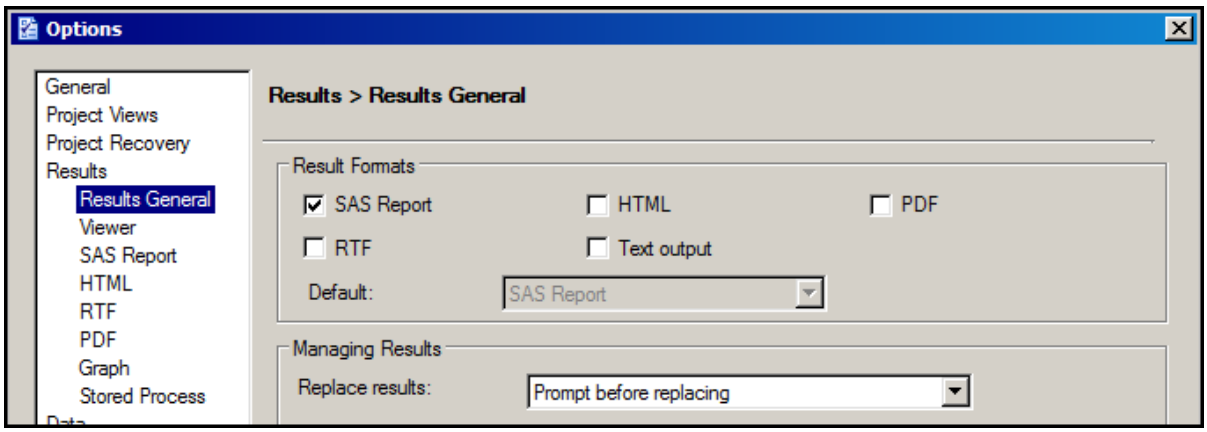
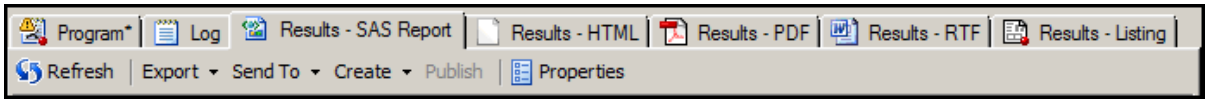
2.3 Customizing the Results

1. On the Program tab, click the **Run** button or press F3 to submit the program. If the program runs successfully, the Results tab automatically opens and shows the PROC PRINT output.
2. By default, the results that are created on the Results tab are SAS Report output. SAS Report output is an XML file, which can be viewed within SAS applications.
3. In addition to creating SAS Report output, other output types can be created. Select **Tools** ⇨ **Options** ⇨ **Results General**.



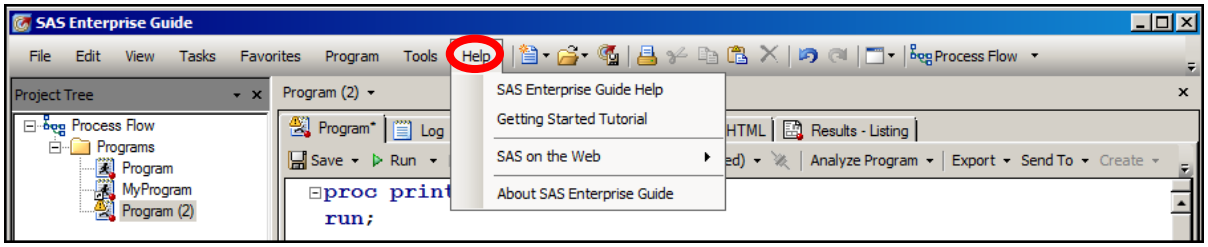
4. A check mark already appears in front of SAS Report. Select the **HTML**, **PDF**, **RTF**, and **Text output** check boxes. Click **OK**.
5. Submit the PROC PRINT step. Click **Yes** to replace the results from the previous run. Five Results tabs appear.



6. Click each tab to view the results. When you click the PDF tab, the PDF output opens in an Adobe product such as Adobe Reader. When you click the RTF tab, the RTF output opens in a word processing application such as Microsoft Word. After you click the PDF and RTF tabs, the tabs disappear because the files are opened outside of SAS. The Listing tab contains the text output.
7. Select **Tools** ⇨ **Options** ⇨ **Results General**. Clear the **HTML**, **PDF**, and **RTF** check boxes. Do ***not*** change the SAS Report and Text output check boxes. Click **OK**.

2.4 Accessing Help and Documentation

1. SAS Help and documentation can be accessed from the **Help** drop-down menu.



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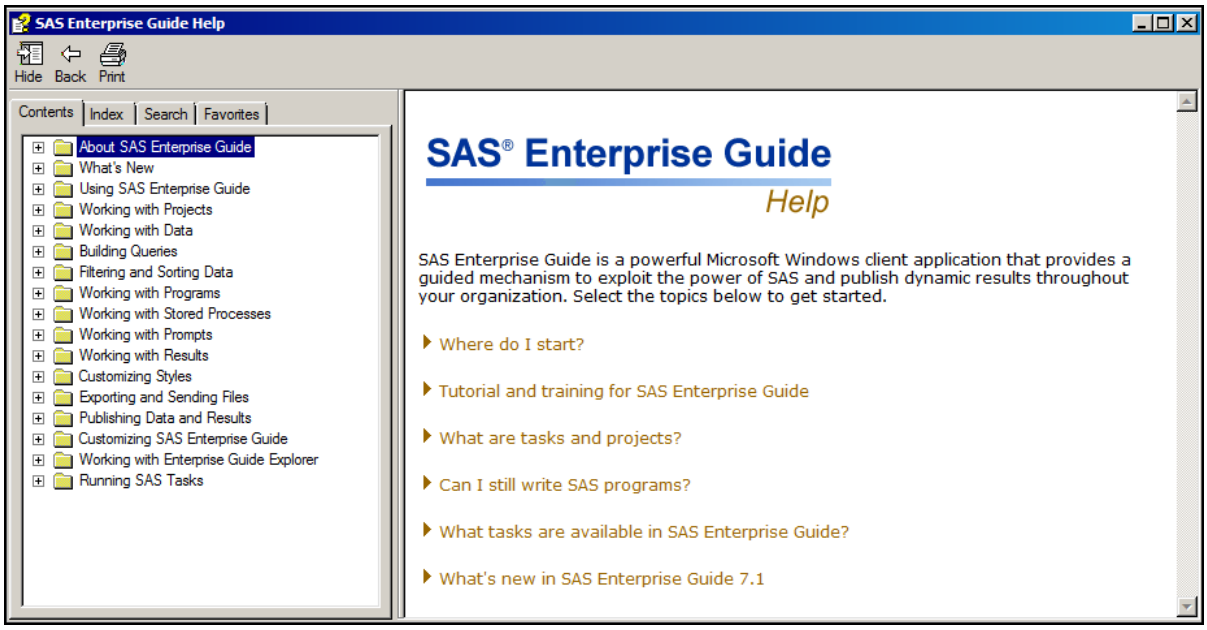
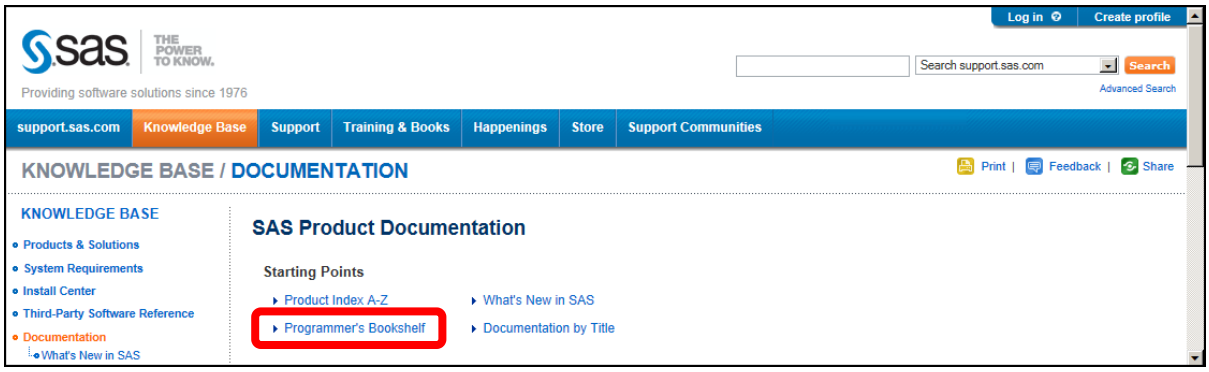
2. Select **Help ⇨ SAS Enterprise Guide Help** to be directed to a window that displays help for SAS Enterprise Guide. This window is useful for assistance with navigating the SAS Enterprise Guide interface. After you view the Help window, close the window



3. Select **Help ⇨ SAS on the Web ⇨ SAS Product Documentation** to be directed to the SAS Product Documentation web page. This web page is useful for viewing the syntax documentation related to a SAS product.

External address to the SAS Product Documentation page:
http://support.sas.com/documentation/

4. On this web page, select **Programmer's Bookshelf**. Then select the link for the appropriate SAS version.



The Programmer's Bookshelf contains selected documentation for SAS products such as Base SAS.

5. Browse the Programmer's Bookshelf web page. Close the window after browsing it.

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2.5 Diagnosing Syntax Errors

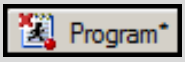
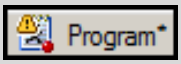
1. Select **File** ⇨ **New** ⇨ **Program** or click (**New**) ⇨ **Program** to start a new program.
2. On the Program tab, enter the following program with the given formatting:

```
proc print data=sashelp.class;
run; proc means data=sashelp.class;   run;
```

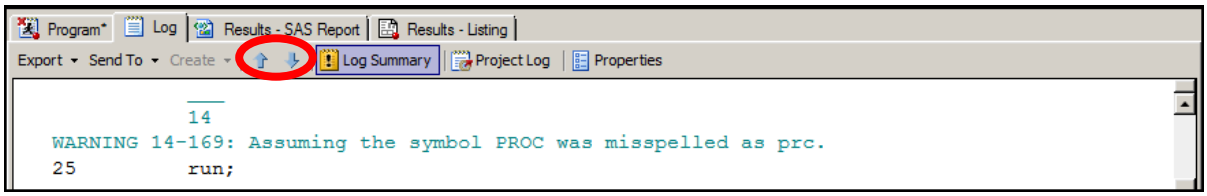
3. Click **Edit** ⇨ **Format Code** so that your program is easier to read. This selection automatically formats your code by adding line breaks and indenting at appropriate nesting levels.
4. Add two mistakes to the program. Remove the letter **o** from the first PROC step and remove the semicolon after the last reference to **sashelp.class**.

```
prc print data=sashelp.class;
run;
proc means data=sashelp.class
run;
```

5. On the Program tab, click the **Run** button or press F3 to submit the program. The Program tab shows a special icon in front of the program name if the program contains errors, warnings, or both.

Errors or Errors and Warnings:	
Warnings with no Errors:	

6. On the Results tab, notice that there is PROC PRINT output but no PROC MEANS output.
7. On the Log tab, scroll through the log. Notes appear as green text, warnings as light blue text, and errors as red text. Use the Up and Down arrows on the Log tab to find the previous or next warning or error.



8. Go to the Log Summary window, which is located below the Log tab. The log summary lists all the errors, warnings, and notes that were generated when the program ran, as well as related line numbers and a sample of the affected code. By default, all types of messages are displayed. You can filter the messages by selecting or deselecting the tab for the type of message.

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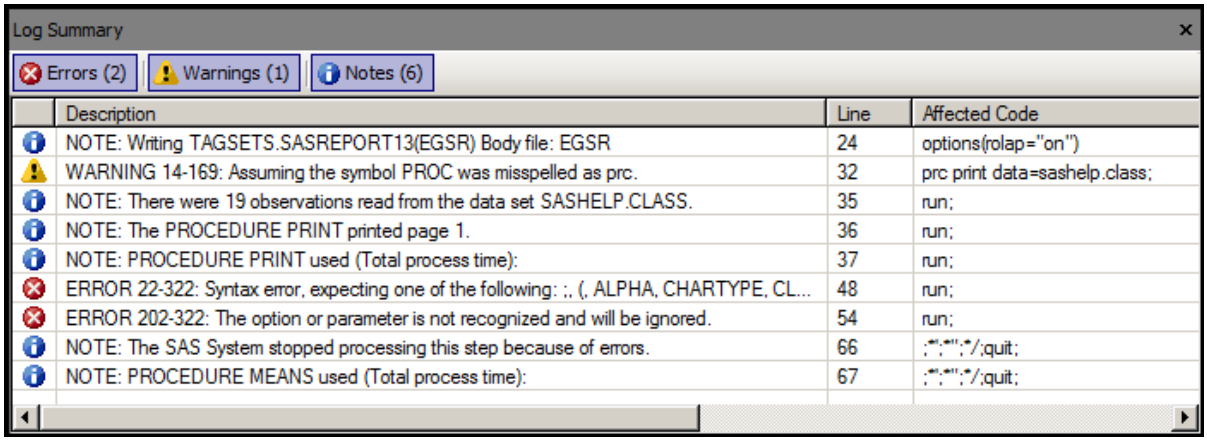
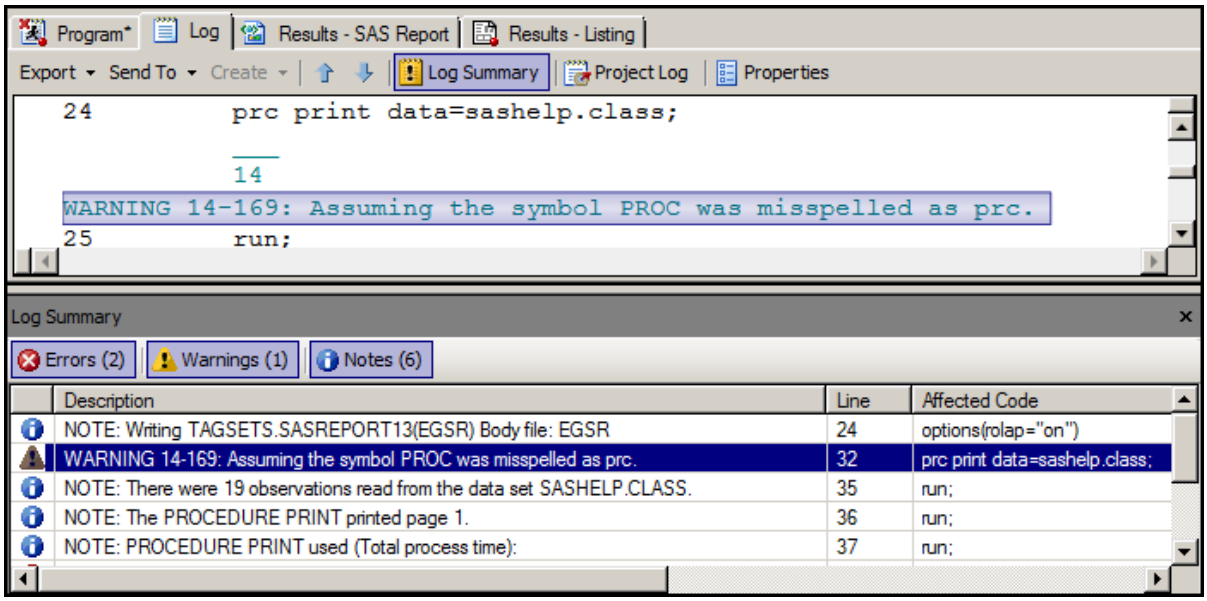


9. In the Log Summary window, click a message description and view the message on the Log tab.



10. Click the **Program** tab and fix the two mistakes. Submit the program and click **Yes** to replace the results from the previous run. Verify that there are no errors or warnings in the log.

11. In the log, notice that SAS Enterprise Guide includes supplemental code before and after your program. This generated wrapper code is included in the log by default.

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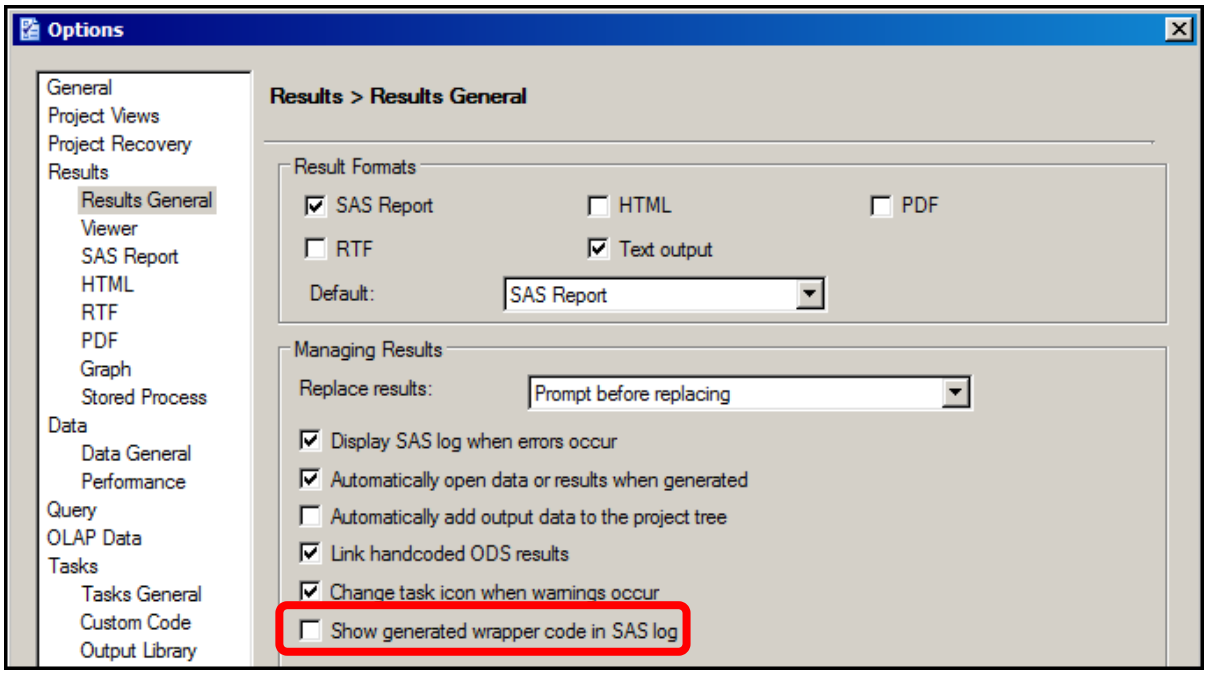
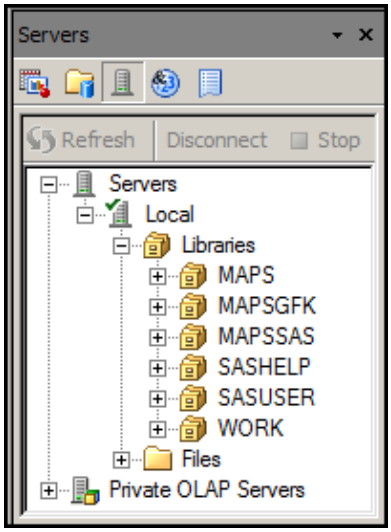
12. To hide the generated wrapper code in the log, select **Tools** ⇨ **Options** ⇨ **Results General**. Clear the **Show generated wrapper code in SAS log** check box and click **OK**.



13. Submit the program and view the log. Notice that the majority of the generated wrapper code is hidden.

2.6 Working Interactively with Libraries

1. In the Servers window, expand **Servers** ⇨ **Local** ⇨ **Libraries** to display the active libraries.



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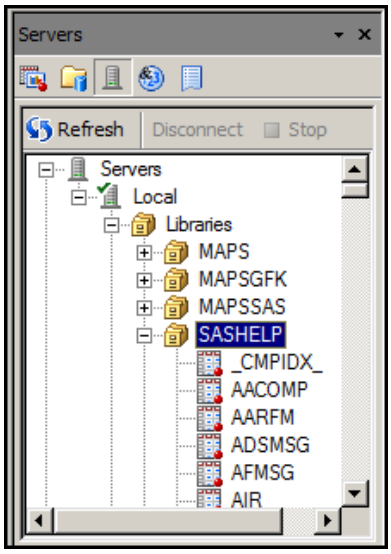
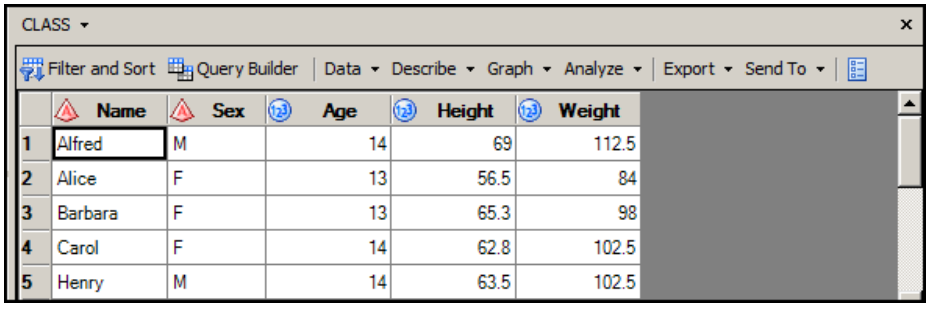
2. Double-click the **SASHELP** library to see the data sets in this library.



3. Scroll through the list of data sets and double-click the **CLASS** data set to open the **SASHELP.CLASS** data set in the data grid. By default, the data grid shows all rows and columns of a data set.



	Name	Sex	Age	Height	Weight
1	Alfred	M	14	69	112.5
2	Alice	F	13	56.5	84
3	Barbara	F	13	65.3	98
4	Carol	F	14	62.8	102.5
5	Henry	M	14	63.5	102.5

4. Close the data grid by clicking the **X** in the right corner of the window.

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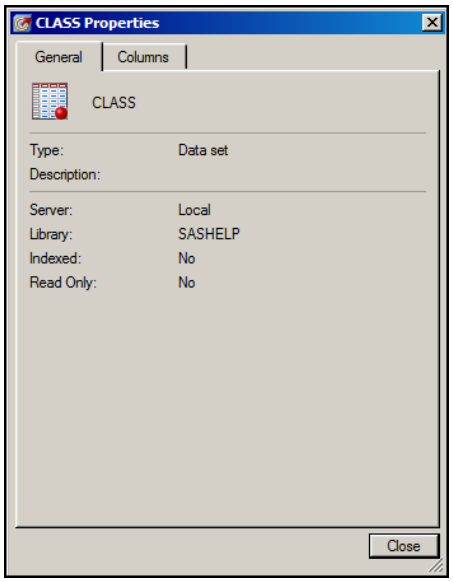
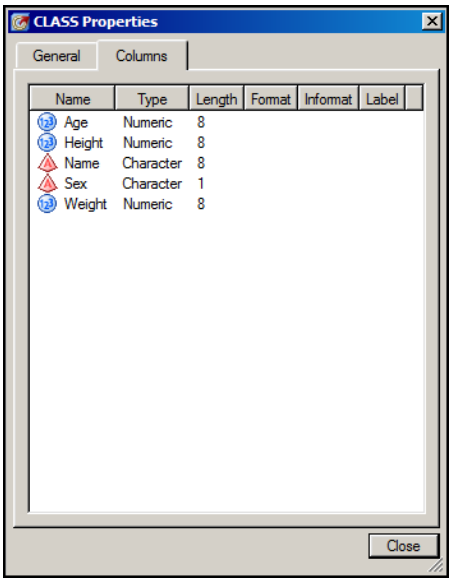
5. Return to the Servers window and right-click the **CLASS** data set. Select **Properties** to view the Properties window for the given data set.





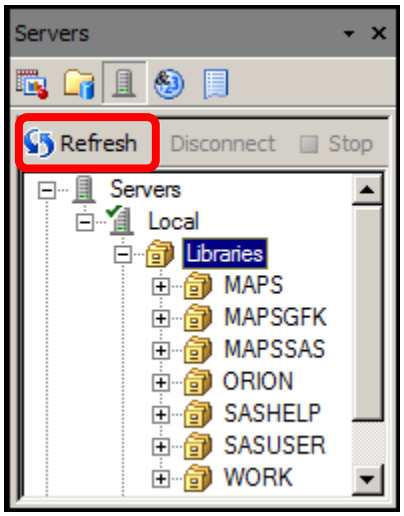
6. Click **Close** to close the Properties window.
7. You can assign a new library interactively by selecting **Tools** ⇨ **Assign Project Library**.
8. In the Assign Project Library Wizard, complete these steps:

   Step 1 of 4: Enter **orion** in the **Name** field. Click **Next**.

   Step 2 of 4: Enter the path, such as **s:\workshop**. Click **Next**.

   Step 3 of 4: Enter any desired options. Click **Next**.

   Step 4 of 4: Click **Finish**.
9. The new library appears in the Servers window after you click **Libraries** ⇨ **Refresh**.



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Chapter 3 SAS® Windowing Environment

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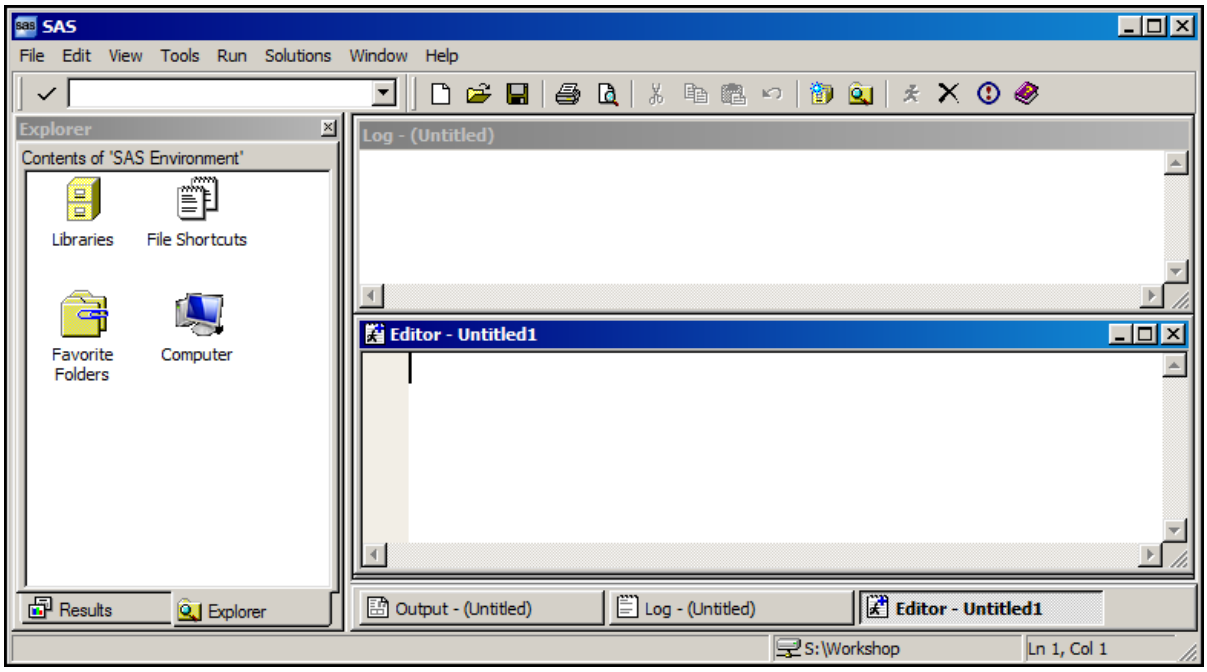
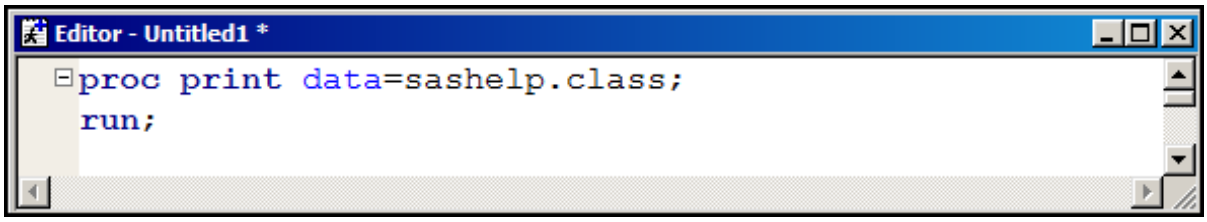
3.1 Using the Primary Interface Windows

1. Start the SAS windowing environment. If you see a pop-up window that references a change notice or getting started with SAS, click **Close**. By default, the SAS windowing environment consists of a left pane containing the Results and Explorer windows and a right pane containing the Output, Log, and Editor windows.



2. In the Editor window, enter the PROC PRINT step shown below.



The Enhanced Editor is used when you use the Editor window.

3. Click (**Submit**) or press F3 to submit the program. If the program runs successfully, the Results Viewer window automatically appears and shows the PROC PRINT output.

4. Go to the Log window and check the log for the two notes below. If you see any warnings or errors, return to the Editor window, fix any mistakes, and rerun the program.

```
NOTE: There were 19 observations read from the data set SASHELP.CLASS.
NOTE: PROCEDURE PRINT used (Total process time):
```

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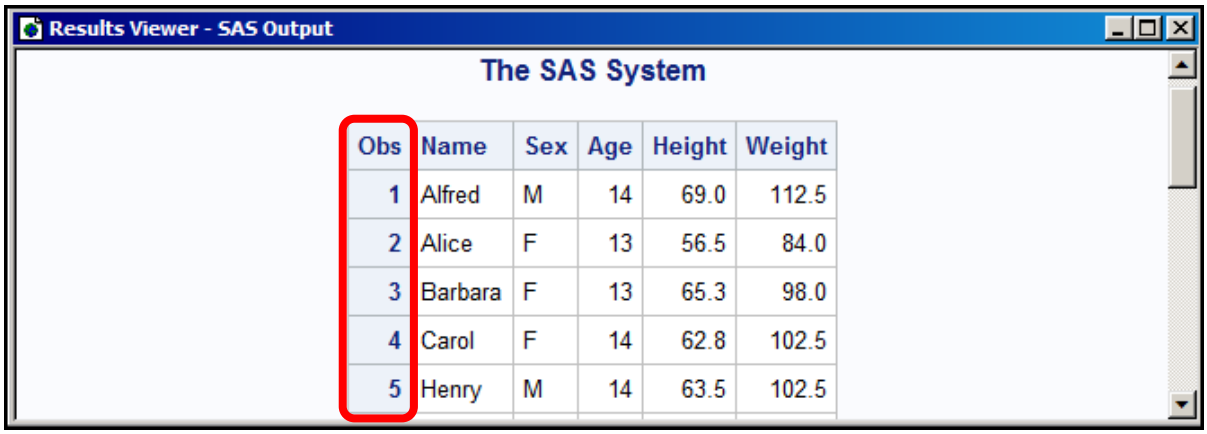
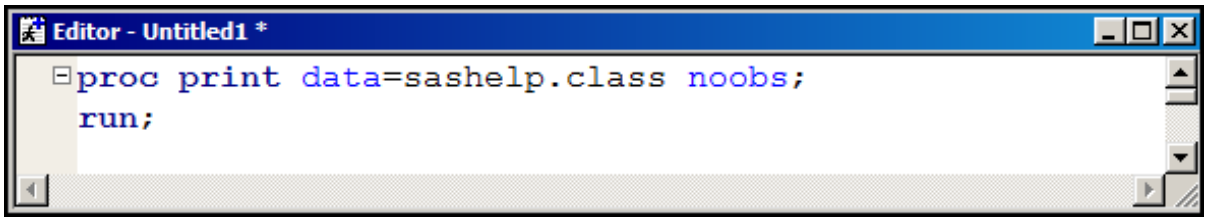
5. Return to the Results Viewer window. Notice that the PROC PRINT output contains an **Obs** column.



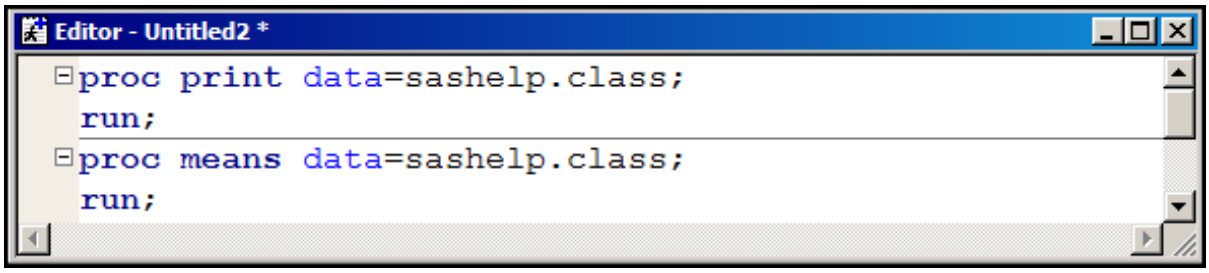
Obs	Name	Sex	Age	Height	Weight
1	Alfred	M	14	69.0	112.5
2	Alice	F	13	56.5	84.0
3	Barbara	F	13	65.3	98.0
4	Carol	F	14	62.8	102.5
5	Henry	M	14	63.5	102.5

6. Return to the Editor window and add the NOOBS option to eliminate the **Obs** column.



The NOOBS option is in the PROC PRINT statement before the semicolon.

7. Click (**Submit**) or press F3 to submit the program.
8. View the information in the Results Viewer window and the Log window. Notice that the information in these windows is cumulative. The most recent information is added at the bottom.
9. Close the Log window by clicking the **X** in the right corner of the window. Select **View** ⇨ **Log** to reopen the log. The Log window still contains the information from the previous two submissions.
10. To clear the Log window, click (**New**) when the Log window is the active window. You can also select **Edit** ⇨ **Clear All** to clear the Log window.
11. Create another program. Click (**New**) from an existing Editor window or select **View** ⇨ **Enhanced Editor**.
12. In the new Editor window, enter the PROC PRINT step and PROC MEANS step shown below.



An asterisk (*) at the end of a filename means that the program was not saved.

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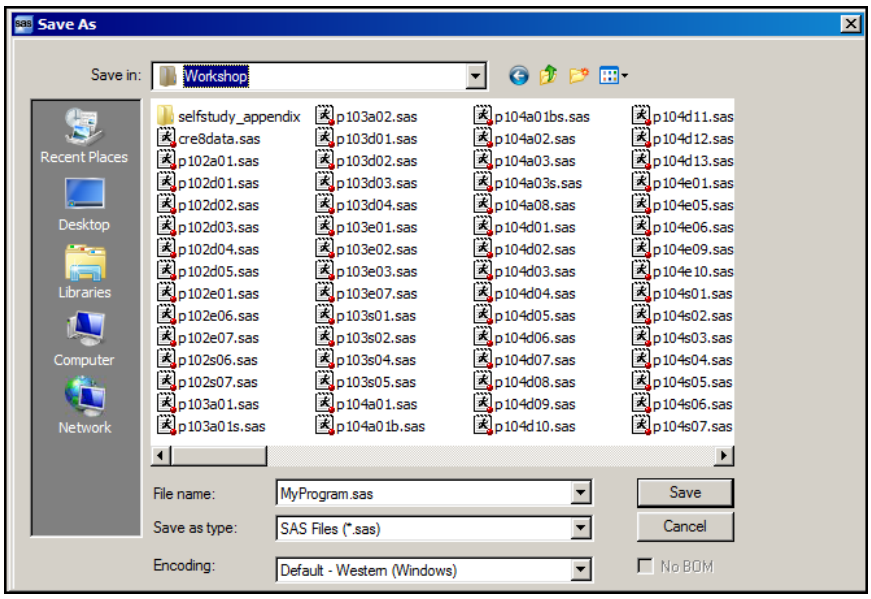
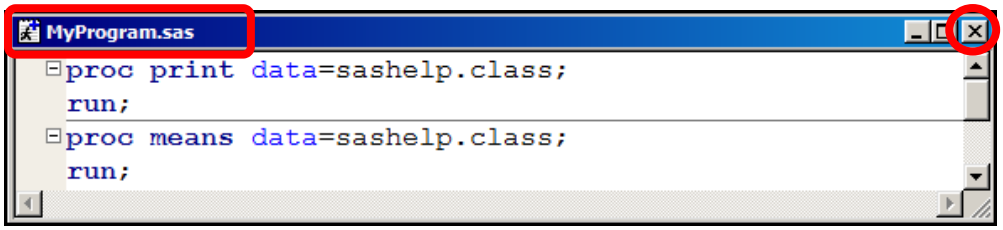
13. Click (**Submit**) or press F3 to submit the program. If the program runs successfully, the Results Viewer window automatically appears and shows the PROC PRINT and PROC MEANS output. Do not forget that the Results Viewer is cumulative. The most recent information is added at the bottom.
14. Go to the Log window. Check the log for notes. If you see any warnings or errors, return to the Editor window, fix any mistakes, and rerun the program.
15. Return to the Editor - Untitled2 window. Click (**Save**) or select **File** ⇨ **Save As** to save the program.
16. In the Save As window, choose a file location such as **s:\workshop**, name the file **MyProgram**, and click **Save**.



17. Notice that the Editor window now appears with the program name. Close the Editor window for **MyProgram** by clicking the **X** in the right corner of the window.



18. Open the program that you saved and closed. To open a program, click (**Open**) when the Editor window is the active window or select **File** ⇨ **Open Program**.
19. In the Open window, navigate to the file location to find **MyProgram** and click **Open**.

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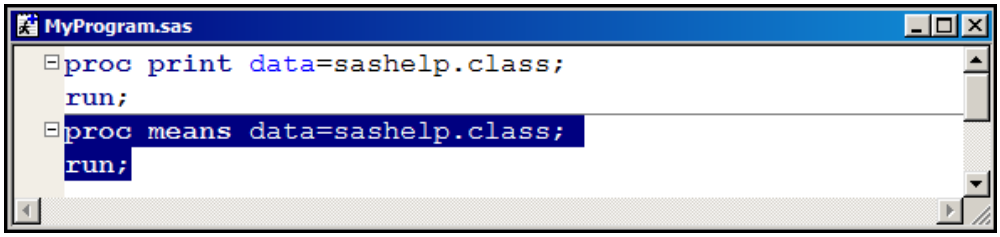
20. Submit a portion of the program. In the Editor window, highlight the PROC MEANS step (two lines of code). Click (**Submit**) or press F3 to submit the highlighted code.

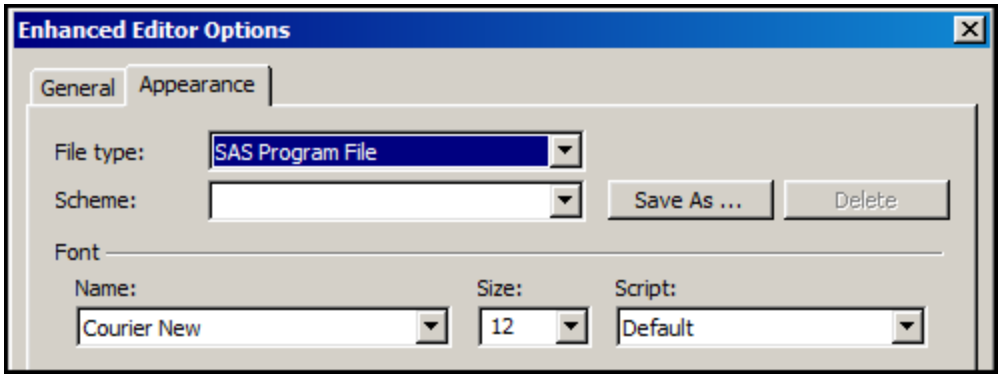


21. View the Results Viewer window and the Log window. Notice that the last submission submitted only the PROC MEANS step.

3.2 Customizing the Enhanced Editor

1. Return to the Editor window for **MyProgram**. If you want, click the **Maximize** button in the top right corner of the window to maximize the window.

2. The appearance and functionality of the Enhanced Editor can be customized. To customize the Enhanced Editor, select **Tools** ⇨ **Options** ⇨ **Enhanced Editor** from the main toolbar.



3. In the Enhanced Editor Options window, two tabs contain editor options. On the Appearance tab, increase the font size and click **OK**. Notice the change of the text's font size in the Editor window.
4. To browse a list of the function key definitions for the windowing environment, select **Tools** ⇨ **Options** ⇨ **Keys** to access the Keys window. Notice the following key definitions:
   - F1 is help.
   - F3 is end.
   - F6 is log.
   - F8 is zoom off and submit.

   The End command is an alias for the Submit command when it is initiated in the Editor window.
5. The function key definitions can be customized. For example, F12 can be set to clear the log and submit the program. This function key is used in an Editor window. Enter the following command in the Definition column for F12:

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```
clear log; submit
```

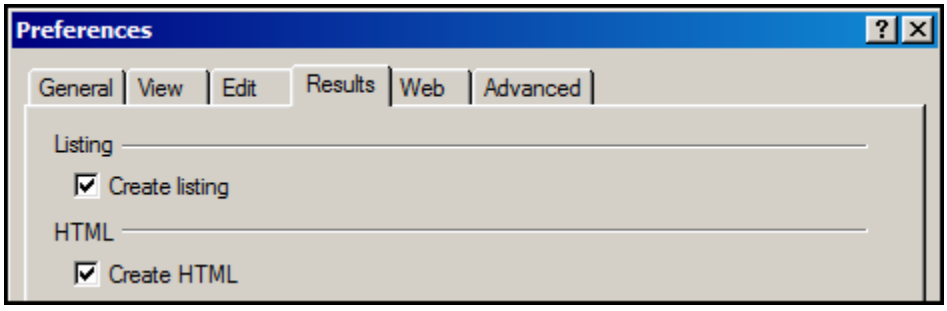
6. Close the Keys window by clicking the **X** in the right corner of the window or by pressing F3.
7. Return to the Editor window for **MyProgram**. Press F12. Confirm that the Log window contains only the messages for the PROC PRINT and PROC MEANS steps that were submitted.

3.3 Customizing Results

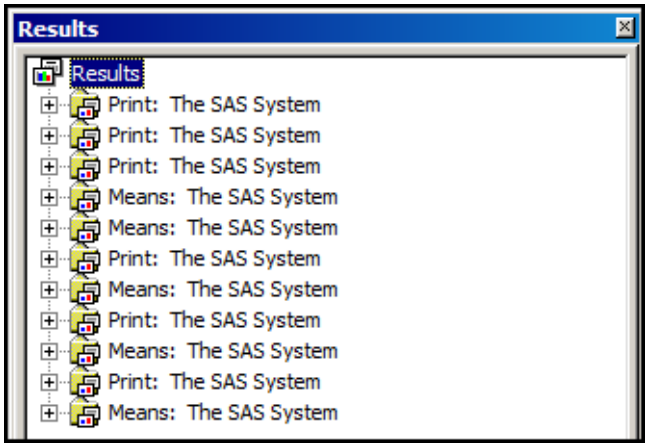
1. By default, the results created in the Results Viewer window are cumulative HTML4 output. To clear the previous output, you can add ODS statements to the program to close the existing output and start new output. Add the following two ODS statements to the beginning of **MyProgram**:

```
ods html close; ods html;
```

2. Click (**Submit**) or press F3 to submit the modified program. Verify that the Results Viewer window contains only one PROC PRINT output and one PROC MEANS output.
3. In addition to creating HTML4 output in the Results Viewer window, you can create text output in the Output window. Select **Tools** ⇨ **Options** ⇨ **Preferences** and click the **Results** tab. The **Create HTML** check box is already selected. Select the **Create listing** check box to create text output. Click **OK**.



4. Submit the program. Verify that the Results Viewer window contains PROC PRINT and PROC MEANS output. The Results Viewer window is not cumulative when you submit the two ODS statements. In addition, verify that the PROC PRINT and PROC MEANS output is also visible in the Output window as text output. The Output window is cumulative. The most recent information is added at the bottom.
5. The Results window is used to navigate the results. The window contains bookmarks that you can expand and collapse.



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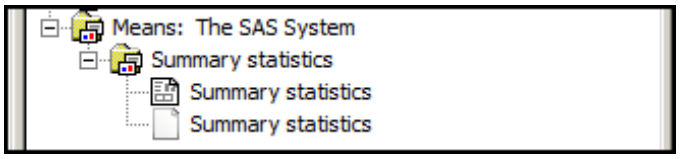
6. Select the last **Means** node in the Results window. Click the plus sign in front of **Means** to expand the node. Click the plus sign in front of **Summary statistics** to expand it. Each report bookmark contains an icon that indicates the file type, such as HTML or LISTING (text output).



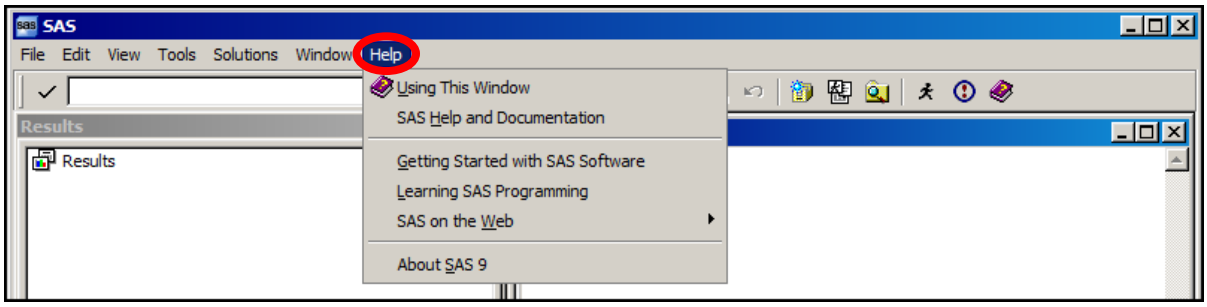
7. Double-click one of the report bookmarks to view the corresponding report in the appropriate window.
8. The previously defined F12 key can be modified to clear the Log window, clear the Output window, and clear the Results window. To modify F12, select **Tools** ⇨ **Options** ⇨ **Keys** to access the Keys window. Enter the following command in the Definition column for F12:

```
clear log; clear output; odsresults; clear;
```

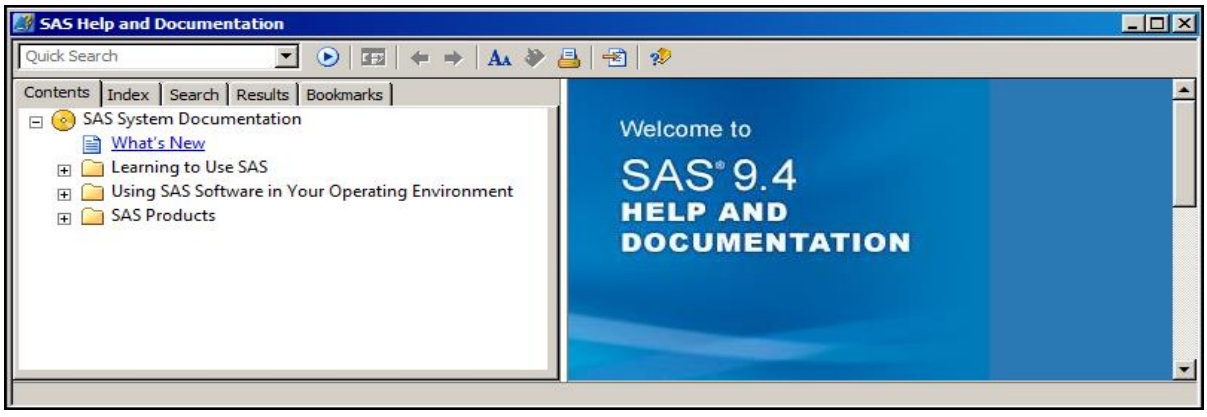
8. Close the Keys window by clicking the **X** in the right corner of the window or by pressing F3.
9. Press F12. Confirm that the Log, Output, and Results windows are cleared.
10. Return to the Editor window for **MyProgram** and click (**Save**) or select **File** ⇨ **Save** to save the program.
11. Close the Editor window for **MyProgram** by clicking the **X** in the right corner of the window.

3.4 Accessing Help and Documentation

1. SAS Help and SAS documentation can be accessed from the **Help** drop-down menu.



2. Click **Help** ⇨ **SAS Help and Documentation** to be directed to a window that displays Help and documentation.



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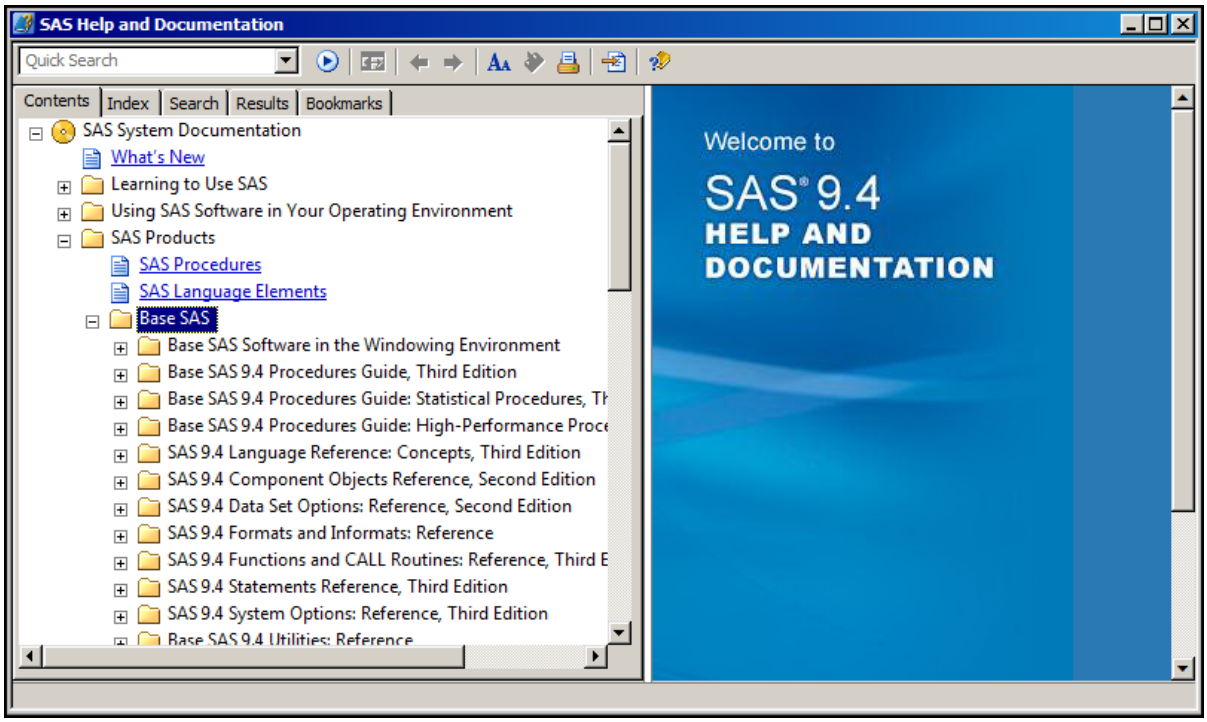
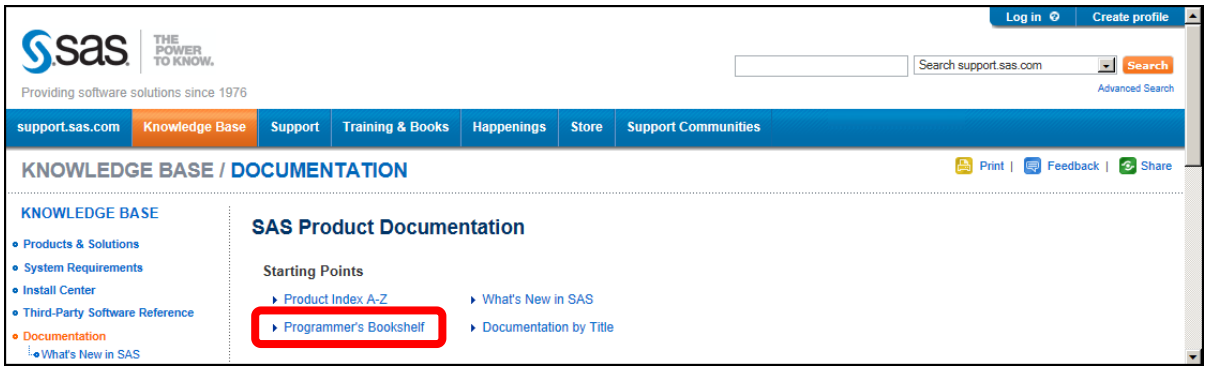
3. To view the syntax documentation for a specific product, expand **SAS Products** on the Contents tab. Choose the desired product, such as Base SAS, to view the product documentation. Close the window when you are finished browsing.



4. Alternatively, you can access the documentation for a SAS product directly from the following SAS Product Documentation web page: **http://support.sas.com/documentation/**.

5. From this web page, select **Programmer's Bookshelf**. Then choose the link for the appropriate version of SAS.



The Programmer's Bookshelf contains selected documentation for SAS products such as Base SAS.

6. Browse the Programmer's Bookshelf web page. Close the window after browsing.

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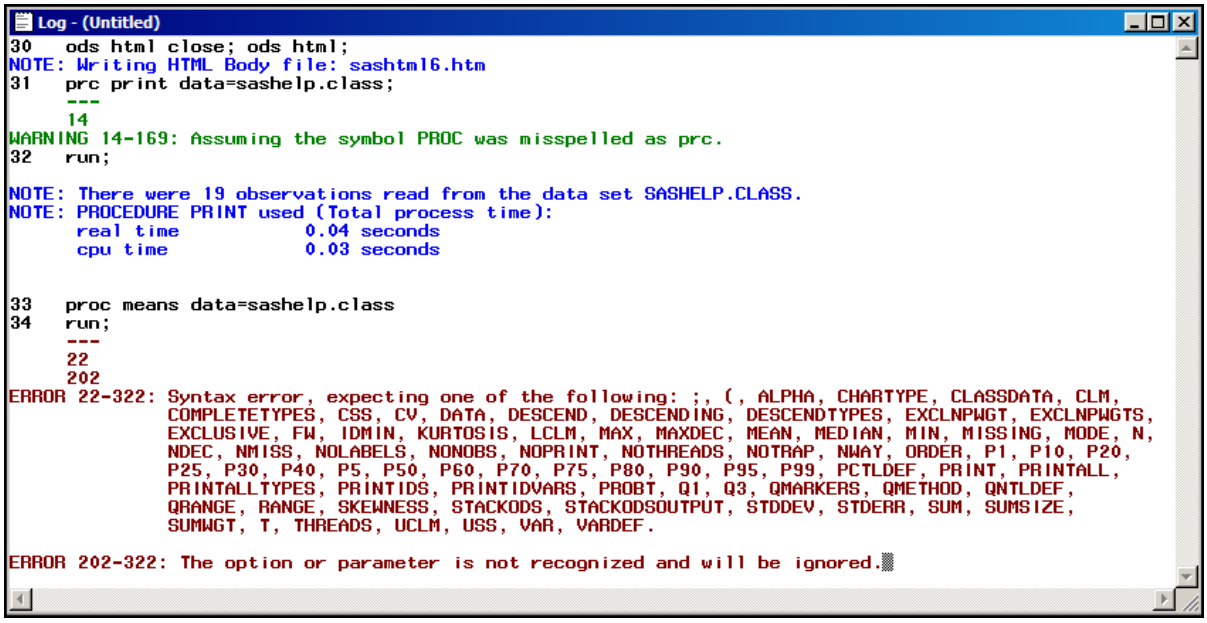
3.5 Diagnosing Syntax Errors

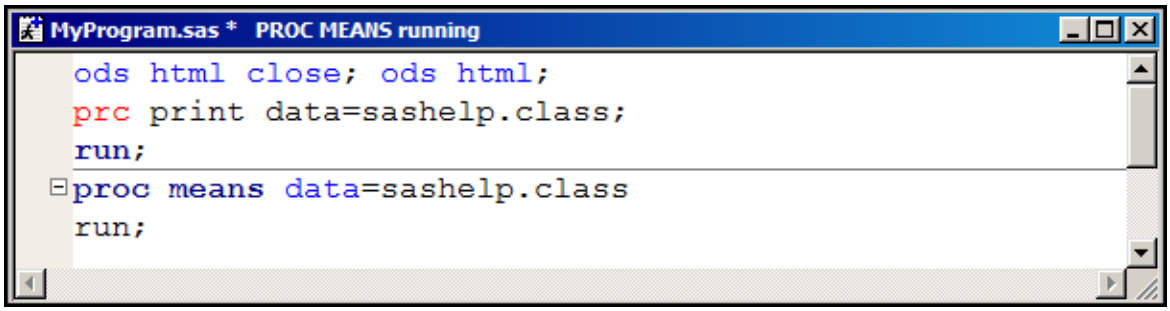
1. Click (**Open**) when the Editor window is the active window or select **File** ⇨ **Open Program** to open a program.
2. In the Open window, navigate to the file location to find **MyProgram**. Click **Open**.
3. Add two mistakes to the program. Remove the letter **o** from the first PROC step and remove the semicolon after the last reference to **sashelp.class**.

```
ods html close; ods html;
prc print data=sashelp.class;
run;
proc means data=sashelp.class
run;
```

4. Click (**Submit**) or press F3 to submit the program.
5. In the Results Viewer and Output windows, notice that there is PROC PRINT output, but no PROC MEANS output.
6. In the Log window, scroll through the log. Notes appear as blue text, warnings as green text, and errors as red text.



7. Return to the Editor window. Notice the text on the title bar that states "PROC MEANS running."



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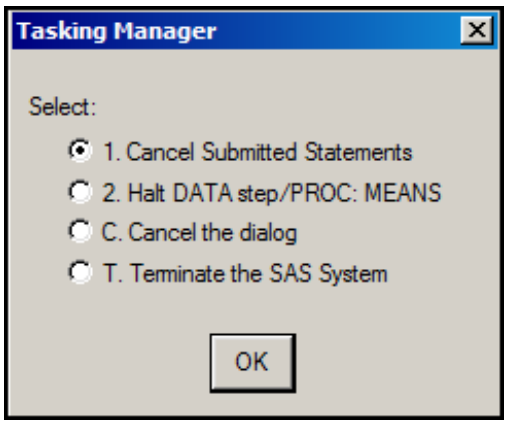
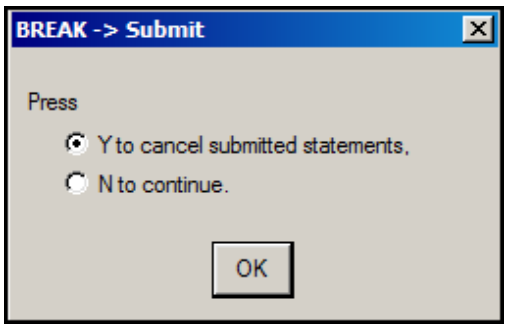
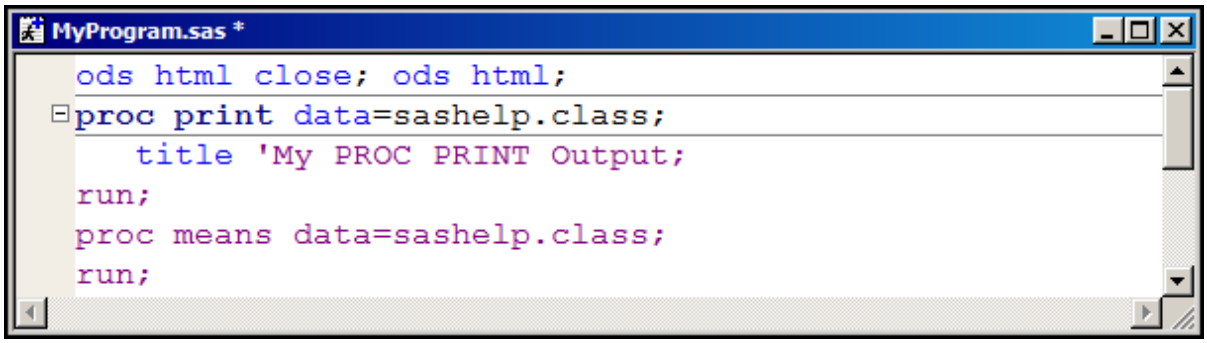
8. To stop the step from running, click (**Break**) or press the Ctrl and Break keys.
9. Select the **1. Cancel Submitted Statements** radio button in the Tasking Manager window. Click **OK**.



10. Select the **Y to cancel submitted statements.** radio button. Click **OK**.



11. The program is no longer running, so fix the two mistakes. Clear the log, submit the program, and verify that there are no errors or warnings in the log.
12. Add the following TITLE statement to the PROC PRINT step. The single quotation mark after the word **Output** is purposely missing.



13. Clear the log, submit the program, and view the Log window. There are no notes, warnings, or errors in the log due to the unbalanced quotation marks.
14. Return to the Editor window. Notice the text on the title bar that states “PROC PRINT running.”
15. In the TITLE statement, add a single quotation mark after the word **Output** but before the semicolon.
16. Clear the log, submit the program, and view the Log window. The log contains a warning about the TITLE statement being ambiguous due to invalid options or unquoted text. The problem is not corrected because the running program was not canceled before you submitted the corrected program.

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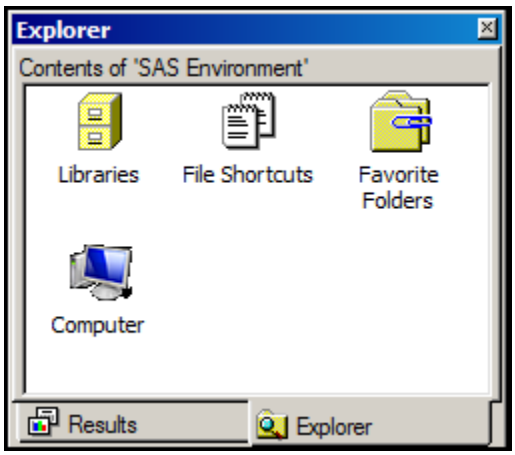
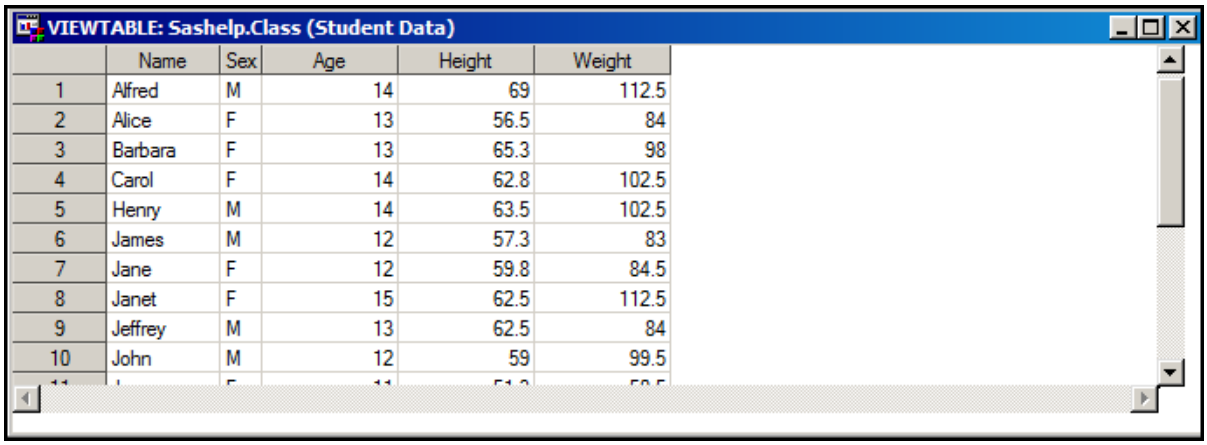
17. Return to the Editor window. Click (**Break**) or press the Ctrl and Break keys. Select the **1. Cancel Submitted Statements** radio button in the Tasking Manager window. Click **OK**. Select the **Y to cancel submitted statements** radio button. Click **OK**.
18. Clear the log, submit the program, and verify that there are no errors or warnings in the log.

3.6 Working Interactively with Libraries

1. Click the **Explorer** tab to activate the Explorer window or select **View** ⇨ **Contents Only**.



2. Double-click the **Libraries** icon to show all available libraries.
3. Double-click the **Sashelp** library to see the members of this library.
4. Scroll through the list of members and double-click the **CLASS** data set to open the **Sashelp.Class** data set in the Viewtable window. By default, the Viewtable window shows all rows and columns of a data set.



	Name	Sex	Age	Height	Weight
1	Alfred	M	14	69	112.5
2	Alice	F	13	56.5	84
3	Barbara	F	13	65.3	98
4	Carol	F	14	62.8	102.5
5	Henry	M	14	63.5	102.5
6	James	M	12	57.3	83
7	Jane	F	12	59.8	84.5
8	Janet	F	15	62.5	112.5
9	Jeffrey	M	13	62.5	84
10	John	M	12	59	99.5

5. Close the Viewtable window by clicking the **X** in the right corner of the window.

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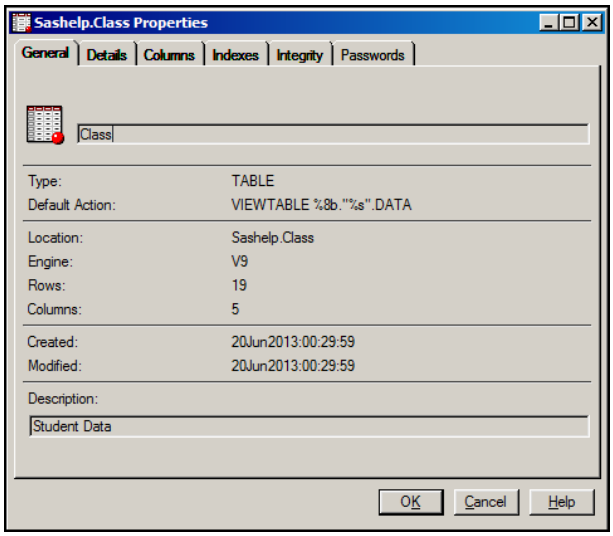
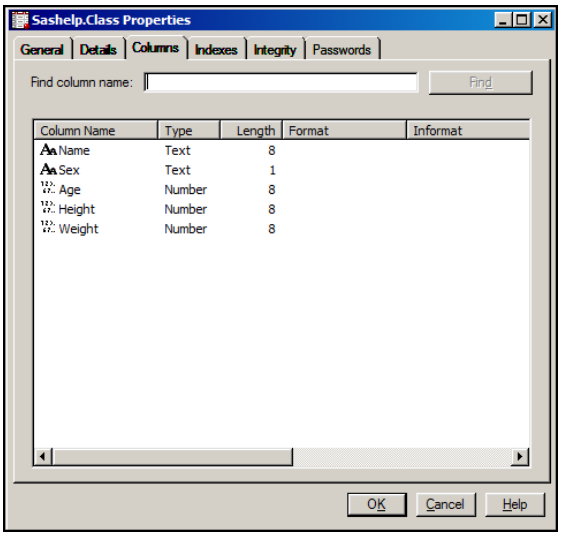
6. Return to the Explorer window and right-click the **Class** data set. Select **Properties** to view the Properties window for the given data set.

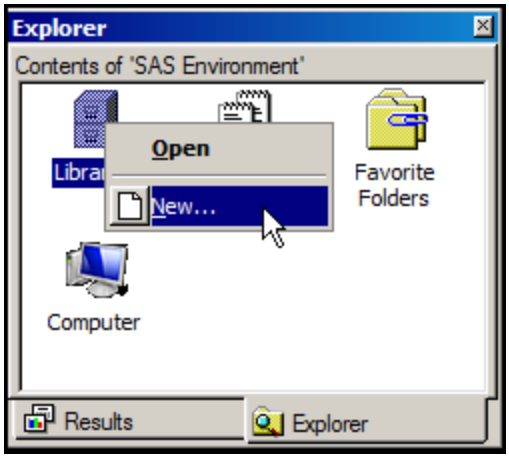




7. Click **OK** to close the Properties window.
8. Return to the Explorer window. Click (**Up One Level**) twice to return to the Libraries icon.

   The Up One Level button is visible only if the Explorer window is the active window.

9. A new library can be assigned interactively by right-clicking the **Libraries** icon and selecting **New**. Alternatively, a new library can be created by selecting **Tools** ⇨ **New Library** or clicking (**New Library**) when the Explorer window is the active window.



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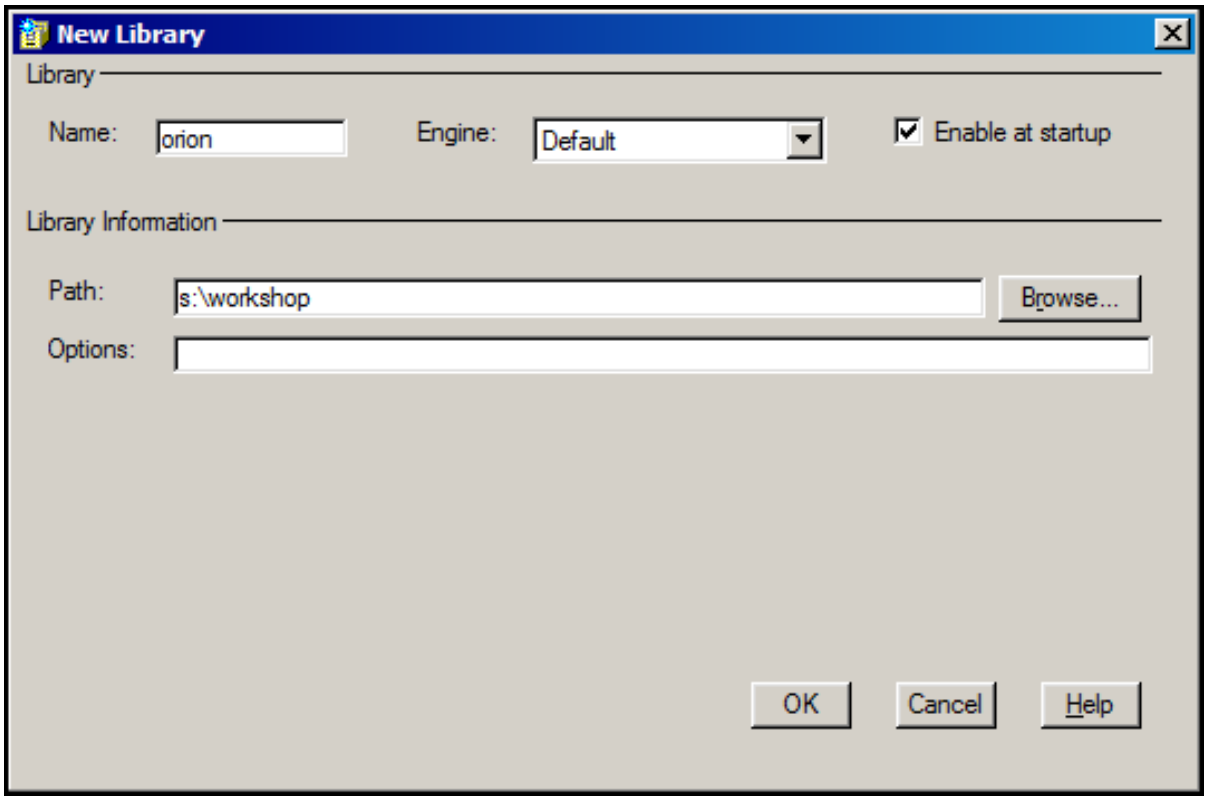
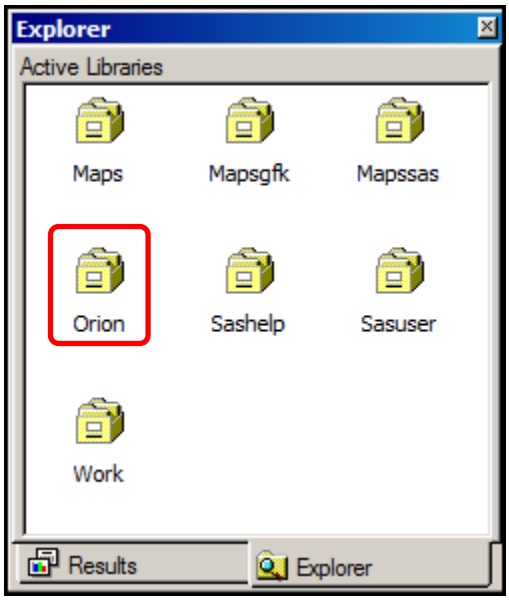
10. In the New Library window, complete the fields as needed and click **OK**.



11. The new library appears in the Explorer window after you double-click the **Libraries** icon.



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