



THE
POWER
TO KNOW.

SAS/IntrNet[®] 9.2

Xplore Sample Web Application

The correct bibliographic citation for this manual is as follows: SAS Institute Inc. 2008. *SAS/IntrNet® 9.2: Xplore Sample Web Application*. Cary, NC: SAS Institute Inc.

SAS/IntrNet® 9.2: Xplore Sample Web Application

Copyright © 2008, SAS Institute Inc., Cary, NC, USA

All rights reserved. Produced in the United States of America.

For a hard-copy book: No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, or otherwise, without the prior written permission of the publisher, SAS Institute Inc.

For a Web download or e-book: Your use of this publication shall be governed by the terms established by the vendor at the time you acquire this publication.

U.S. Government Restricted Rights Notice: Use, duplication, or disclosure of this software and related documentation by the U.S. government is subject to the Agreement with SAS Institute and the restrictions set forth in FAR 52.227-19, Commercial Computer Software-Restricted Rights (June 1987).

SAS Institute Inc., SAS Campus Drive, Cary, North Carolina 27513.

1st electronic book, March 2008

SAS® Publishing provides a complete selection of books and electronic products to help customers use SAS software to its fullest potential. For more information about our e-books, e-learning products, CDs, and hard-copy books, visit the SAS Publishing Web site at support.sas.com/publishing or call 1-800-727-3228.

SAS® and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration.

Other brand and product names are registered trademarks or trademarks of their respective companies.

Table of Contents

About Xplore.....	1
Overview.....	2
Requirements.....	3
Logging in to a Secure Application Server.....	4
Session Expiration.....	5
Using Xplore.....	6
Working with PROC SUMMARY Entries.....	8
Working with Data Set Entries.....	10
Working with FORMAT Entries.....	12
Working with GIF Entries.....	13
Working with GRSEG Entries.....	14
Working with HTML Entries.....	15
Working with IMAGE Entries.....	16
Working with JPEG Entries.....	17
Working with LOG Entries.....	18
Working with OUTPUT Entries.....	19
Working with SCL Code Entries.....	20
Working with SOURCE Entries.....	21
Setting Up Xplore for Your Site.....	22
Setting Xplore's Parameters.....	22
Running with a Secure Application Server.....	23
Expiration of Authorization.....	24
The webxplib.html File.....	25
Xplore's Source Code.....	27

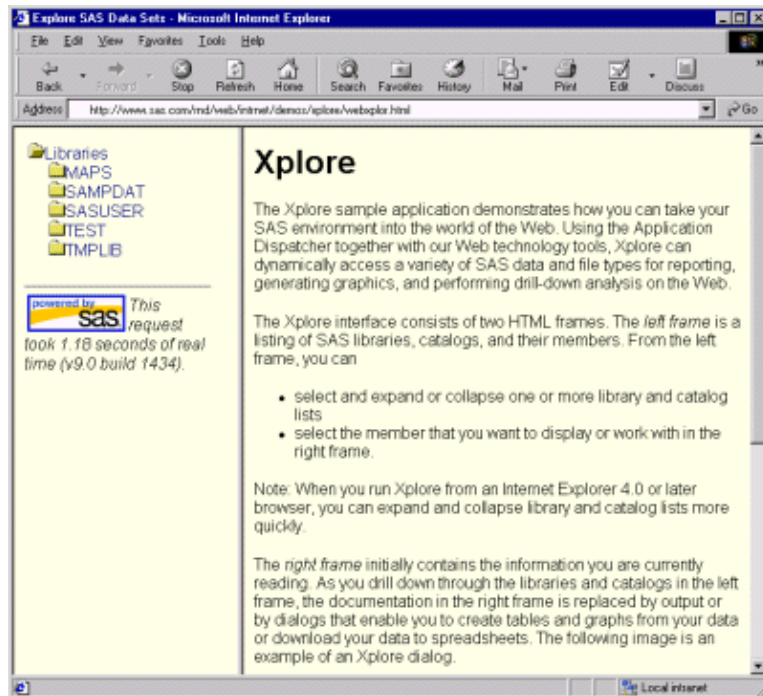
About Xplore

The Xplore sample application demonstrates how you can take your SAS environment into the world of the Web. Xplore is built using a variety of SAS programming tools including the SAS/IntrNet suite of Web tools. Using the Application Dispatcher together with the Web Publishing Tools, Xplore can dynamically access a variety of SAS data and file types for reporting, generating graphics, and performing drill-down analysis on the Web.

You can use Xplore as is, or if you are an expert user, you can use the Xplore application as a model for your own applications. All of the source code for Xplore is included in the WEBSAMP catalog in your SAS/IntrNet SAMPLIB library (created when you install the SAS/IntrNet Server).

Overview

The Xplore interface consists of two HTML frames.



The *left frame* is a listing of SAS libraries, catalogs, and their members. From the left frame, you can

- expand or collapse one or more library and catalog lists
- select the member that you want to display or work with in the right frame.

Note: When you run Xplore from an Internet Explorer 4.0 or later Web browser, you can expand and collapse library and catalog lists more quickly.

The *right frame* initially contains overview information about the Xplore application. As you drill down through the libraries and catalogs in the left frame, the documentation in the right frame is replaced by output or by dialog boxes that enable you to

- specify which variables you want to include and display
- specify the order in which to display variables in a table
- download data to a local spreadsheet application
- drill down on data sets that are created by PROC SUMMARY
- view thin-client graphics that chart data sets that are created by PROC SUMMARY
- display contents of a SAS/EIS application database
- display most catalog entries.

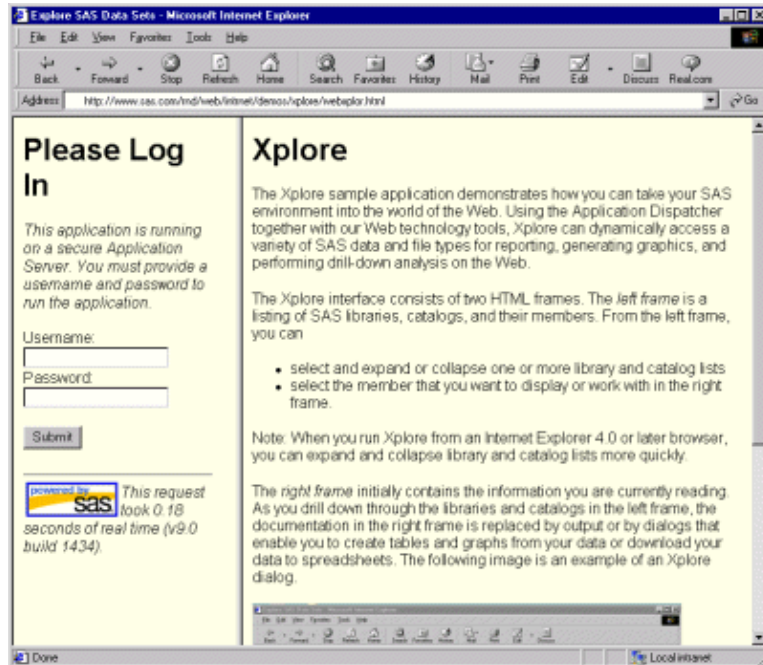
Requirements

To use Xplore, you must have the following prerequisite software:

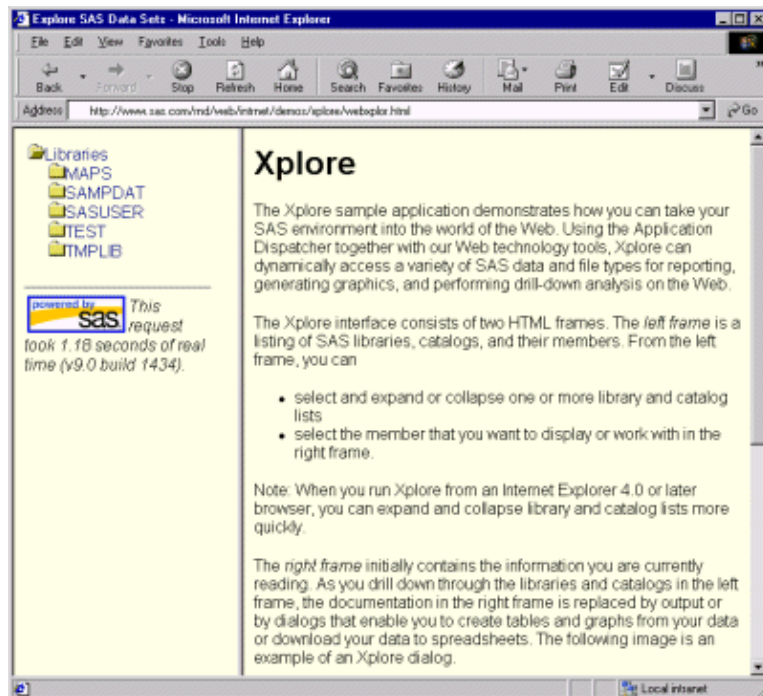
- SAS/IntrNet 9.2, including the Application Dispatcher component.
- a frame-enabled Web browser. To use the Dynamic HTML capabilities of Xplore, you must use Microsoft Internet Explorer 4.0 or later. To view thin-client graphics, you must also have the prerequisite Web browser software for Graph Applet.

Logging in to a Secure Application Server

In order to ensure the security of data, some Application Servers are run as secure Servers. A secure Application Server requires that you provide a user name and password before you can access the Server's data. If your Xplore application runs with a secure Application Server, then the following page appears when you start Xplore:



After you type in a user name and password, select the **Submit** button. When you are authorized, Xplore brings up a list of libraries in the left frame (see screen below) and enables you to begin using Xplore.





















Session Expiration















Authorization to a secure Application Server can expire after a certain amount of time (determined by your administrator). This means that you could leave your Web browser for a period of time and come back to an expired Xplore session.

If your session expires, then when you try to use Xplore, it will display an error message that says your session is an invalid session id.

To restore authorization, you must either restart Xplore or use the Web browser's **Back** button to return to the login frame and resubmit your user name and password.

Using Xplore

Function	User Action
Display members of a library or catalog	<p>Select one or more library () or catalog () entries from the left frame of your Web browser window and a list of members appears below each entry that you select.</p> <p>If the library or catalog is empty, an open folder icon appears next to the library or catalog entry but nothing is listed under the entry.</p>
Collapse a library or catalog list	<p>Select the opened library () or catalog () that you want to close and</p> <ul style="list-style-type: none"> • the icon changes to a closed icon • the list of members collapses back into the entry.
Display or work with members of libraries and catalogs	<p>Select the item in the left frame. Usually, the right frame displays the results of your selection, though the behavior of the Web browser can vary depending on your Web browser's configuration. Select a link from the lists below to see instructions for working with that entry in the right frame of Xplore.</p> <p>Library Entries</p> <ul style="list-style-type: none"> • any data set entries (data files  and data views ). When you select a data set entry, Xplore determines which of the following types of entries it is and presents the corresponding dialog box: <ul style="list-style-type: none"> ◆ PROC SUMMARY data set ◆ all other data sets (including SAS/EIS application databases) • Data Mining Data Base (DMDB) entries , Financial Data Base (FDB) entries , ITEMSTOR entries , MDDB entries , and SAS/ACCESS entries  <p>are currently not displayable by Xplore.</p> <p>Catalog Entries</p> <ul style="list-style-type: none"> • CSS catalog entries () • CSV catalog entries () • FORMAT catalog entries () • GIF catalog entries () • GRSEG catalog entries () • HTML catalog entries () • IMAGE catalog entries ()

- JPEG catalog entries ()
- JS catalog entries ()
- LOG catalog entries ()
- OUTPUT catalog entries ()
- PDF catalog entries ()
- PS catalog entries ()
- RTF catalog entries ()
- SCL code entries ()
- SOURCE catalog entries ()
- VBS catalog entries ()
- WML catalog entries ()
- XML catalog entries ()
- XSL catalog entries ()
- all nondisplayable catalog entries ()

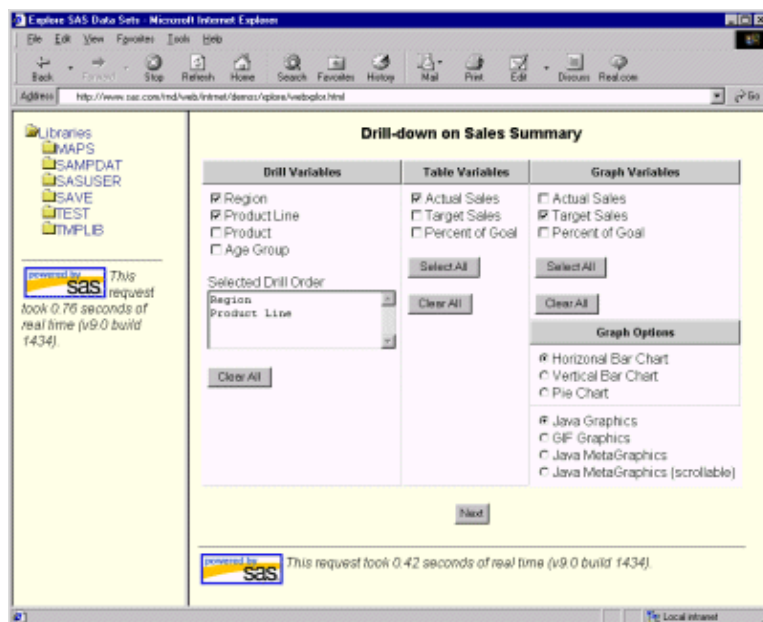
Working with PROC SUMMARY Entries

For data sets that are generated by PROC SUMMARY, Xplore's right frame displays a JavaScript–based, dynamically generated, drill–down dialog box that enables you to view your data in both tabular and graphical formats.

This dialog box enables you to select the

- class variables you want to drill down on and the order in which the variables are displayed (drill order)
- analysis variables you want to display in your table
- analysis variables you want to graph
- type of graph you want to show
- type of graphical image to display.

The following instructions guide you through the drill–down dialog box:

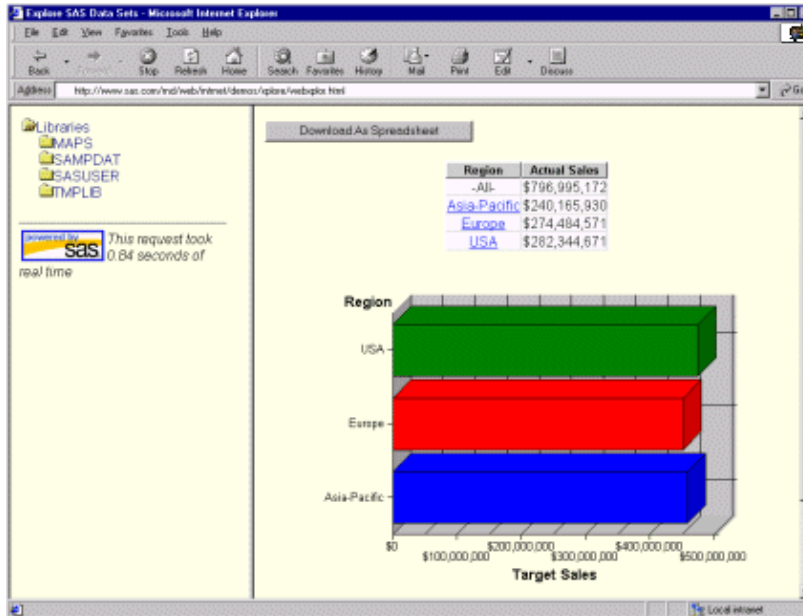


1. In the **Drill Variables** column, select the check boxes for the variables that you want to drill down on, *in the order* you want to drill. Xplore lists each drill variable that you select in the **Selected Drill Order** list box.
 - ◆ You *must* select at least one drill variable. The current drill variable is always the first column in the output table.
 - ◆ To delete a variable from the list box, you must deselect the check box that is next to that variable.
 - ◆ If you delete a variable and then reselect it, it will be listed last in the drill order.
2. In the **Table Variables** column, select the check box next to each variable that you want to display as a column in the table. If you do not select any variables, then Xplore does not display a table for your data.
3. In the **Graph Variables** column, select the check box next to each variable that you want to graph. If you do not select any variables, then Xplore does not display a graph of your data.
4. In the **Graphic Options** section:
 - ◆ From the list of charts, select the radio button for the type of chart you want to display. Three types of charts are available: horizontal bar chart, vertical bar chart, and pie chart.

- ◆ From the list of graphics types, select the radio button for the type of graphics you want to display.

- ◇ Java Graphics
- ◇ GIF Graphics
- ◇ Java MetaGraphics
- ◇ Java MetaGraphics (scrollable).

5. Select the **Next** button to display the selected data.
6. Xplore displays data in its right frame.



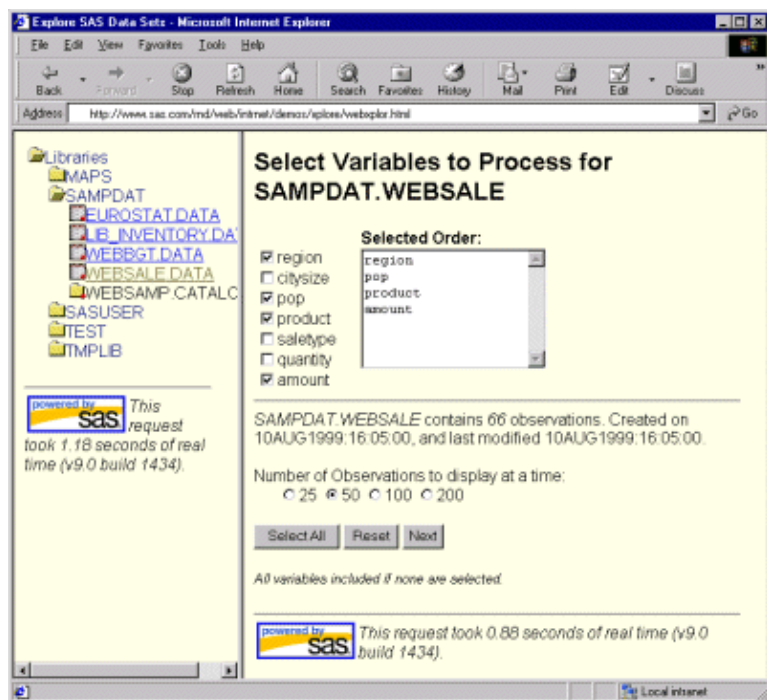
- ◆ At the top of the frame, Xplore provides a **Download As Spreadsheet** button that you can select to download your data to a local spreadsheet. This button is available for each level of data that you drill down to.
- ◆ Below the button, if you selected at least one table variable, Xplore displays an HTML table that contains the table variables. If you selected more than one drill variable, then you can select the links in the table's first column to drill down to the next table. The first column of each table you drill down to contains the values for the next drill variable.
- ◆ After the table, if you selected at least one graph variable, Xplore displays charts of your data. If you selected more than one drill variable, then you can select the bars or slices in the chart with the first mouse button and drill down to the next set of data.

Working with Data Set Entries

For data sets that are not PROC SUMMARY data sets, Xplore's right frame displays a dialog box that enables you to customize how Xplore displays your data.

This dialog box enables you to select the variables you want to display, the order in which to display the variables, and the number of observations to display per Web page. In a subsequent dialog box, you can also download your data to a spreadsheet. For *data files only*, the dialog box also specifies the number of observations that are in the data file (Xplore cannot determine the number of observations in a data view so it cannot provide this information for data views).

The following instructions guide you through this dialog box:



1. Select the check box next to each variable that you want to include. Xplore lists each selected variable in the list box that is next to the check boxes.
 - ◆ If you want to select all variables, and you want them listed in default order, then do not select any of the check boxes (all variables are selected by default).
 - ◆ If you want to select all variables and you want them in a particular order, select the check boxes in the order you want.
 - ◆ If you want to select all variables and you want only a few of them in a particular order, then select the check boxes of the variables you want ordered—in the order you want—and then select the **Select All** button, which helps you quickly select the rest of the check boxes.
 - ◆ If you want to display only certain variables, select only the check boxes for the variables that you want. Ensure that you select them in the order that you want them displayed.
 - ◆ If you want to clear all of your selections, select the **Reset** button.
2. Select one of the radio buttons that is displayed under the **Number of Observations to display at a time** prompt. This selection enables you to specify the number of rows of data that you see per Web page.
3. To display your data, select the **Next** button.

Libraries

- MAPS
- SAMPDAT
- EUROSTAT DATA
- LIB_INVENTORY DA
- WEBBGT DATA
- WEBSALE DATA
- WEBSAMP.CATALC
- SASUSER
- TEST
- TEMPLIB

powered by **sas** This request took 1.18 seconds of real time (v9.0 build 1434).

Download As Spreadsheet

51-66

Records 1-50 of 66

REGION	POP	PRODUCT	AMOUNT
NC	25000	A100	3750
NE	37000	A100	5000
SO	48000	A100	10250
WE	32000	A100	4500
NC	125000	A100	8750
NE	237000	A100	15000
SO	348000	A100	17750
WE	432000	A100	19500
NC	837000	A100	20000
SO	748000	A100	19000
WE	932000	A100	22000
NC	25000	A100	3000
NE	37000	A100	4000
WE	32000	A100	3600
NC	125000	A100	7000
NE	237000	A100	12000
SO	348000	A100	14200
WE	432000	A100	15500
NC	625000	A100	15000
NE	837000	A100	16000
SO	748000	A100	15200

Xplore then displays the data in an HTML table and provides a **Download As Spreadsheet** button that you can select to download the table data into your local spreadsheet application. Note that only the variables that you selected in the initial dialog box are downloaded into the spreadsheet.

Xplore also provides buttons that enable you to see the next or previous page of observations. For data files only, the buttons state the range of rows that the next or previous page contains. (Xplore cannot determine the number of observations in a data view so the buttons that are generated for data views are not always accurate.) The number of rows that are shown depends on the selection you made for the **Number of Observations to display at a time** prompt (see above).

Working with FORMAT Entries

When you select a FORMAT (character, numeric, or picture) entry from the left frame, Xplore's right frame displays the contents of the PROC FORMAT control out data set.

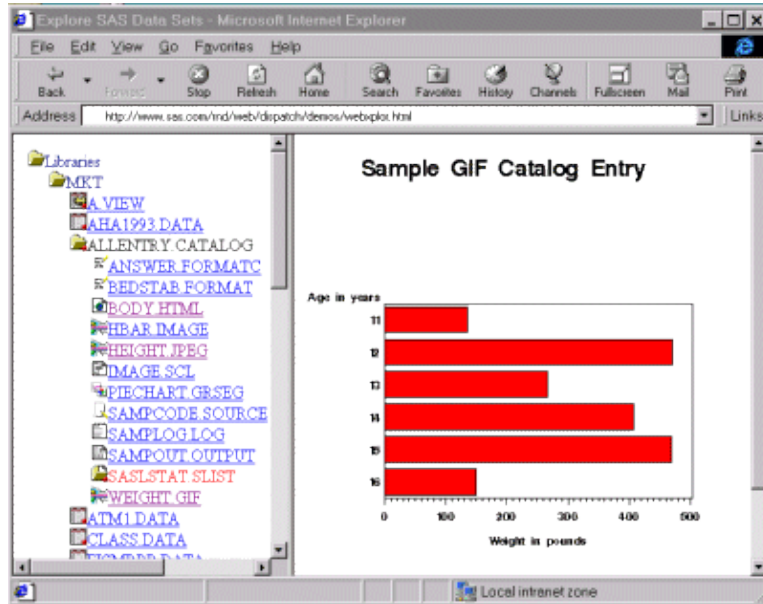
The screenshot shows a web browser window titled "Explore SAS Data Sets - Microsoft Internet Explorer". The address bar shows the URL "http://www.sas.com/rdc/web/frames/demos/asplore/webbgfx.html". The left frame contains a "Libraries" section with a tree view showing folders: MAPS, SAMPDAT, SASUSER, SAVE, TEST, and TMPUB. Below this, a message states: "This request took 0.72 seconds of real time (v9.0 build 1434)". The right frame displays the "Control Out Data Set Corresponding to" a selected format. It contains a table with the following data:

Starting value for format	Ending value for format	Format value label	Minimum length	Maximum length	Default length	Format length	Fuzz value	Prefix characters	Multiplier	Fill character	Is picture string needed?
LOW	HIGH	000,000	1	40	7	7	1E-12	\$	1.61		0

Below the table, a message states: "This request took 1.05 seconds of real time (v9.0 build 1434)".

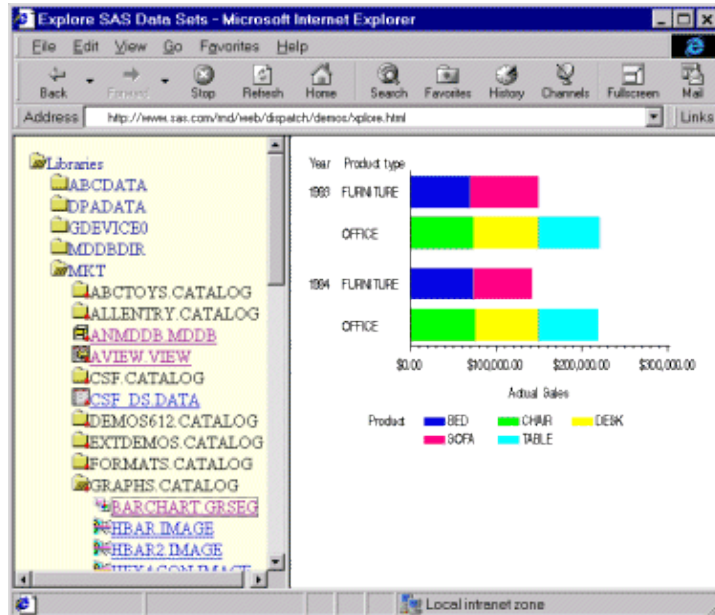
Working with GIF Entries

When you select a GIF entry from the left frame, Xplore's right frame displays the graphical image.



Working with GRSEG Entries

When you select a GRSEG entry from the left frame, Xplore's right frame displays the graphical image.



Working with HTML Entries

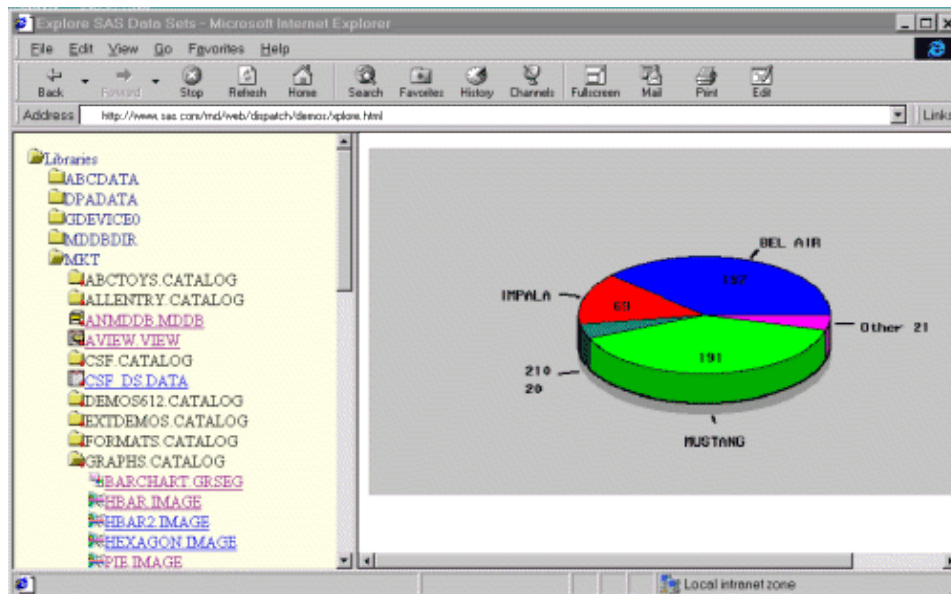
When you select an HTML entry from the left frame, Xplore's right frame displays the Web page that is created by the HTML code.

Men's and Women's Shoe Sales Figures by Region

Men's and Women's Shoe Sales Figures for Canada				
Subsidiary	Shoe Style	Sales	Inventory	Returns
Calgary	Men's Dress	\$12,775	\$39,663	\$353
	Women's Dress	\$12,601	\$54,677	\$488
		\$25,376	\$94,340	\$841
Montreal	Men's Casual	\$53,929	\$187,155	\$2,241
	Men's Dress	\$112,009	\$355,170	\$3,713
	Women's Casual	\$24,497	\$34,808	\$832
	Women's Dress	\$132,638	\$483,637	\$2,880
		\$323,073	\$1,060,770	\$9,666
Ottawa	Men's Casual	\$19,210	\$29,249	\$578
	Women's Casual	\$18,712	\$46,064	\$427
	Women's Dress	\$33,824	\$84,378	\$939

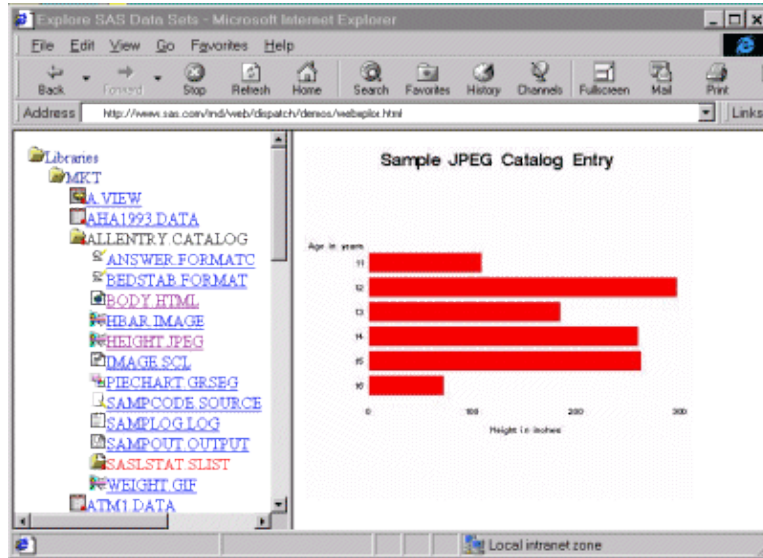
Working with IMAGE Entries

When you select an IMAGE entry from the left frame, Xplore's right frame displays the graphical image.



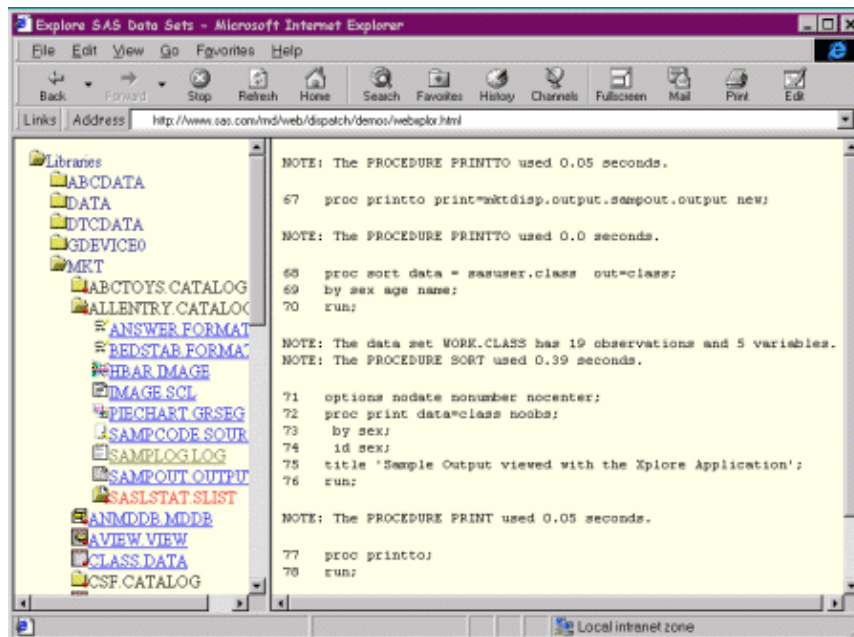
Working with JPEG Entries

When you select a JPEG entry from the left frame, Xplore's right frame displays the graphical image.



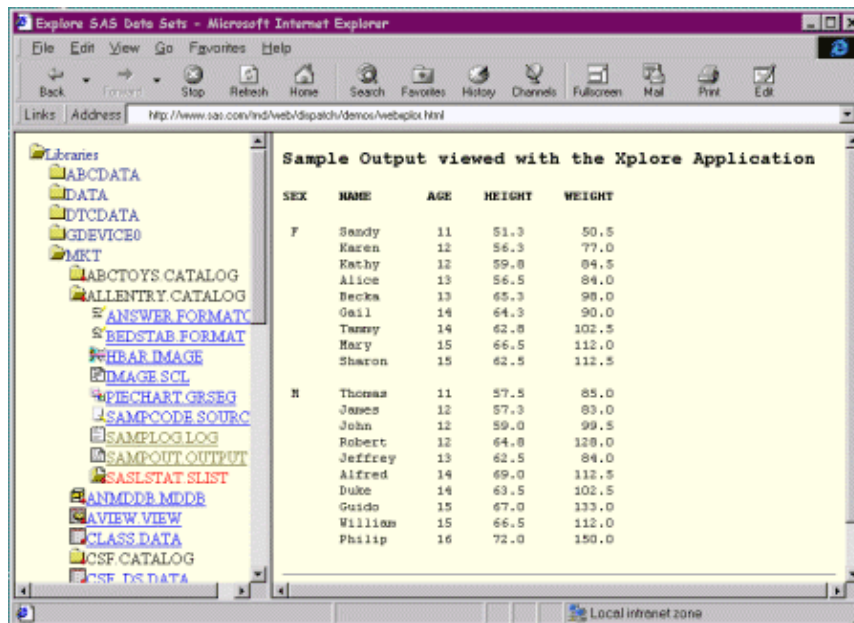
Working with LOG Entries

When you select a LOG entry from the left frame, Xplore's right frame displays the contents of that SAS log.



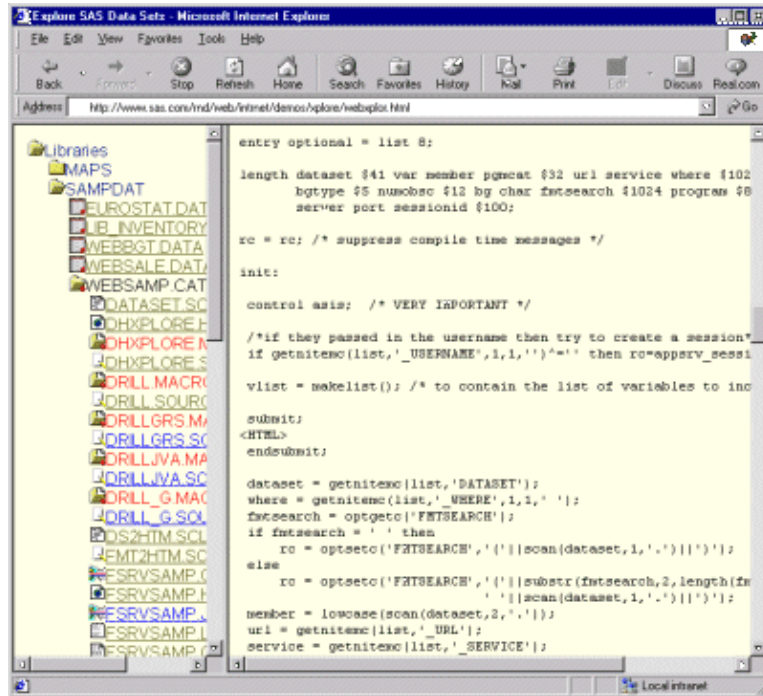
Working with OUTPUT Entries

When you select an OUTPUT entry from the left frame, Xplore's right frame displays a listing of the SAS output.



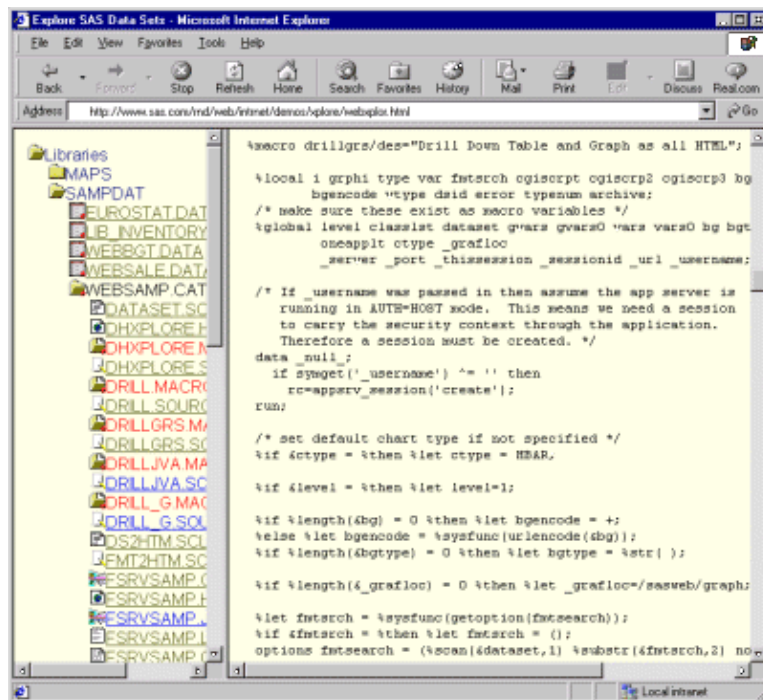
Working with SCL Code Entries

When you select an SCL entry from the left frame, Xplore's right frame displays the SCL code.



Working with SOURCE Entries

When you select a SOURCE entry from the left frame, Xplore's right frame displays a listing of the source statements.



Setting Up Xplore for Your Site

1. Ensure that the parameters in the main Xplore HTML file (webxplib.html) are correct for your site. The webxplib.html file can be found in the directory that corresponds to the following URL:

```
http://your_server/sasweb/IntrNet9/xplore
```

where *your_server* is your Web server host name.

2. If Xplore is to run with a secure Application Server, you must add a statement to the program that starts your Application Server.
3. To run Xplore, type the following URL into your Web browser:

```
http://your_server/sasweb/IntrNet9/xplore/webxplor.html
```

Note: Xplore displays all Application Server data libraries except those that are excluded by the `exclude` parameter in the webxplib.html file (the sample webxplib.html file excludes the SASHELP library). You can add new data libraries to Xplore by defining them in an `ALLOCATE LIBRARY` statement and listing them in the `DATALIBS` statement of the `APPSRV` procedure.

Setting Xplore's Parameters

The webxplib.html file is located on your Web server in a directory that you created when you installed the Application Dispatcher. You can modify the values for the following parameters. *Do not modify* any of the other parameters in the file.

Required Parameters

You must set the following parameters in order to run Xplore:

brokername = ***'/sasweb/cgi-bin/broker'***

This parameter is the location of your Application Broker CGI. The value contains `broker.exe` instead of `broker` on Windows systems.

servicename = ***'default'***

This parameter is the Application Dispatcher service that is defined in the Application Broker configuration file. The value of `default` is the default service that is defined for the Application Server. Change this value only if you define another service for the Application Server.

xplorelocation = ***'samplib.websamp'***

This parameter is the name of the library that contains the source code for the Xplore sample application. Change the value of the parameter only if you rename the `SAMPLIB.WEBSAMP` library.

Optional Parameters

If you do *not* want to use an optional parameter, then set the parameter value to `' '`.

debugvalue = ***'2'***

This parameter specifies the debug flag. If you do not set this parameter, the value defaults to the debug flag that is set in the Application Broker configuration file.

bgtype = ***'COLOR'***

This parameter states whether the Xplore window's background is a color or an image. The default value is `COLOR`. To specify that the background is an image, specify a value of `IMAGE`.

bg = ***'%23ffffe7'***

This parameter specifies the background color or image for Xplore's window. The default value is a

cream color.

- ◇ Specify a background color if the value of the `bgtype` parameter is `COLOR`. Specify the hexadecimal value of the color, and precede it with an NCR code of `%23` (the NCR code for the pound sign (#)). For an example, see the default value for the `bg` parameter.
- ◇ Specify a URL for the background image if the value of the `bgtype` parameter is `IMAGE`.

`giflocation = ' '`

This parameter is the location of the gif icons that are used by Xplore. The default location is the location of the `webxplib.html` file.

`memtypes = new Array()`

This parameter defines the types of members to include in Xplore's list of library members. If you specify no members (that is, `Array ()`), then *all* member types are included. If you specify specific member types (for example, `Array ('data', 'view')`), then only members of the specified types are included.

`include = new Array()`

This parameter defines the libraries that you want to include in Xplore's list of libraries. If you specify no libraries (that is, `Array ()`), then *all* libraries are included except for the libraries that are specified by the `exclude` parameter. If you specify specific libraries (for example, `Array ('sasuser')`), then only those libraries are included.

Notes:

- ◇ You *cannot* include the `WORK` library.
- ◇ You cannot use the `include` parameter if you use the `exclude` parameter.

`exclude = new Array('sashelp')`

This parameter defines the libraries that you want to exclude from Xplore's list of libraries. If you specify no libraries (that is, `Array ()`), then no libraries are excluded. The default value for this parameter excludes the `SASHELP` library.

Note: You cannot use the `exclude` parameter if you use the `include` parameter.

Running with a Secure Application Server

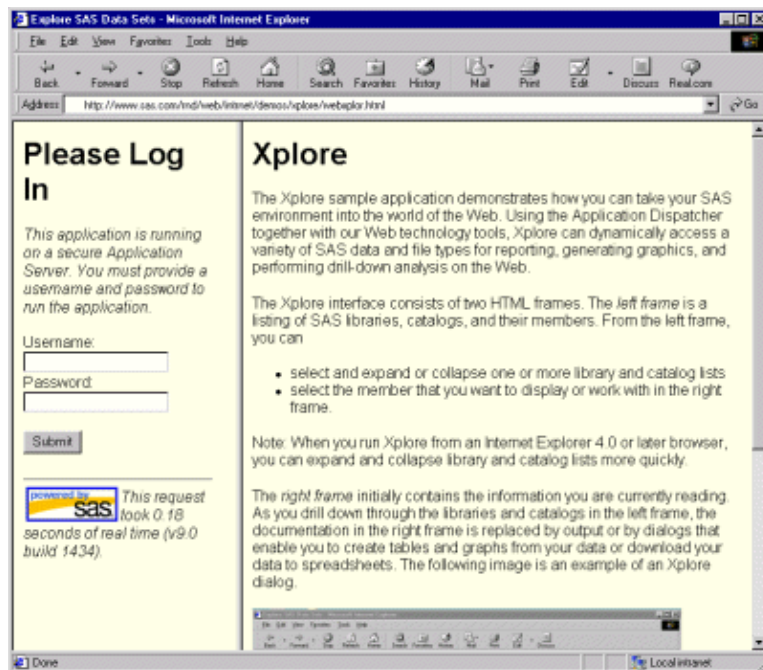
If your Xplore application runs with a secure Application Server, then you must add the following statement to the program that starts the Application Server.

```
request login=sample.weblogin.sas;
```

Your program would then look something like the following:

```
proc appsrv auth=host;
.
.
.
request login=sample.weblogin.sas;
.
.
.
run;
```

When a user starts the Xplore application, the following page appears requesting a user name and password:



After the user submits the user name and password and is authorized, Xplore proceeds to run normally.

Expiration of Authorization

You can configure your secure Application Server so that authorization to the Server expires after a certain amount of time. For more information on setting an expiration time, see the TIMEOUT parameter of the SESSION statement for the APPSRV procedure.

The webxplib.html File

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 3.2 Final//EN">
<HTML>
<HEAD>
<TITLE>None</TITLE>

<script language="Javascript">
function loadlibrarylist()
{
  // change the following values as appropriate:
  brokername = '/sasweb/cgi-bin/broker';
  servicename = 'default';
  xplorelocation = 'samplib.websamp';

  // the following are optional. set them to ' ' if not wanted.
  debugvalue = '2';      // debug option - defaults to value in broker.cfg if not set
  bgtype = 'COLOR';      // background COLOR or IMAGE for generated HTML
  bg = '%23ffffe7';      // either a color or a URL for an image, depending on bgtype
  giflocation = ' ';     // location of gif icons - defaults to same directory as this html file

  // define the member types to include - leave blank for all, e.g.,
  //      new Array('data','view')
  // says only include datasets and views
  memtypes = new Array();

  // define the libraries to include/exclude - e.g.,
  //      exclude new Array('sashelp','sasuser')
  // says to exclude sashelp and sasuser.
  // only one of them should be provided
  include = new Array();
  exclude = new Array('sashelp');

  // do not touch the rest of this code
  if (brokername.charAt(0) == '/')
    url = 'http://' + location.host + brokername + "?_service=" + servicename;
  else url = brokername + "?_service=" + servicename;

  // check for IE4 and invoke dynamic html version if appropriate
  var MS=navigator.appVersion.indexOf("MSIE");
  if ((MS>0) && ((parseInt(navigator.appVersion.substring(MS+5,MS+6)) >= 4) &&
(navigator.appVersion.indexOf("MSIE")>0 && (navigator.appVersion.indexOf("B1")==-1))
    xplorelocation = xplorelocation + '.dhxplore.macro';
  else xplorelocation = xplorelocation + '.xplore.macro';

  url = url + '&_program=' + xplorelocation;
  if (debugvalue != ' ') url = url + '&_debug=' + debugvalue;
  if (bgtype != ' ') url = url + '&bgtype=' + bgtype;
  if (bg != ' ') url = url + '&bg=' + bg;
  if (memtypes.length > 0)
  { thelist = memtypes[0];
    for (i = 1; i < memtypes.length; i++) thelist = thelist + '+' + memtypes[i] ;
    url = url + '&memtypes=' + thelist;
  }
  if (include.length > 0)
  { thelist = include[0];
    for (i = 1; i < include.length; i++) thelist = thelist + '+' + include[i] ;
    url = url + '&sel_libs=' + thelist;
  }
  if (exclude.length > 0)
  { thelist = exclude[0];
    for (i = 1; i < exclude.length; i++) thelist = thelist + '+' + exclude[i] ;
    url = url + '&exc_libs=' + thelist;
  }
  if (giflocation == ' ')
```

```

    { giflocation = location.href;
      lastslash = giflocation.length + 1;
      for (i = 0; i < giflocation.length; i++)
        if (giflocation.charAt(i) == '/') lastslash = i;
      giflocation = giflocation.substring(0,lastslash);
    }
    url = url + '&gifbase=' + giflocation;

// use the line below if your browsers don't support the location replace function
// location.href = url;
    location.replace(url);
  }
</script>
</HEAD>

<BODY BGCOLOR="#ffffe7" onLoad="loadlibrarylist()">
<H1>Loading Libraries.</H1>
<H2>Please be patient...</H2>
</BODY>
</HTML>

```

Xplore's Source Code

Xplore is distributed with complete source code. The source code is located in the WEBSAMP catalog of the SAMPLIB library (created when you install the SAS/IntrNet Server).

Xplore's source code is portable across all SAS/IntrNet platforms. If you are an expert user, you can use the source code as a model or template for your own applications. You can also use some of the programs as-is in your applications.

Note: SAS supports the Xplore source code in its *unmodified* form only.

You can view Xplore's source code either from within the SAS environment or from the Web.

- To view the code from the SAS environment:

1. Issue a LIBNAME statement that points to the directory where the WEBSAMP catalog is stored.
2. Use the BUILD command to view the source code in the WEBSAMP catalog.

- To view the source code from the Web:

1. From Xplore's main page, select the SAMPDAT library from the list in the left frame of your Web browser.

Note: SAMPDAT is used instead of SAMPLIB for viewing purposes only. When you run your programs, they should still be run from SAMPLIB.WEBSAMP.

2. Select WEBSAMP . CATALOG from the list of SAMPDAT members. Xplore then displays a list of WEBSAMP . CATALOG members from which you can select.
3. Select any of the . SCL or . SOURCE members that are listed, and Xplore displays that source code in the right frame of your Web browser.

Your Turn

We welcome your feedback.

- If you have comments about this book, please send them to **`yourturn@sas.com`**. Include the full title and page numbers (if applicable).
- If you have comments about the software, please send them to **`suggest@sas.com`**.

SAS® Publishing delivers!

Whether you are new to the workforce or an experienced professional, you need to distinguish yourself in this rapidly changing and competitive job market. SAS® Publishing provides you with a wide range of resources to help you set yourself apart.

SAS® Press Series

Need to learn the basics? Struggling with a programming problem? You'll find the expert answers that you need in example-rich books from the SAS Press Series. Written by experienced SAS professionals from around the world, these books deliver real-world insights on a broad range of topics for all skill levels.

support.sas.com/saspress

SAS® Documentation

To successfully implement applications using SAS software, companies in every industry and on every continent all turn to the one source for accurate, timely, and reliable information—SAS documentation. We currently produce the following types of reference documentation: online help that is built into the software, tutorials that are integrated into the product, reference documentation delivered in HTML and PDF—free on the Web, and hard-copy books.

support.sas.com/publishing

SAS® Learning Edition 4.1

Get a workplace advantage, perform analytics in less time, and prepare for the SAS Base Programming exam and SAS Advanced Programming exam with SAS® Learning Edition 4.1. This inexpensive, intuitive personal learning version of SAS includes Base SAS® 9.1.3, SAS/STAT®, SAS/GRAPH®, SAS/QC®, SAS/ETS®, and SAS® Enterprise Guide® 4.1. Whether you are a professor, student, or business professional, this is a great way to learn SAS.

support.sas.com/LE



**THE
POWER
TO KNOW®**