ABSTRACT
SAS/ASSIST® software provides a menu-driven, task-oriented interface to the most commonly used features of the SAS® System. This interface makes it simple to perform tasks in the areas of data access, data management, data analysis, and data presentation. SAS/ASSIST software is designed to serve the needs of users with many different levels of expertise.

SAS/ASSIST software was constructed using tools available to any user of the SAS System. Thus, the software can be customized to meet the needs of a particular site. Tools to aid in application development are included as part of SAS/ASSIST software.

INTRODUCTION
SAS/ASSIST software is a menu-driven interface to many features of the SAS System. It is a task-oriented system that includes components for data management, graphics production, report writing, data analysis, decision support, and application development. It includes tools for management of programs and output produced through your work with SAS/ASSIST software as well as output created using either SAS or non-SAS products outside of SAS/ASSIST. With Version 6 of the SAS System, the ease of use of personal computers is brought to other computing environments via SAS/ASSIST software.

At its heart, SAS/ASSIST software is a catalog of programs and help objects constructed with SAS/AF® software, although SAS/AF software is not required to run SAS/ASSIST. In addition, various features of base SAS software — the DATA step, procedures, and the macro facility — are heavily utilized by SAS/ASSIST software. Transparently to the user of SAS/ASSIST software, the menu selections made by a user actually generate a SAS program to perform the task at hand. Depending on the task, the generated program may utilize portions of SAS/GRAPH® software, SAS/FSP® software, SAS/STAT® software, or other components of the SAS System. Thus, the utility of SAS/ASSIST software is enhanced with each additional SAS System product that is licensed.

SAS/ASSIST software provides an excellent illustration of the value of the SAS System's MVA™ (MultiVendor Architecture™). With rare exceptions, the same catalog drives SAS/ASSIST software on every operating system. The software behaves the same on every system. Any differences in appearance from system to system simply make SAS/ASSIST software appear more at home on a particular system, and these differences are a function of the SAS supervisor and host layers, not SAS/ASSIST software.

As this paper will point out, SAS/ASSIST software has been designed with the needs of many different types of users in mind. Minimal training is required for its use. The software is suitable for:
- newcomers to the SAS System
- experienced SAS users
- professionals who want to use the power of the SAS System without having to learn SAS syntax
- application developers.

In this paper, the following topics are discussed:
- the tasks that can be performed with SAS/ASSIST software
- the SAS/ASSIST interface
- application development features of SAS/ASSIST software
- some fundamental technical aspects of the software
- setting up SAS/ASSIST software for an individual user
- setting up SAS/ASSIST software for a department or site
- customization of SAS/ASSIST software
- support issues and future plans.

THE TASKS THAT CAN BE PERFORMED WITH SAS/ASSIST SOFTWARE

Primary Menu

Note: REMOTE CONNECT will appear on the Primary Menu for some operating systems.

The online TUTORIAL helps new SAS/ASSIST users to become productive quickly. It not only describes how to use SAS/ASSIST software, but how to use the SAS System in general.

In terms of the primary areas served by the SAS System — data access, data management, data analysis, data presentation, and application development — SAS/ASSIST software is provided by SAS/ASSIST's DATA MGMT section and by REMOTE CONNECT, where applicable. Data analysis is provided by the DATA ANALYSIS and PLANNING TOOLS sections. Data presentation can be performed with the REPORT WRITING and GRAPHICS sections. The EIS section facilitates application development.
Data Management Menu

The data management section enables you to easily:
- edit or browse a data set
- create a new data set by importing a flat file or by entering data
- create data sets for special applications such as mapping
- access data from DB2™, SQL/DS™, ORACLE®, and Rdb/VMS™ data bases and other data bases supported by SAS/ACCESS® software (on appropriate operating systems)
- merge or concatenate data sets
- produce subsets
- create, derive, or transform variables
- define formats
- transpose data sets
- convert data libraries from one format to another
- perform functions such as those provided by the CONTENTS, COPY, and DATASETS procedures.

Report Writing Menu

A highlight of the report writing section is its six different templates for tabular reports. The UTILITIES selection provides the ability to produce calendars as well as mailing labels and other repetitive forms.

Graphics Menu

Both high resolution and line printer graphics can be produced. Highlights of the high resolution graphics section include:
- the availability of a wide variety of plots and horizontal and vertical bar charts
- the ability to produce maps (U.S., Canadian, European, World, and most other specific regions) at a number of different scales
- extensive possibilities for customizing a graph
- the ability to create data sets for specific types of graphs.

Data Analysis Menu

The ELEMENTARY selection enables you to:
- produce summary statistics
- compute correlation coefficients
- find confidence intervals for means
- analyze frequency tables.

The REGRESSION selection enables you to perform:
- linear regression
- logistic regression
- regression with correction for autocorrelation.

The ANOVA selection enables you to:
- perform numerous types of analysis of variance (ANOVA, multivariate ANOVA, analysis of covariance, and so forth)
• perform t tests
• compute a variety of nonparametric statistics.

The MULTIVARIATE selection enables you to find principal components and compute canonical correlations.

The TIME SERIES selection provides seasonal adjustment and regression with correction for autocorrelation.

The UTILITIES selection enables you to compute ranks and percentiles and standardize data. Data management facilities for time series data are also provided.

The following is a summary of the functions provided by the remaining items on the SAS/ASSIST Primary Menu in Release 6.06:

The PLANNING TOOLS selection from the Primary Menu currently provides a tool for loan analysis and comparison. Eventually, it will link to applications for project management, univariate forecasting, production of quality control charts, and the design of experiments. These applications are slated to be released as part of other SAS System products (SAS/OR® software, SAS/ETS® software, and SAS/QC® software) in the latter half of 1990. Note that SAS/ASSIST software will not be required to run these applications.

The EIS selection provides an easy way to construct and run executive information systems and to link your SAS/AF applications to SAS/ASSIST software. This portion of the product is discussed in more detail later.

The RESULTS selection from the main menu enables you to work with programs and output that you have saved from SAS/ASSIST software.

The SETUP selection enables you to control many aspects of your SAS/ASSIST session. For example, it allows you to specify the set of colors used to display menus. More importantly, this section takes care of all the aspects of SAS/ASSIST software that might confuse a naive computer user. Thus, this selection is important to system administrators, who can use it to set up default catalogs, printer and plotter specifications, and so forth. This portion of SAS/ASSIST software is also discussed in more detail later.

The INDEX selection provides an alphabetical list of all important functions provided by SAS/ASSIST software. If you do not know where to look for your task among the menus, the index can take you directly to the task.

The REMOTE CONNECT selection, when present, enables you to sign on to one or more remote hosts, upload or download data, and perform remote processing.

THE SAS/ASSIST INTERFACE

The primary goal of SAS/ASSIST software is to provide the power of the SAS System without requiring use of SAS syntax. The interface has been designed with this goal in mind.

The list below summarizes some important features of the SAS/ASSIST interface.

Organization
• SAS/ASSIST software is a task-oriented system. That is, you only have to know that you want to perform linear regression, not that you want to use PROC REG. The SAS/ASSIST menus reflect logical groupings of these tasks.

• In case a user is not sure where among the menus a particular task might be located, or wonders whether a particular task is included in SAS/ASSIST software, an index that lists all tasks in the product is offered. Selecting an item from the index takes you to the task.

• Within a particular task, a user's choices are layered. The primary window for a task asks only for the most important information associated with that task. After making these choices, the task can be performed. This feature insures that SAS/ASSIST software does not overwhelm a user who needs to perform only simple tasks. On the other hand, if the user wants to perform a more sophisticated version of a task, SAS/ASSIST generally provides additional layers of selections to offer a wealth of ways to enhance the analysis, report, or graph. This feature serves the needs of power SAS users or users with a great deal of expertise in a particular area.

Presentation
• To minimize the learning curve associated with SAS/ASSIST software, we have used a consistent interface across all tasks. A consistent set of colors, legends (instructional areas), and action bars is used. For example, titles are always specified via the Customize action bar item, and the Cancel action bar item always takes the user back to the previous window without registering any information that had been specified in the canceled window.

• To minimize the opportunity for user error, selection lists are offered to the user whenever possible. SAS/ASSIST software can be driven almost entirely by the 'point and click' method.

• For flexibility beyond what the 'point and click' method can provide, and for power users, editors are available for free-form entry or editing of certain kinds of information.

• Terminology that derives its meaning primarily from SAS syntax has been avoided whenever possible.

Functionality
• On every relevant task, the user can specify that processing be done in groups (using BY variables), on only a subset of the data (via a WHERE statement), or both.

• Context-sensitive help is available at every point in SAS/ASSIST software. This help utilizes hypertext features.

Guidance
• Table look-up methods are used whenever appropriate to supply the valid selections for a particular field or to validate a user's entry.

• Important information such as the active data set and the user's graphics device are retained from one task to another and even from one SAS/ASSIST session to the next.

• Some guidance of a user's choices is made. For example, items may be 'grayed out,' or made unselectable, if they are precluded by some previous choice.

• When a window involves an elaborate set of choices, it also offers the option to reset, should the user decide to start over. In addition, it is always possible to cancel out of a window. In
Output Management

• Most SAS/ASSIST tasks generate a SAS program to perform the task. At any point, the user can view the program being generated. In addition, the generated program can be saved, modified, and reexecuted later. These features make SAS/ASSIST software more useful to experienced SAS users, and they also make SAS/ASSIST a good tool for training new users who want to learn SAS syntax.
• SAS/ASSIST output, including graphs, can be saved for later use.
• The SAS log associated with your SAS/ASSIST session can also be saved, in case you need a record of your SAS System activities.
• All items saved from SAS/ASSIST software are saved into catalogs. This feature protects users from having to know about operating system-specific file characteristics.

APPLICATION DEVELOPMENT FEATURES OF SAS/ASSIST SOFTWARE

The EIS (Executive Information System) section of SAS/ASSIST software provides you with an easy-to-use application development tool that you may find to be extremely valuable.

The EIS option makes it simple for you to construct and run your own menu-driven applications. SAS/ASSIST software prompts you for the information to appear on the menus and the action to be taken when each menu selection is made. The types of actions available include:

• displaying another menu
• displaying a report
• displaying a graph
• running a SAS program
• running a SAS/AF application
• editing, browsing, or printing a SAS letter document
• editing or browsing a SAS data set
• editing or browsing an external file
• executing a host command
• executing a SAS command.

Given the range of actions available, you can easily construct an attractive menu-driven application that gives an executive access to the information he or she wants to see each morning. One menu selection can run a SAS program that produces a report on yesterday's sales, based on an up-to-date view of the corporate data base. Another selection can provide a graph of the same information. Yet another selection can access the site's electronic mail system. And another can run a SAS/AF application written on site to perform a specific function. The possibilities are endless.

The information that you specify when building an EIS is stored in what is called an application database. An application database consists of records with names you have specified, and each record has a type according to its corresponding action (bring up a block menu, run a SAS program, display a graph, and so forth). You can maintain a number of application databases to contain different applications that you have built, but you can always point to a different application database from the current one, and you can copy items from one application database to another. Thus, you can mix and match parts of many applications to construct a new one; you do not always have to start from scratch.

Other aspects of the EIS section of SAS/ASSIST software are covered later in this paper. The online help should also be of use.

FUNDAMENTAL TECHNICAL ASPECTS OF SAS/ASSIST SOFTWARE

SAS/ASSIST software is a very large SAS application. As sophisticated SAS users, you may be interested in hearing something about how this application is put together. This information will be especially useful to those of you who are interested in customizing SAS/ASSIST software for your site.

The Programming Language

Our primary development tool has been SAS/AF software with its powerful screen control language (SCL) and BUILD procedure. The BUILD procedure, in turn, includes a versatile CBT facility. As shipped, SAS/ASSIST software consists of one large catalog and one indexed data set (for the EIS section), which are installed in the SASHELP library, and a collection of development macros, which are installed in the autocall library.

SAS/ASSIST's catalog consists primarily of program entries, which usually display windows, validate user selections, and perform functions or generate SAS code based on user selections, and CBT entries, which are linked to the program entries to provide help.

The SASPARM Data Set

The SASPARM data set is one of SAS/ASSIST software's basic building blocks. Every user has a unique SASPARM data set to serve as SAS/ASSIST's memory for that user. The SASPARM data set contains such information as the last data set used, the last graphics device specified, BY and WHERE processing information, and the names of catalogs where programs and output are to be stored. The very first time a user invokes SAS/ASSIST software, this data set is created and added to the user's SASUSER data library. The data set is referenced and updated at various points during interaction with SAS/ASSIST software, and information remains in the data set from one SAS/ASSIST session to the next.

The Primary Programs

SAS/ASSIST software's primary programs perform several important tasks. They display the initial block or menu screen and all subsequent block screens, open the SASPARM data set to retrieve current user-specific information, and pass control to the section you request.
The basic structure of SAS/ASSIST software is shown below:

```
SASPARM data set

||
user (primary programs)

DATA REPORTS GRAPHICS ANALYSIS ETS

section programs
```

**SETTING UP SAS/ASSIST SOFTWARE FOR AN INDIVIDUAL USER**

Beginning to use SAS/ASSIST software is easy: type `ASSIST` on any SAS Display Manager System command line, and up comes SAS/ASSIST's Primary Menu. Or, if pmenus are being used, ASSIST is the first selection in the Globals pull-down menu. The first time a user invokes SAS/ASSIST (or if no SASPARM data set is found in the SASUSER library), several sample data sets are created. Once the Primary Menu is in place, the user can simply start making selections.

However, there are things that can be done to make use of SAS/ASSIST software more effortless and attractive for the individual user.

SAS/ASSIST's menus (Primary Menu, Report Writing Menu, and so forth) are sent out with a default set of display colors. These colors may not look very good on the type of terminal you are using, or they may not be colors that you like. If that is the case, you can easily change the colors used to display the menus. You can even make the Primary Menu a different set of colors from the secondary menus (Data Management Menu, Report Writing Menu, and so forth). Simply select SETUP from the Primary Menu. Then, select Primary Menu Colors or Secondary Menu Colors from the resulting list, and you can scroll through all available combinations of colors until you find a set that looks good on your terminal. When you select OK from the action bar, a record is written to your SASPARM data set noting the color combination you have selected. This color combination will be used in all future displays of the menus. You can, of course, select a new color combination at anytime.

If the MAPS libref is assigned automatically as part of the SAS autoexec file, the speciallibref LIBRARY is assigned to this library data set. Thus, the individual user has the SASPARM data set that is desired by the system administrator.

Items that a system administrator might want to reference in the data set SASHELP.SASPARM include a library of site-specific formats, a catalog of available printing forms, a primary private application, a logon exit, and a catalog search path. The latter three items are explained below.

**SETTING UP SAS/ASSIST SOFTWARE FOR A DEPARTMENT OR SITE**

**Using a SASHELP.SASPARM Data Set**

In the main, setting up SAS/ASSIST software for a department or site involves creating certain catalogs and a customized version of the SASPARM data set that points to these catalogs. This customized SASPARM data set should be put into the SASHELP library. When a user starts up SAS/ASSIST software for the first time (or any time the data set SASUSER.SASPARM is not found), SAS/ASSIST looks for a SASHELP.SASPARM data set before executing its code that creates the SASUSER.SASPARM data set. If a SASPARM data set is found in the SASHELP library, that data set is copied into the user's SASUSER library and becomes the user's SASPARM data set.

Thus, the individual user has the SASPARM data set that is desired by the system administrator.

A system administrator can use SAS/ASSIST software to create a template SASPARM data set that is ready to be placed in the SASHELP library. To do so, rename (or delete) your existing SASUSER.SASPARM data set, bring up SAS/ASSIST, and then use various selections under SETUP, as described below, to specify a format library, a forms catalog, a primary private application, and so forth. As you do so, SAS/ASSIST updates the SASUSER.SASPARM data set accordingly. When you exit SAS/ASSIST after making these selections, you should have a data set ready to be copied into the SASHELP library.

**Setting up a Template SASPARM Data Set**

A system administrator can use SAS/ASSIST software to create a template SASPARM data set that is ready to be placed in the SASHELP library. To do so, rename (or delete) your existing SASUSER.SASPARM data set, bring up SAS/ASSIST, and then use various selections under SETUP, as described below, to specify a format library, a forms catalog, a primary private application, and so forth. As you do so, SAS/ASSIST updates the SASUSER.SASPARM data set accordingly. When you exit SAS/ASSIST after making these selections, you should have a data set ready to be copied into the SASHELP library.

**Note:** The Appendix contains information on the structure and contents of the SASPARM data set.

**Pointing to a Format Library**

To let SAS/ASSIST users to select printing forms from a catalog of available printing forms, a primary private application, a logon exit, and a catalog search path. The latter three items are explained below.

**Pointing to a Forms Catalog**

To allow SAS/ASSIST users to select printing forms from a catalog that has been created at your site, again choose the SETUP option from the Primary Menu. Select Forms management from the resulting list. In the Forms Management window, enter the name, or physical location, of the format library at your site. When you select OK from the action bar, the speciallibref LIBRARY is assigned to this library, and the location of the library is stored in the SASPARM data set.

In all future uses of SAS/ASSIST software that use this SASPARM data set, SAS/ASSIST will look for and store user-defined formats in this library.

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enter? in either field to get a selection list. When you select OK from the action bar of this window, the name of the forms catalog (in the form library name, or name) is stored in the SASPARM data set. In all future uses of SAS/ASSIST software that use this SASPARM data set, SAS/ASSIST will use this catalog as the basis for the list of available printing forms.

Pointing to a Primary Private Application

Generally, menu-driven applications that you create with the EIS section of SAS/ASSIST software can be considered 'private' applications — they are applications that have been developed at and for your site. Since any item on a menu can point to another menu or to an elaborate application constructed with SAS/AF software, as well as more simple items such as saved reports or stand-alone SAS programs, you can use the EIS section to build one menu that points to every application that needs to be accessed by everyone at a site or in a department. You might call an overarching application such as this your primary private application.

To designate one application as the primary private application and to store that information in the SASPARM data set, select SETUP from the Primary Menu. Under Private/public applications, select Primary private application. In the resulting window, specify the libname, application database, and name and type of the application you want to serve as the primary private application. When you select OK from the action bar, this information is stored in the SASPARM data set.

The information comes into play when the user selects EIS from SAS/ASSIST's Primary Menu and then selects Run private application. The application specified above is displayed.

Specifying a Logon Exit

If you have built an EIS (or some other sort of application) that you want to bring up for all users in a group in a transparent manner, you can use SAS/ASSIST to do so, via what is called a logon exit. If a logon exit is specified in the SASPARM data set, the logon command (which, you recall, can be issued in a DIM command in your autoexec) takes the user to this alternative application rather than to the SAS/ASSIST menus.

The logon exit is specified in a manner similar to the primary private application described above. Select Logon/logoff exits under SETUP, and then select Logon exit from the resulting list. Specify the libname, application database, and name and type of the application you want to come up at the ASSIST command. Note that you can specify whether the SAS/ASSIST menus are to be displayed when the application is exited. Select OK to save this information to the SASPARM data set.

To override a logon exit specification, a user can issue the ASSIST command with a parameter: ASSIST LOGON=NO.

Establishing a Catalog Search Path

The developers of SAS/ASSIST software know that they may not have constructed a product that will meet everyone's needs perfectly. Therefore, SAS/ASSIST software includes a mechanism for substituting an alternative program for any program which resides in SAS/ASSIST's catalog. This mechanism involves what is called a catalog search path.

SAS/ASSIST software operates via a series of programs in a catalog, where one program calls another, which calls another, and so forth, according to the SAS/ASSIST user's selections on a menu or in a window. Generally, all of the programs called reside in the main SAS/ASSIST catalog. However, a user of SAS/ASSIST software can specify up to four catalogs to serve as a catalog search path. If a catalog search path exists, then every time a program is called, SAS/ASSIST searches for a program of that name in each of the search catalogs before it ever looks for the program in the SAS/ASSIST catalog. Thus, if you put into a catalog in your search path a program of the same name as some program in the SAS/ASSIST catalog, SAS/ASSIST runs your program instead of the one sent out by SAS Institute.

To establish a catalog search path, again select SETUP from SAS/ASSIST's Primary Menu. Then, select Catalog search path from the resulting list to bring up a window where you can enter the name (in the form libraryname, or name) of up to four catalogs. In top down order (top catalog searched first), these catalogs make up the path searched by SAS/ASSIST software any time it is asked to display another window. Be sure that the Use search path checkbox at the bottom of the window is turned on. When you exit this window, the search path is established for the current SAS/ASSIST session, and the information is written to the SASPARM data set to take effect for future SAS/ASSIST sessions.

Setting up a Customized Graphics Device Catalog

Independently of the SASPARM data set, an administrator can control the graphics devices that a group can use. To allow a particular group (or user) access to only certain graphics devices, a catalog named DEVICES can be set up in a SAS data library to which the libname GDEVICE is assigned. This catalog should be created by copying certain entries from the device catalog SASHELP.DEVICES sent out by SAS Institute. Such a catalog can be created from SAS/ASSIST software by using the Device driver management option under the SETUP selection. The libname GDEVICE can then be assigned as part of the SAS invocation process or in an autoexec file. If SAS/ASSIST software does not find the libname GDEVICE, it presents a user with the device list supplied by SAS Institute for a particular operating system.

Note that SAS/ASSIST software also enables you to specify groups of SAS statements and system commands to be executed before and after a graph is created for a specific device driver. This is useful, for example, in directing device-dependent graphics output to hardcopy devices that are not attached in a drop mode. Commands to be executed before a graph is created are written to a SOURCE object in your SASUSER.PROFILE catalog. Commands to be executed after a graph is created are written to an OUTPUT object in that catalog. When SAS/ASSIST creates a graph, it looks for device-specific SOURCE and OUTPUT objects first in the catalog SASUSER.PROFILE and then in catalog GDEVICE.DEVICES. Thus, a system administrator can copy SOURCE and OUTPUT objects from the SASUSER.PROFILE catalog to GDEVICE.DEVICES to make these sets of commands available to other users.

CUSTOMIZATION OF SAS/ASSIST SOFTWARE

The EIS section of SAS/ASSIST software can be used to create a customized version of parts of the software that you want to modify for your site. These customized applications can then be made available as private applications or by using a logon exit.
For example, suppose you want to offer a simplified version of the Report Writing Menu to users at your site, including only the selections LISTING, TABLES, COUNTS, BAR CHARTS, GOB- ACK, and HELP.

To begin, you have to play detective, using a key set to ID to find the program or CST accessed from each Report Writing window gives you the four-level name ID.

For example, suppose you want to offer a simplified version of program or CST run when that selection is made, which you find selections LISTING, TABLES, COUNTS, BAR CHARTS, GOBACK.

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For example, suppose you want to offer a simplified version of program or CST run when that selection is made, which you find selections LISTING, TABLES, COUNTS, BAR CHARTS, GOBACK.
If serious problems are found in this release of SAS/ASSIST software, fixes will be provided for them. A cumulative catalog of fixed programs will be available on each Usage Notes tape that leaves the Institute. In between those tapes, you will be able to download files in transport format from Technical Support’s Online Customer Support Facility. Each file, when converted to a catalog with PROC CIMPORT, will contain the fix for one problem. These fix catalogs should be merged together at your site to create one catalog of fixed programs.

To use the catalog of fixes, set up a catalog search path, as discussed earlier, to force SAS/ASSIST to use programs in this catalog instead of programs in the original SAS/ASSIST catalog.

Future Enhancements

SAS Institute has many ideas about tasks and functionality that are still missing from SAS/ASSIST software. However, as always, you can affect the development work that goes on in this area by giving us your feedback. Please use the SASWare Ballot or write the Marketing Department to let the Institute know what you would like to see in SAS/ASSIST software.

APPENDIX

How to create an editable version of a program from the SAS/ASSIST catalog

Because of the way a setinit is applied to the SAS/ASSIST catalog (the catalog named ASSIST in your SASHELP library), you cannot simply run a PROC BUILD with a MERGE statement to create a modifiable version of some SAS/ASSIST program. If you do so and you try to edit, you get a message that the object cannot be edited. Instead, you must do the following. Suppose you want to edit a copy of the SAS/ASSIST program REPPRINT:

1. Issue a PROC BUILD statement to create a new catalog.
2. From the command line of the PROC BUILD catalog window, give the command EDIT REPPRINT.PROGRAM
3. In the resulting program entry window, give the command COPY SASHELP ASSIST.REPPRINT.PROGRAM

You will be able to edit the copy of REPPRINT.PROGRAM that you have just made.

The structure and contents of the SASPARM data set

Generally, one type of information is stored in each record of the SASPARM data set. Each observation consists of five variables: SASTYPE, which contains a number (currently between 1 and 64) and indicates the type of information the record contains; SASNUM1 and SASNUM2, of type num and length 8, to contain general numeric information; and SASTEXT1 and SASTEXT2, of type char and length 200, to contain general character information.

In SAS/ASSIST’s SCL code, records in the SASPARM data set are referred to by a macro variable name rather than by number (SASTYPE). Important records in the SASPARM data set include the following:

- **ASTPMDS**
  - SASTYPE: 1
  - SASNUM1: dsid
  - SASTEXT1: data set name and dsid
  - variable name: ASTPMDS
  - record contents: active data set name and dsid

- **ASTMCLR**
  - SASTYPE: 2
  - SASNUM1: primary menu color combination
  - SASNUM2: secondary menu color combination
  - variable name: ASTMCLR
  - record contents: primary and secondary menu colors

- **ASTGDEV**
  - SASTYPE: 3
  - SASNUM1: 1 if monitor, 2 if hardcopy device
  - SASNUM2: device driver name
  - SASNUM3: device driver description
  - variable name: ASTGDEV
  - record contents: active graphics device name and description

- **ASTBY**
  - SASTYPE: 5
  - SASNUM1: order indicator
  - SASNUM2: string of BY variables
  - SASNUM3: descending/ascending string
  - variable name: ASTBY
  - record contents: BY processing information

- **ASTOUTCT**
  - SASTYPE: 7
  - SASNUM1: catalog for saved output and logs
  - variable name: ASTOUTCT
  - record contents: catalog for saved output and logs

- **ASTPGMCT**
  - SASTYPE: 8
  - SASNUM1: catalog for saved programs
  - variable name: ASTPGMCT
  - record contents: catalog for saved programs

- **ASTGRPCT**
  - SASTYPE: 9
  - SASNUM1: catalog for saved graphics
  - variable name: ASTGRPCT
  - record contents: catalog for saved graphics

- **ASTFORM**
  - SASTYPE: 10
  - SASNUM1: forms catalog
  - variable name: ASTFORM
  - record contents: forms catalog

- **ASTWH1**
  - SASTYPE: 11
  - SASNUM1: WHERE statement information
  - SASNUM2: criteria for WHERE processing
  - variable name: ASTWH1
  - record contents: WHERE statement information

- **ASTCATLU**
  - SASTYPE: 17
  - SASNUM1: 1 to use search path, 0 not to use
  - SASNUM2: 1 libname.catname ... 4 libname.catname
  - variable name: ASTCATLU
  - record contents: catalog search path

- **ASTLOGON**
  - SASTYPE: 18
  - SASNUM1: item to be displayed at ASSIST command and indicator concerning SAS/ASSIST entry
  - SASNUM2: logon exit information
  - variable name: ASTLOGON
  - record contents: logon exit information

- **ASTBYSCR**
  - SASTYPE: 19
  - SASNUM1: item to be displayed at ASSIST command and indicator concerning SAS/ASSIST entry
  - variable name: ASTBYSCR
  - record contents: logon exit information
macro variable name: BY variable display text
{BY variable string displayed in window
macro variable name: ASTDGDEV
SASTYPE: current display (monitor) graphics device
SASTEXT1: 26
device driver name
SASTEXT2: device driver description
macro variable name: ASTTGDDEV
SASTYPE: current hardcopy graphics device
SASTEXT1: 27
device driver name
SASTEXT2: device driver description
macro variable name: ASTMAPL1
SASTYPE: SAS map data library information
SASTEXT1: 28
SASTEXT2: location of SAS map data library
macro variable name: ASTGTOP1
SASTYPE: information for first title
SASTEXT1: 35
SASTEXT2: title text
macro variable name: ASTGTOP2
SASTYPE: information for second title
SASTEXT1: 36
SASTEXT2: title text
macro variable name: ASTGTOP3
SASTYPE: information for third title
SASTEXT1: 37
SASTEXT2: title text
macro variable name: ASTGTOP4
SASTYPE: information for fourth title
SASTEXT1: 38
SASTEXT2: title text
macro variable name: ASTGFOP1
SASTYPE: information for first footnote
SASTEXT1: 40
SASTEXT2: footnote text
macro variable name: ASTGFOP2
SASTYPE: information for second footnote
SASTEXT1: 41
SASTEXT2: footnote text
macro variable name: ASTGFOP3
SASTYPE: information for third footnote
SASTEXT1: 42
SASTEXT2: footnote text
macro variable name: ASTGFOP4
SASTYPE: information for fourth footnote
SASTEXT1: graphics options values
SASTEXT2: footnote text
macro variable name: ASTPAPPL
SASTYPE: primary public application
SASTEXT1: 45
SASTEXT2: 
macro variable name: ASTUAPPL
SASTYPE: primary private application
SASTEXT1: 46
SASTEXT2: 
macro variable name: ASTLOGOF
SASTYPE: logoff exit information
SASTEXT1: 47
SASTEXT2: item to be displayed at SAS/ASSIST exit
macro variable name: ASTFMTCT
SASTYPE: format library information
SASTEXT1: 53
SASTEXT2: location of format library


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