



## CHAPTER

## 3

## Working with SAS System Files

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### Introduction

This section provides host-specific information about several SAS system files that are significant to SAS users under CMS. Two other system files, CONFIG and SASUSER, are discussed in “Configuration Files” on page 15 and “SASUSER Library” on page 19.

For brief descriptions of all the SAS system files that SAS frequently uses, see “Summary Table of SAS System Files” on page 24.

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### Handling Space in the WORK Library

If you have many large temporary SAS data sets, or if you use a procedure that has many large utility files (for example, a PROC FREQ step with a complex TABLES statement that you run against a large SAS data set), you may run out of space in the WORK library. If you run out of space in batch mode, your PROC or DATA step terminates prematurely, and SAS issues a message similar to the following:

**Output 3.1 Log**

```

ERROR: Insufficient space in file WORK.TEMP.DATA.
NOTE: The SAS System stopped processing this step because of errors.
WARNING: The data set WORK.TEMP may be incomplete. When this step was
         stopped there were 117 observations and 3 variables.
WARNING: Data set WORK.TEMP was not replaced because this step was stopped.

```

In an interactive session, a dialog window asks you to specify what action to take. Here are several possible solutions to this problem:

- 1 Delete files to free space.
  - Delete SAS data sets and members from any SAS library that resides on the same minidisk as the WORK library, including members of the WORK library itself. If the WORK library is in an SFS directory, deleting SAS data sets and members of any SAS library in the same userid and file pool as the WORK library will free additional space for the WORK library. See “Deleting Temporary SAS Data Sets” on page 22 for more information.
  - Remove unneeded CMS files from the minidisk where your WORK library resides. If the WORK library resides in an SFS directory, removing any CMS files from the same userid and file pool as the WORK library will free additional WORK library space.
- 2 Define a virtual disk or a temporary disk for your WORK library. Point WORK or USER to the virtual disk or to the temporary disk. See “Directing Temporary SAS Data Sets to the USER Library” on page 23 for more information.
- 3 Ask your systems administrator to increase the allocation of the minidisk where the WORK library resides or to increase the limits for your userid in the SFS pool where your WORK library resides. See “Increasing the Size of the WORK Library” on page 22 for more information.

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## Increasing the Size of the WORK Library

By default, SAS creates the WORK library on the CMS minidisk that has the largest amount of READ/WRITE (R/W) space available.

You may also want to access a minidisk and reserve it exclusively for SAS WORK files. Use the SAS system option SIODISK= to tell SAS which filemode or SFS directory to use for the WORK library. (See “SIODISK=” on page 292.)

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## Deleting Temporary SAS Data Sets

Under CMS, *temporary SAS data set* means a data set that is stored in a temporary SAS data library. That is, you cannot designate the data set itself as temporary, but the data set takes on the attribute of the library in which it is stored.

One simple way to conserve space in the WORK library is to delete each temporary SAS data set with a PROC DATASETS step after you no longer need it. However, there are two potential problems to keep in mind with this method.

- You can cause errors in a job by deleting a SAS data set before the job is finished with it.
- If you need several very large temporary SAS data sets in your job at the same time, you may run out of space before you reach a point at which you can delete any SAS data sets.

## Directing Temporary SAS Data Sets to the USER Library

An alternative to deleting temporary SAS data sets is to direct them to a different SAS data library. You can use the `USER=` system option to store temporary data sets in the USER library rather than in the WORK library. You can make the USER library as large as you need it to be.

*Note:* Utility data sets that are created by SAS procedures continue to be stored in the WORK library. However, any data sets that have one-level names and that are created by your SAS programs will be stored in the USER library.  $\Delta$

You can put the library either on disk or on tape. The data set can be in either a Version 8, 7, or 6 SAS data library. The following table summarizes differences between the WORK and USER libraries.

Library	Type of Data Set	Storage Medium	Format
WORK	temporary	disk	V8
USER	temporary or permanent	disk or tape	V8, V7, or V6

The following example illustrates the use of the `USER=` system option.

```

filename giant 'survey tvdata a1';
libname result 'filepool:my.tv.sasdata';
❶ libname temp 'f';
❷ options user=temp;
❸ data totalusa;
    infile giant;
    input home_id region income viewers cable;
    if home_id=. then delete;
run;

❹ proc freq;
    tables region*income*viewers*cable
❺      / noprint out=result.freqdata;
run;

```

- 1 The LIBNAME statement associates the libref TEMP with the F minidisk.
- 2 In the OPTIONS statement, the `USER=` system option designates the TEMP libref as the temporary SAS data library. Any data sets that have one-level names and that are created by your SAS program are stored in this library.
- 3 A one-level name is used in the DATA statement. When the DATA step is processed, the SAS data set TEMP.TOTALUSA is created.
- 4 Because the large TOTALUSA data set was directed to the TEMP library, there is more space available in the WORK library for the utility files that the FREQ procedure requires.
- 5 The SAS data set FREQDATA contains the results of the FREQ procedure. A two-level name is used to store FREQDATA in the permanent SAS data library "result filepool: my.tv.sasdata".

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## SAS Log File

In interactive line mode, the SAS log file is routed to the terminal by default. In the windowing environment, the log is directed to the LOG window.

In noninteractive mode, the SAS log has the following characteristics:

- The filename is the same as the filename of the SAS program file.
- The filetype is SASLOG.
- If the SAS program file resides on an accessed R/W disk or on an SFS directory, then the SASLOG file is routed to that location; otherwise, it is routed to the first accessed R/W disk.
- RECFM=V.
- LRECL=the value of the SAS system option LINESIZE= plus one. The default value of LINESIZE= is 132; hence, LRECL=133 by default.

For information about changing the destination of the SAS log, see “Routing Your SAS Log or Procedure Output to an External File” on page 88.

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## SAS Procedure Output File

In noninteractive line mode, the SAS procedure output file is routed to the terminal by default. In the windowing environment, output is directed to the OUTPUT window.

In batch mode, the procedure output file has the following characteristics:

- The filename is the same as the filename of the SAS program file.
- The filetype is LISTING.
- If the SAS program file resides on an accessed R/W disk, then the procedure output file is routed to that disk; otherwise, it is routed to the first accessed R/W disk.
- RECFM=V.
- LRECL= the value of the SAS system option LINESIZE= plus one. The default value of LINESIZE= is 132; hence, LRECL=133 by default.

The SAS procedure output file is often called the *print file*; however, note that any file that contains carriage-control information can be called a print file.

For information about changing the destination of procedure output files, see “Routing Your SAS Log or Procedure Output to an External File” on page 88.

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## Parmcards File

When you invoke SAS, SAS automatically issues a FILEDEF command for the parmcards file, assigning to it the DDname FT15F001. SAS uses the parmcards file for internal processing. Lines that follow a PARMCARDS statement in a PROC step are first written to the parmcards file; then they are read into the procedure. The PARMCARDS statement is used in the BMDP and EXPLODE procedures.

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## Summary Table of SAS System Files

Table 3.1 on page 25 lists all of the files that are frequently used by base SAS software. Under CMS, logical names are associated with most of these files. The logical

names that are listed in the table are those that SAS uses by default. Your installation may use different names.

The system option column lists SAS system options that you can specify when you invoke SAS. You can use these system options to change the default settings that were established for your site. See “Summary Table of SAS System Options” on page 308 for default logical names that are dynamically generated at SAS initialization.

The concat column specifies if the file can be specified as a concatenation of multiple files. For example, the SASHELP file can be specified as an ordered series of Help files using the SASHELP= system option. The default value for this option is 'SASHELP \*'.

**Table 3.1** SAS System Files

Default Logical Name	System Option	Concat?	Type of Data Set or Library
n/a logical name. Physical name: SASV8SYS CONFIG	n/a	n/a	sequential data set
<i>Description:</i> System configuration file contains system options that are processed automatically when you invoke SAS. It is usually maintained by your data center.			
n/a logical name. Physical name: SASV8 CONFIG	CONFIG=	N	sequential data set
<i>Description:</i> User configuration file also contains system options that are processed automatically when you invoke SAS. Your user configuration file is appended to the system configuration file.			
LIBRARY	n/a	n/a	SAS data library
<i>Description:</i> Format library contains formats and informats.			
SAMPPIO	n/a	n/a	SAS data library
<i>Description:</i> Sample SAS data library is accessed by SAS programs in the sample library provided by SAS Institute.			
SASAUTOS	SASAUTOS=	Y	MACLIB, SFS directory, or minidisk
<i>Description:</i> Autocall library contains automatic call source macros.			
SASEXEC	AUTOEXEC=	Y	sequential data set
<i>Description:</i> Autoexec file contains statements that are executed automatically when you invoke SAS.			
SASHELP	SASHELP=	Y	SAS data library
<i>Description:</i> HELP library contains system default catalogs and Help system information.			
SASLIB	SASLIB=	N	TXTLIB
<i>Description:</i> A CMS TXTLIB library that is globalized during the SAS session.			
Dynamically generated	PRINT=	N	sequential data set
<i>Description:</i> Procedure output file contains SAS procedure output.			
Dynamically generated	LOG=	N	sequential data set
<i>Description:</i> SAS log file.			

Default Logical Name	System Option	Concat?	Type of Data Set or Library
Dynamically generated	MSG=	Y	aggregate SFS directory, or minidisk (see “Specifying CMS File Identifiers” on page 6).
<i>Description:</i> System message file contains SAS system messages.			
Dynamically generated	PARMCARD=	N	sequential data set
<i>Description:</i> Parmcards file is a temporary file that is used by various procedures. PARMCARD= system option assigns a fileref to the parmcards file. If PARMCARD= is not specified, a name is generated automatically.			
SASUSER	SASUSER=	N	SAS data library
<i>Description:</i> SASUSER library contains the user profile catalog and other personal catalogs.			
SYSIN	SYSIN=	Y	sequential data set
<i>Description:</i> Primary input file contains SAS statements.			
USER	USER=	Y	SAS data library
<i>Description:</i> USER library specifies a SAS data library in which to store SAS data sets that have one-level names (instead of storing them in the WORK library).			
WORK	WORK=	N	SAS data library
<i>Description:</i> WORK library contains temporary SAS files that are created by SAS during your session.			

## CMS Filetypes That the SAS System Uses

Unless you specify otherwise, SAS assumes default filetypes for the CMS files that it reads and writes. For descriptions, see “CMS Filetypes Used by SAS” on page 9.

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