



CHAPTER 38

External Files

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Definition

external files

are files that are managed and maintained by your operating system, not by SAS. They contain data or text or are files in which you want to store data or text. They can also be SAS catalogs or output devices. Every SAS job creates at least one external file, the SAS log. Most SAS jobs create external files in the form of procedure output or output created by a DATA step.

External files used in a SAS session can store input for your SAS job as:

- records of raw data that you want to use as input to a DATA step
- SAS programming statements that you want to submit to the system for execution.

External files can also store output from your SAS job as:

- a SAS log (a record of your SAS job)
- a report written by a DATA step.
- procedure output created by SAS procedures, including regular list output, and, beginning in Version 7, HTML and PostScript output from the Output Delivery System (ODS).

The PRINTTO procedure also enables you to direct procedure output to an external file. For more information, see *SAS Procedures Guide*. See Chapter 16, “SAS Output,” on page 197 for more information about ODS.

Note: Database management system (DBMS) files are a special category of files that can be read with SAS/ACCESS software. For more information on DBMS files, see Chapter 33, “Accessing Data in a DBMS,” on page 487 and the SAS/ACCESS documentation for your DBMS. △

Operating Environment Information: Using external files with your SAS jobs entails significant operating-environment-specific information. Refer to the SAS documentation for your operating environment for more information. \triangle

Referencing External Files Directly

To reference a file directly in a SAS statement or command, specify in quotation marks its physical name, which is the name by which the operating environment recognizes it, as shown in the following table:

Table 38.1 Referencing External Files Directly

External File Task	Tool	Example
Specify the file that contains input data.	INFILE	<pre>data weight; infile 'input-file'; input idno \$ week1 week16; loss=week1-week16;</pre>
Identify the file that the PUT statement writes to.	FILE	<pre>file 'output-file'; if loss ge 5 and loss le 9 then put idno loss 'AWARD STATUS=3'; else if loss ge 10 and loss le 14 then put idno loss 'AWARD STATUS=2'; else if loss ge 15 then put idno loss 'AWARD STATUS=1'; run;</pre>
Bring statements or raw data from another file into your SAS job and execute them.	%INCLUDE	<pre>%include 'source-file';</pre>

Referencing External Files Indirectly

If you want to reference a file in only one place in a program so that you can easily change it for another job or a later run, you can reference a filename indirectly. Use a FILENAME statement, the FILENAME function, or an appropriate operating system command to assign a *fileref* or nickname, to a file.* Note that you can assign a fileref to a SAS catalog that is an external file, or to an output device, as shown in the following table.

* In some operating environments, you can also use the command '&' to assign a fileref.

Table 38.2 Referencing External Files Indirectly

External File Task	Tool	Example
Assign a fileref to a file that contains input data.	FILENAME	<code>filename mydata 'input-file';</code>
Assign a fileref to a file for output data.	FILENAME	<code>filename myreport 'output-file';</code>
Assign a fileref to a file that contains program statements.	FILENAME	<code>filename mypgm 'source-file';</code>
Assign a fileref to an output device.	FILENAME	<code>filename myprinter <device-type> <host-options>;</code>
Specify the file that contains input data.	INFILE	<code>data weight; infile mydata; input idno \$ week1 week16; loss=week1-week16;</code>
Specify the file that the PUT statement writes to.	FILE	<code>file myreport; if loss ge 5 and loss le 9 then put idno loss 'AWARD STATUS=3'; else if loss ge 10 and loss le 14 then put idno loss 'AWARD STATUS=2'; else if loss ge 15 then put idno loss 'AWARD STATUS=1'; run;</code>
Bring statements or raw data from another file into your SAS job and execute them.	%INCLUDE	<code>%include mypgm;</code>

Referencing Many Files Efficiently

When you use many files from a single aggregate storage location, such as a directory or partitioned data set (PDS or MACLIB), you can use a single fileref, followed by a filename enclosed in parentheses, to access the individual files. This saves time by eliminating the need to type a long file storage location name repeatedly. It also makes changing the program easier later if you change the file storage location. The following table shows an example of assigning a fileref to an aggregate storage location:

Table 38.3 Referencing Many Files Efficiently

External File Task	Tool	Example
Assign a fileref to aggregate storage location.	FILENAME	<code>filename mydir 'directory-or-PDS-name';</code>
Specify the file that contains input data.	INFILE	<code>data weight; infile mydir(qrt1.data); input idno \$ week1 week16; loss=week1-week16;</code>
Specify the file that the PUT statement writes to. ¹	FILE	<code>file mydir(awards); if loss ge 5 then put idno loss 'AWARD STATUS=3'; else if loss ge 10 then put idno loss 'AWARD STATUS=2'; else if loss ge 15 then put idno loss 'AWARD STATUS=1'; run;</code>
Bring statements or raw data from another file into your SAS job and execute them.	%INCLUDE	<code>%include mydir(whole.program);</code>

¹ SAS creates a file that is named with the appropriate extension for your operating environment.

Operating Environment Information: The CMS operating environment does not allow write access to an aggregate MACLIB. Δ

Referencing External Files with Other Access Methods

You can assign filerefs to external files that you access with the following FILENAME access methods:

- CATALOG
- FTP
- TCP/IP SOCKET
- URL.

Examples of how to use each method are shown in the following table:

Table 38.4 Referencing External Files with Other Access Methods

External File Task	Tool	Example
Assign a fileref to a SAS catalog that is an aggregate storage location.	FILENAME with CATALOG specifier	<code>filename mycat catalog 'catalog' <catalog-options>;</code>
Assign a fileref to an external file accessed with FTP.	FILENAME with FTP specifier	<code>filename myfile FTP 'external-file' <ftp-options>;</code>
Assign a fileref to an external file accessed by TCP/IP SOCKET in either client or server mode.	FILENAME with SOCKET specifier	<code>filename myfile SOCKET 'hostname: portno' <tcpip-options>;</code> or <code>filename myfile SOCKET ':portno' SERVER <tcpip-options>;</code>
Assign a fileref to an external file accessed by URL.	FILENAME with URL specifier	<code>filename myfile URL 'external-file' <url-options>;</code>

See *SAS Language Reference: Dictionary* for detailed information about each of these statements.

Working with External Files

Reading External Files

The primary reason for reading an external file in a SAS job is to create a SAS data set from raw data. This topic is covered in Chapter 22, “Reading Raw Data,” on page 285.

Writing to External Files

You can write to an external file by using:

- a SAS DATA step
- the External File Interface (EFI)
- the Export Wizard.

When you use a DATA step to write a customized report, you write it to an external file. In its simplest form, a DATA step that writes a report looks like this:

```
data _null_;
  set budget;
```

```
file 'your-file-name';  
put variables-and-text;  
run;
```

For examples of writing reports with a DATA step, see Chapter 22, “Reading Raw Data,” on page 285.

If your operating environment supports a graphical user interface, you can use the EFI or the Export Wizard to write to an external file. The EFI is a point-and-click graphical interface that you can use to read and write data that is not in SAS software’s internal format. By using the EFI, you can read data from a SAS data set and write it to an external file, and you can read data from an external file and write it to a SAS data set. See the SAS online Help for more information on the EFI.

The Export Wizard guides you through the steps to read data from a SAS data set and write it to an external file. As a wizard, it is a series of windows that present simple choices to guide you through the process. See the SAS online Help for more information on the wizard.

Processing External Files

When reading data from or to a file, you can also use a DATA step to:

- copy only parts of each record to another file
- copy a file and add fields to each record
- process multiple files in the same way in a single DATA step
- create a subset of a file
- update an external file in place
- write data to a file that can be read in different computer environments
- correct errors in a file at the bit level.

For examples of using a DATA step to process external files, see Chapter 22, “Reading Raw Data,” on page 285.

Your Turn

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