

**Wondered what it would be like to be a host:**

**Welcome  
to  
FCMP*fest* 2011!**

...just kidding.

# **Two More Tools for Efficient Processing in UNIX Environments:**

- I. The SAS PC Files Server(PCFS)
- II. The SASFILE Statement

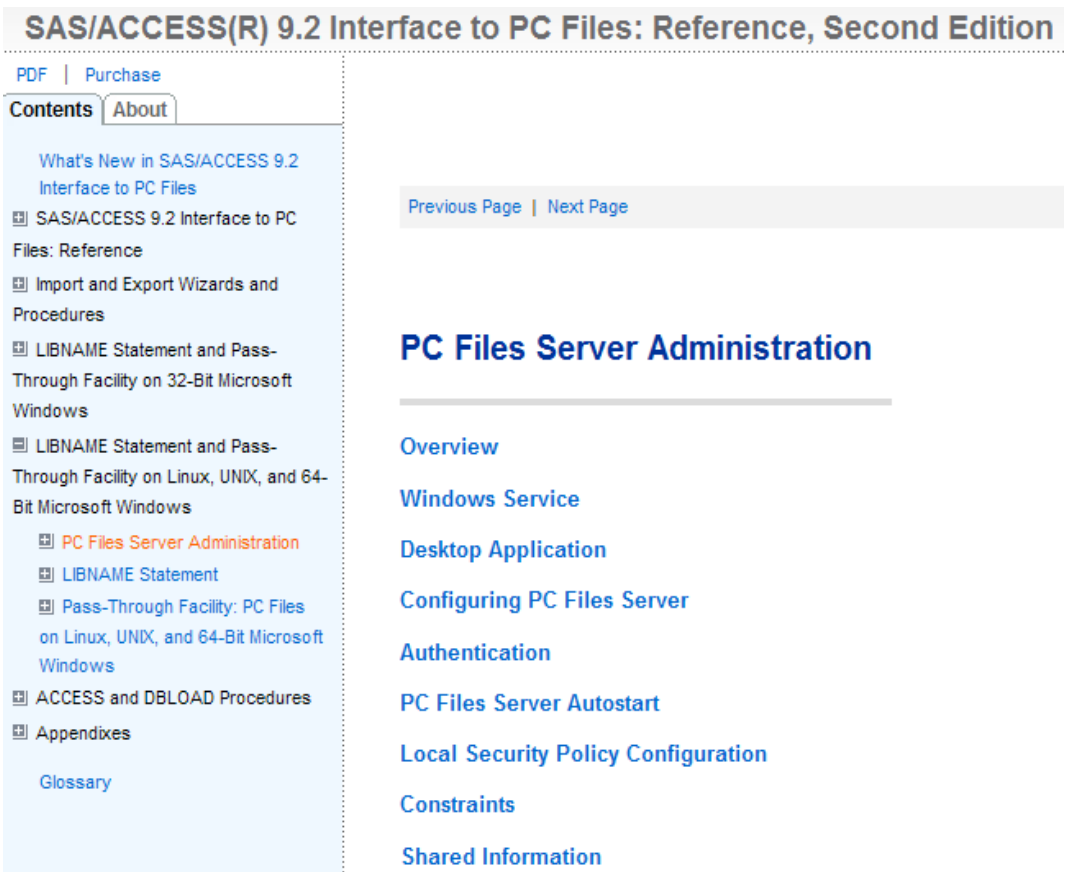
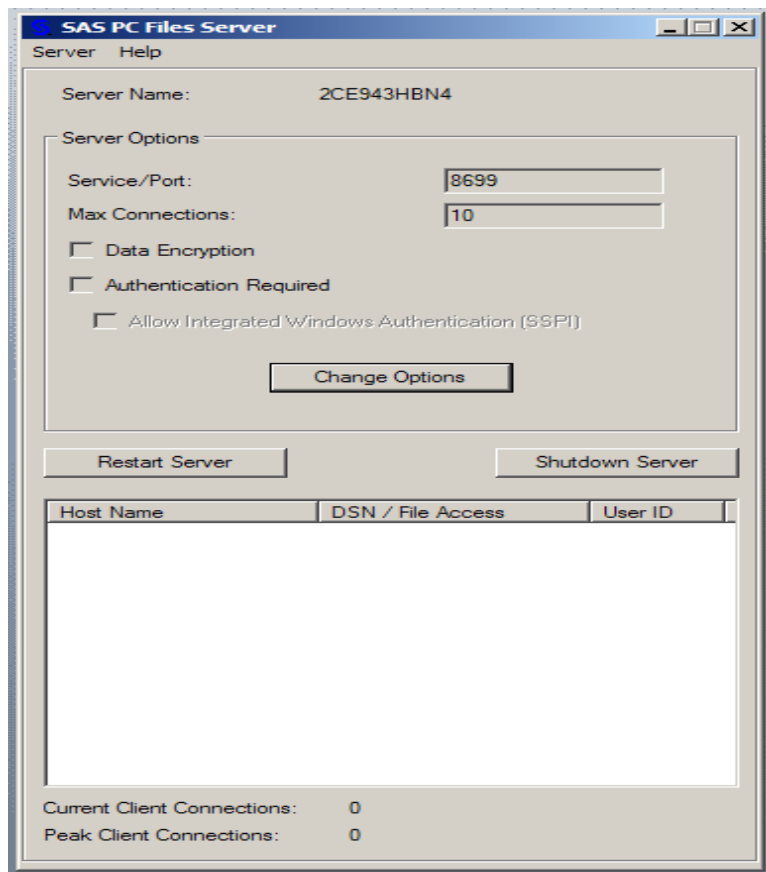
By

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09/13/2011

# The SAS PC Files Server – an Introduction

## A. A SAS for Windows Application

1. Download link - [SAS PC Files Server v9.3 download page](#)
2. Documentation - [LIBNAME PCFILES Engine and PC Files Server on Windows, v9.2](#)



## B. SAS/ACCESS Interface to PC Files required

1. It's a SAS Product
2. Runs on 64-bit UNIX, Linux, or Windows
3. Allows access to PC Files in these formats
  - a. MS Access
  - b. Lotus 1-2-3
  - c. JMP
  - d. Stata
  - e. MS Excel
  - f. DBF
  - g. SPSS
  - h. Paradox
4. Access PC Files by these methods
  - a. Import/Export wizards or procedures
  - b. Pass-through facility
  - c. PC Files Server
  - d. DBLoad Procedure
  - e. DBF and DIF Procedures

Experienced with these formats or methods

# An Example(path is to Windows folder)

The image displays two windows from a SAS environment. The left window is the 'SAS PC Files Server' configuration utility, and the right window is the 'SAS Program Editor' showing a SAS program and its corresponding log output.

**SAS PC Files Server Configuration:**

- Server Name: 2CE943HBN4
- Server Options:
  - Service/Port: 8699
  - Max Connections: 10
  - Data Encryption
  - Authentication Required
  - Allow Integrated Windows Authentication (SSPI)
- Buttons: Restart Server, Shutdown Server, Change Options
- Table:

Host Name	DSN / File Access	User ID
-----------	-------------------	---------
- Current Client Connections: 0
- Peak Client Connections: 0

**SAS Program Editor (pcfiles\_test\_newfs.sas):**

```
00001 /** GASUG 201109 Presentation - SAS PC Files Server Example **/  
00002 libname workbook pcfiles server='2CE943HBN4' port=8699  
00003     path="path-to-Excel-workbook.sample_workbook.xls";  
00004  
00005 /** Read in Sheets **/  
00006 data sheet01; set workbook."sheet01$"n;           run;  
00007 data sheet02; set workbook."sheet02$"n;           run;  
00008 data sheet03; set workbook."sheet03$"n;           run;  
00009 data sheet04; set workbook."sheet04$"n;           run;  
00010 data sheet05; set workbook."sheet05$"n;           run;  
00011 data sheet06; set workbook."sheet06$"n(drop=F:); run;  
00012 data sheet07; set workbook."sheet07$"n(drop=F:); run;  
00013 data sheet08; set workbook."sheet08$"n;           run;  
00014 data sheet09; set workbook."sheet09$"n;           run;  
00015 data sheet10; set workbook."sheet10$"n(drop=F:); run;  
00016 data sheet11; set workbook."sheet11$"n;           run;  
00017 data sheet12; set workbook."sheet12$"n;           run;  
00018 data sheet13; set workbook."sheet13$"n;           run;  
00019 data sheet14; set workbook."sheet14$"n;           run;  
00020 data sheet15; set workbook."sheet15$"n;           run;
```

**SAS Log (pcfiles\_test\_newfs.log):**

```
00001 123 libname workbook pcfiles server='2CE943HBN4' port=8699  
00002 124     path="path-to-Excel-workbook.sample_workbook.xls";  
00003 NOTE: Libref WORKBOOK was successfully assigned as follows:  
00004     Engine:           PCFILES  
00005     Physical Name: path-to-Excel-workbook.sample_workbook.xls  
00006  
00007 142 /** Read in Sheets **/  
00008 143 data sheet01; set workbook."sheet01$"n;           run;  
00009  
00010 NOTE: There were 108 observations read from the data set workbook.'sheet01$'n.  
00011 NOTE: The data set WORK.sheet01 has 108 observations and 2 variables.  
00012 NOTE: DATA statement used (Total process time):  
00013     real time           0.11 seconds  
00014     cpu time            0.01 seconds  
00015  
00016
```

# Recap

- A. Download SAS PC Files Server from SAS site and install – PCFS version and SAS/ACCESS for PC Files version must match
- B. Read the online documentation available at SAS support – nice overview, configuration of server, using PCFILES engine, get familiar with requirements before going to IT support
- C. Verify client running SAS System can connect to PC running PC Files Server – my client SAS sessions cannot connect to the PCFS, possible firewall issues(no connections listed in example)
- D. Start up PC Files Server on laptop – desktop application or a service
- E. Define SAS libraries on client using PCFILES engine – server, port, path to PC file
- F. Start reading and writing PC Files from 64-bit UNIX environments - without PC SAS

# Introduction to the SASFILE statement

A. Using memory to forget about I/O constraints

B. Documentation - [SASFILE Statement](#)

## SAS(R) 9.2 Language Reference: Dictionary, Fourth Edition

PDF | Purchase

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## SASFILE Statement

Opens a SAS data set and allocates enough buffers to hold the entire file in memory.

<b>Valid:</b>	Anywhere
<b>Category:</b>	Program Control
<b>Restriction:</b>	A SAS data set opened by the SASFILE statement can be used for subsequent input (read) or update processing but not for output or utility processing.
<b>See:</b>	SASFILE Statement under <a href="#">z/OS</a>

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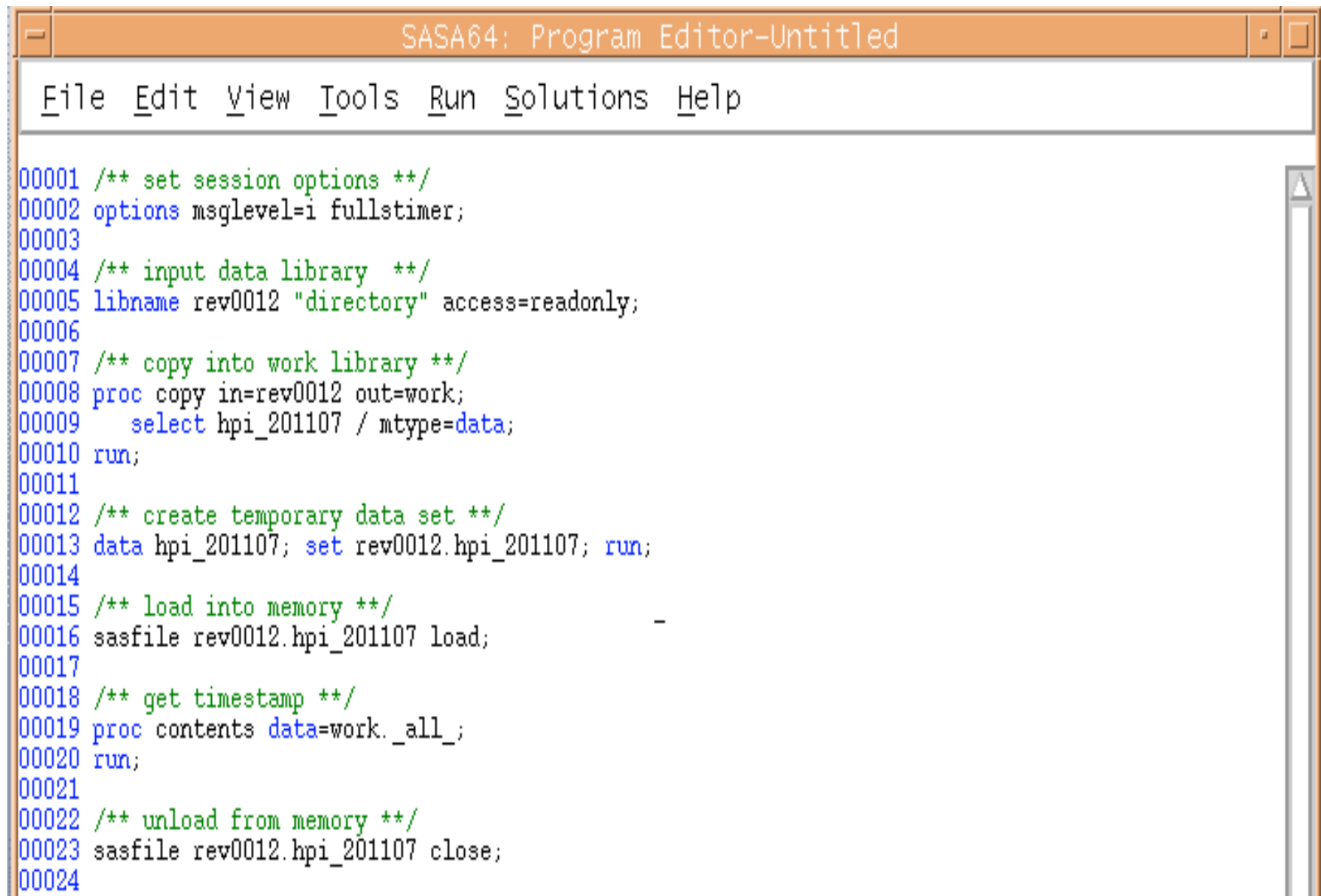
### [Examples](#)

[Example 1: Using SASFILE in a Program with Multiple Steps](#)

[Example 2: Specifying Passwords with the SASFILE Statement](#)

### [See Also](#)

# An Example(the code)

A screenshot of a SASA64 Program Editor window. The window title is "SASA64: Program Editor-Untitled". The menu bar includes "File", "Edit", "View", "Tools", "Run", "Solutions", and "Help". The main text area contains SAS code with line numbers from 00001 to 00024. The code includes comments and commands for setting session options, copying data into a work library, creating a temporary data set, loading it into memory, getting a timestamp, and finally unloading it from memory.

```
00001 /** set session options **/  
00002 options msglevel=i fullstimer;  
00003  
00004 /** input data library **/  
00005 libname rev0012 "directory" access=readonly;  
00006  
00007 /** copy into work library **/  
00008 proc copy in=rev0012 out=work;  
00009     select hpi_201107 / mtype=data;  
00010 run;  
00011  
00012 /** create temporary data set **/  
00013 data hpi_201107; set rev0012.hpi_201107; run;  
00014  
00015 /** load into memory **/  
00016 sasfile rev0012.hpi_201107 load;  
00017  
00018 /** get timestamp **/  
00019 proc contents data=work._all_;  
00020 run;  
00021  
00022 /** unload from memory **/  
00023 sasfile rev0012.hpi_201107 close;  
00024
```

# An Example(Process information)

## TOP Command Snapshots(for first run)

```
System: server                                     Tue Sep 13 10:33:09 2011
CPU TTY      PID USERNAME PRI NI    SIZE    RES STATE   TIME  %WCPU  %CPU COMMAND
15 pts/4    16815 uggh26   152 24    146M 17928K run     0:19  13.89  13.86 sas (1)
15 pts/4    16815 uggh26   152 24    149M 18096K run     0:22  10.25  10.23 sas (2)
15 pts/4    16815 uggh26   152 24    482M   351M run     0:23   2.78   2.78 sas (3)
15 pts/4    16815 uggh26   152 24    156M 25056K run     0:23   0.73   0.72 sas (4)
```

(1) - PROC COPY

(2) - DATA STEP

(3) - SASFILE LOAD

(4) - SASFILE CLOSE

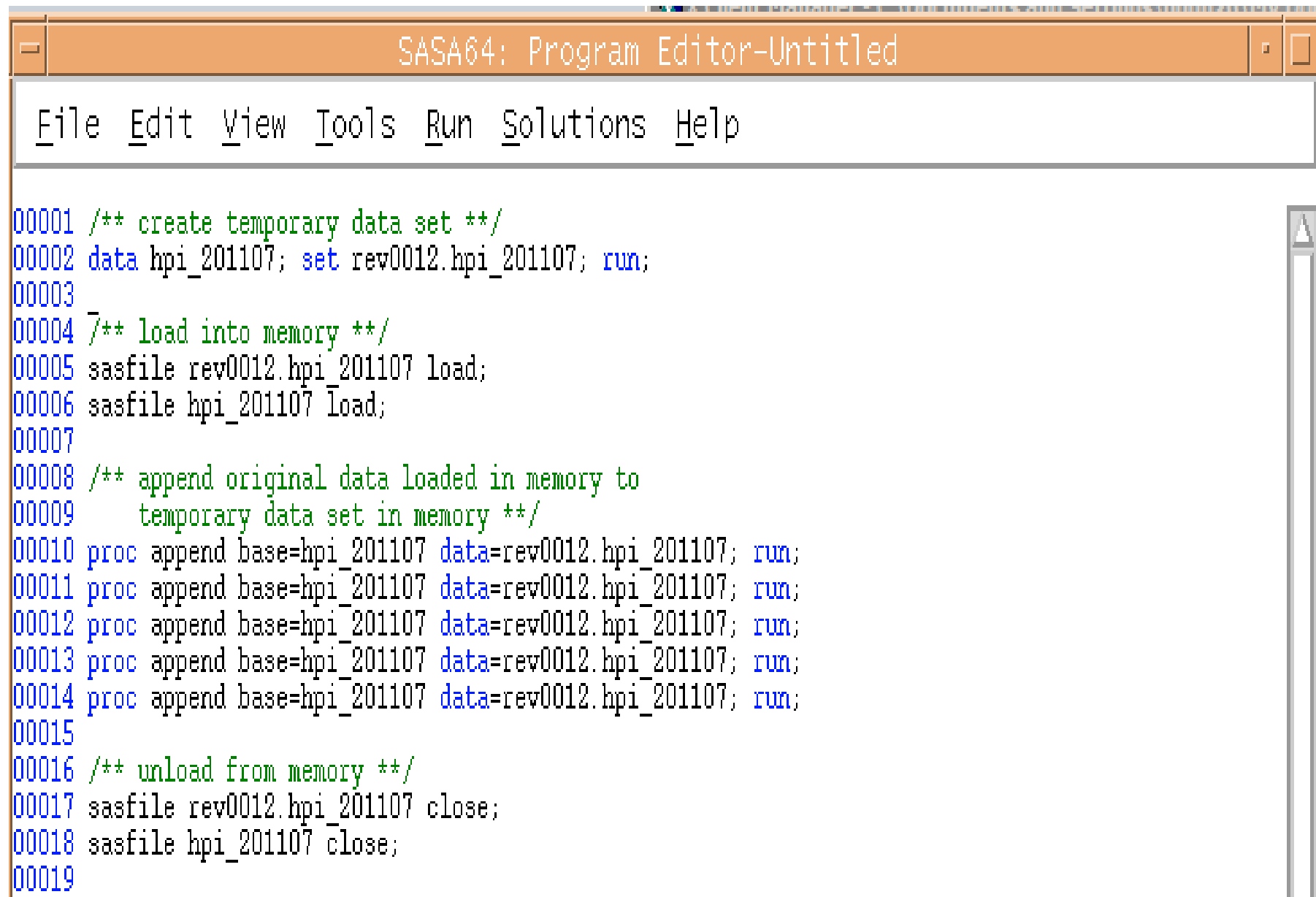
# An Example(Run 2 Log)

```
30  /** set session options **/  
31  options msglevel=i fullstimer;  
32  /** input data library **/  
33  libname rev0012 "/fs008/lossmodel/201107/rev0012" access=readonly;  
NOTE: Libref REV0012 was successfully assigned as follows:  
      Engine: V9  
      Physical Name: /fs008/lossmodel/201107/rev0012  
34  /** copy into work library **/  
35  proc copy in=rev0012 out=work;  
36  select hpi_201107 / mtype=data;  
37  run;  
  
NOTE: Copying REV0012.HPI_201107 to WORK.HPI_201107 (memtype=DATA).  
INFO: Engine's block-read method is in use.  
INFO: Engine's block-write method is in use.  
INFO: Multiple concurrent threads will be used to create the index.  
NOTE: Simple index match_key has been defined.  
NOTE: There were 1544832 observations read from the data set REV0012.HPI_201107.  
NOTE: The data set WORK.HPI_201107 has 1544832 observations and 21 variables.  
NOTE: PROCEDURE COPY used (Total process time):  
      real time          3.59 seconds  
      user cpu time      2.49 seconds  
      system cpu time    2.10 seconds  
      Memory              100209k  
      OS Memory           115144k  
      Timestamp           9/13/2011 10:39:29 AM  
      Page Faults         0  
      Page Reclaims      0  
      Page Swaps          0  
      Voluntary Context Switches 2151  
      Involuntary Context Switches 100  
      Block Input Operations 0  
      Block Output Operations 3204  
  
38  /** create temporary data set **/  
39  data hpi_201107; set rev0012.hpi_201107; run;  
  
NOTE: There were 1544832 observations read from the data set REV0012.HPI_201107.  
NOTE: The data set WORK.HPI_201107 has 1544832 observations and 21 variables.  
NOTE: DATA statement used (Total process time):  
      real time          2.39 seconds  
      user cpu time      0.92 seconds  
      system cpu time    1.46 seconds  
      Memory              404k  
      OS Memory           16168k  
      Timestamp           9/13/2011 10:39:32 AM  
      Page Faults         0  
      Page Reclaims      0  
      Page Swaps          0  
      Voluntary Context Switches 21  
      Involuntary Context Switches 53  
      Block Input Operations 0  
      Block Output Operations 1
```

# An Example(Run 2 Log - continued)

```
40  /** load into memory **/  
41  sasfile rev0012.hpi_201107 load;  
NOTE: The file REV0012.HPI_201107.DATA has been loaded into memory by the SASFILE  
42  /** get timestamp **/  
43  proc contents data=work._all_;  
44  run;  
  
NOTE: PROCEDURE CONTENTS used (Total process time):  
      real time          0.05 seconds  
      user cpu time      0.05 seconds  
      system cpu time    0.01 seconds  
      Memory              359k  
      OS Memory           342888k  
      Timestamp           9/13/2011 10:39:34 AM  
      Page Faults         0  
      Page Reclaims       0  
      Page Swaps          0  
      Voluntary Context Switches 5  
      Involuntary Context Switches 1  
      Block Input Operations 0  
      Block Output Operations 0  
  
45  /** unload from memory **/  
46  sasfile rev0012.hpi_201107 close;  
NOTE: The file REV0012.HPI_201107.DATA has been closed by the SASFILE statement.
```

# A Second Example



The image shows a screenshot of a SASA64 Program Editor window. The window title is "SASA64: Program Editor-Untitled". The menu bar includes "File", "Edit", "View", "Tools", "Run", "Solutions", and "Help". The main text area contains the following SAS code:

```
00001 /** create temporary data set **/  
00002 data hpi_201107; set rev0012.hpi_201107; run;  
00003  
00004 /** load into memory **/  
00005 sasfile rev0012.hpi_201107 load;  
00006 sasfile hpi_201107 load;  
00007  
00008 /** append original data loaded in memory to  
00009     temporary data set in memory **/  
00010 proc append base=hpi_201107 data=rev0012.hpi_201107; run;  
00011 proc append base=hpi_201107 data=rev0012.hpi_201107; run;  
00012 proc append base=hpi_201107 data=rev0012.hpi_201107; run;  
00013 proc append base=hpi_201107 data=rev0012.hpi_201107; run;  
00014 proc append base=hpi_201107 data=rev0012.hpi_201107; run;  
00015  
00016 /** unload from memory **/  
00017 sasfile rev0012.hpi_201107 close;  
00018 sasfile hpi_201107 close;  
00019
```

# A Second Example(Log)

```
47  /** create temporary data set **/  
48  data hpi_201107; set rev0012.hpi_201107; run;  
  
NOTE: There were 1544832 observations read from the data set REV0012.HPI_201107.  
NOTE: The data set WORK.HPI_201107 has 1544832 observations and 21 variables.  
NOTE: DATA statement used (Total process time):  
      real time          4.53 seconds  
      user  cpu time      0.94 seconds  
      system  cpu time    1.97 seconds  
      Memory              427k  
      OS Memory          16168k  
      Timestamp           9/13/2011  10:54:42 AM  
      Page Faults         0  
      Page Reclaims       0  
      Page Swaps          0  
      Voluntary Context Switches 468  
      Involuntary Context Switches 71  
      Block Input Operations 0  
      Block Output Operations 1  
  
49  /** load into memory **/  
50  sasfile rev0012.hpi_201107 load;  
NOTE: The file REV0012.HPI_201107.DATA has been loaded into memory by the SASFILE  
51  sasfile hpi_201107 load;  
NOTE: The file WORK.HPI_201107.DATA has been loaded into memory by the SASFILE st  
52  /** append original data loaded in memory to  
53  temporary data set in memory **/  
54  proc append base=hpi_201107 data=rev0012.hpi_201107; run;  
  
NOTE: Appending REV0012.HPI_201107 to WORK.HPI_201107.  
  
INFO: Engine's fast-append process in use.  
INFO: 10:54:50 Reading DATA file, updating BASE file  
INFO: Starting data set size is 19073 pages  
INFO: Engine's block-read method is in use.  
INFO: Engine's block-write method is in use.  
INFO: Ending data set size is 38145 pages, 19072 added.  
INFO: 00:00:01 Elapsed time  
INFO: 10:54:51 Finished updating BASE file  
  
NOTE: There were 1544832 observations read from the data set REV0012.HPI_201107.  
NOTE: 1544832 observations added.  
NOTE: The data set WORK.HPI_201107 has 3089664 observations and 21 variables.  
NOTE: PROCEDURE APPEND used (Total process time):  
      real time          2.43 seconds  
      user  cpu time      0.51 seconds  
      system  cpu time    1.93 seconds  
      Memory              360248k  
      OS Memory          1062780k  
      Timestamp           9/13/2011  10:54:52 AM  
      Page Faults         0  
      Page Reclaims       0  
      Page Swaps          0  
      Voluntary Context Switches 1  
      Involuntary Context Switches 39  
      Block Input Operations 0
```

# A Second Example(Log - continued)

```
55  proc append base=hpi_201107 data=rev0012.hpi_201107; run;
NOTE: Appending REV0012.HPI_201107 to WORK.HPI_201107.
INFO: Engine's fast-append process in use.
INFO: 10:54:52 Reading DATA file, updating BASE file
INFO: Starting data set size is 38145 pages
INFO: Engine's block-read method is in use.
INFO: Engine's block-write method is in use.
INFO: Ending data set size is 57217 pages, 19072 added.
INFO: 00:00:01 Elapsed time
INFO: 10:54:53 Finished updating BASE file

NOTE: There were 1544832 observations read from the data set REV0012.HPI_201107.
NOTE: 1544832 observations added.
NOTE: The data set WORK.HPI_201107 has 4634496 observations and 21 variables.
NOTE: PROCEDURE APPEND used (Total process time):
      real time           2.55 seconds
      user cpu time       0.53 seconds
      system cpu time     1.96 seconds
      Memory              361089k
      OS Memory          1474428k
      Timestamp           9/13/2011 10:54:55 AM
      Page Faults         0
      Page Reclaims      0
      Page Swaps          0
      Voluntary Context Switches 69
      Involuntary Context Switches 47
      Block Input Operations 0
      Block Output Operations 0

56  proc append base=hpi_201107 data=rev0012.hpi_201107; run;
NOTE: Appending REV0012.HPI_201107 to WORK.HPI_201107.
INFO: Engine's fast-append process in use.
INFO: 10:54:55 Reading DATA file, updating BASE file
INFO: Starting data set size is 57217 pages
INFO: Engine's block-read method is in use.
INFO: Engine's block-write method is in use.
INFO: Ending data set size is 76289 pages, 19072 added.
INFO: 00:00:01 Elapsed time
INFO: 10:54:56 Finished updating BASE file

NOTE: There were 1544832 observations read from the data set REV0012.HPI_201107.
NOTE: 1544832 observations added.
NOTE: The data set WORK.HPI_201107 has 6179328 observations and 21 variables.
NOTE: PROCEDURE APPEND used (Total process time):
      real time           2.45 seconds
      user cpu time       0.55 seconds
      system cpu time     1.80 seconds
      Memory              360974k
      OS Memory          1885820k
      Timestamp           9/13/2011 10:54:57 AM
      Page Faults         0
      Page Reclaims      0
```

# A Second Example(Log - continued)

```
57  proc append base=hpi_201107 data=rev0012.hpi_201107; run;
NOTE: Appending REV0012.HPI_201107 to WORK.HPI_201107.
INFO: Engine's fast-append process in use.
INFO: 10:54:57 Reading DATA file, updating BASE file
INFO: Starting data set size is 76289 pages
INFO: Engine's block-read method is in use.
INFO: Engine's block-write method is in use.
INFO: Ending data set size is 95361 pages, 19072 added.
INFO: 00:00:02 Elapsed time
INFO: 10:54:59 Finished updating BASE file

NOTE: There were 1544832 observations read from the data set REV0012.HPI_201107.
NOTE: 1544832 observations added.
NOTE: The data set WORK.HPI_201107 has 7724160 observations and 21 variables.
NOTE: PROCEDURE APPEND used (Total process time):
      real time           2.56 seconds
      user cpu time       0.56 seconds
      system cpu time     1.87 seconds
      Memory              361087k
      OS Memory          2297468k
      Timestamp          9/13/2011 10:55:00 AM
      Page Faults        0
      Page Reclaims      0
      Page Swaps         0
      Voluntary Context Switches 79
      Involuntary Context Switches 45
      Block Input Operations 0
      Block Output Operations 0

58  proc append base=hpi_201107 data=rev0012.hpi_201107; run;
NOTE: Appending REV0012.HPI_201107 to WORK.HPI_201107.
INFO: Engine's fast-append process in use.
INFO: 10:55:00 Reading DATA file, updating BASE file
INFO: Starting data set size is 95361 pages
INFO: Engine's block-read method is in use.
INFO: Engine's block-write method is in use.
INFO: Ending data set size is 114433 pages, 19072 added.
INFO: 00:00:02 Elapsed time
INFO: 10:55:02 Finished updating BASE file

NOTE: There were 1544832 observations read from the data set REV0012.HPI_201107.
NOTE: 1544832 observations added.
NOTE: The data set WORK.HPI_201107 has 9268992 observations and 21 variables.
NOTE: PROCEDURE APPEND used (Total process time):
      real time           2.49 seconds
      user cpu time       0.57 seconds
      system cpu time     1.87 seconds
      Memory              361087k
      OS Memory          2709116k
      Timestamp          9/13/2011 10:55:03 AM
      Page Faults        0
      Page Reclaims      0
```

## A Second Example(Log - continued)

```
59  /** unload from memory **/  
60  sasfile rev0012.hpi_201107 close;  
NOTE: The file REW0012.HPI_201107.DATA has been closed by the SASFILE statement.  
61  sasfile hpi_201107 close;  
NOTE: The file WORK.HPI_201107.DATA has been closed by the SASFILE statement.
```

# SASFILE statement – Recap

A. Read documentation in SAS® 9.2 Language Reference: Dictionary Fourth Edition

B. Determine physical memory available to SAS System on computing platform

C. Syntax - **SASFILE** *<libref.>member-name<.member-type>* *<(password-option(s))>* OPEN | LOAD | CLOSE ;

D. Allowed processing requests – notice cannot create a data set in memory

Processing Request	Open Mode	Allowed
APPEND procedure	update	Yes
FSEDIT procedure	update	Yes
PRINT procedure	input	Yes
SQL procedure to modify, add, or delete observations	update	Yes

Experienced request along with PROC MEANS, PROC SUMMARY, and PROC TABULATE