

## Paper 199-2012

**A SAS® Tip-of-the-Day Web Page on an Intranet**

Bruce Gilsen, Federal Reserve Board

**INTRODUCTION**

For the past four years I have posted a SAS tip of the Day on the Federal Reserve Board's SAS Consulting Web site, which is part of the Board's intranet site, FedWeb. In this paper, I will discuss design considerations for the tips and display some tips. I also discuss and display the Web pages on the SAS Consulting site that provide links to the tips.

**Overview.**

I started the Tip of the Day in April 2008 with about 100 tips already written. I post one tip per day, except for holidays or when I go on extended vacation. As of December 2011, there are 136 tips.

**Sources of the tips.**

The tips come from a variety of sources, including the following.

## 1. Federal Reserve Board SAS Sample library.

I started a SAS sample library in 1999. To create the initial group of tips, I converted some sample programs into tips.

## 2. User questions.

This is the primary source of new tips. For example, in June 2011, a user asked how to remove from a SAS data set all numeric variables that are missing in every observation. After sending her a solution, I realized that this topic could be of general interest and turned it into the July 1, 2011 tip of the day.

## 3. Material from my conference papers.

I used some material in my SAS Global Forum, SAS Users Group International (SUGI), and NorthEast SAS Users Group (NESUG) conference papers for SAS Tips. The main issue was ensuring that the tip is a manageable size. My "Tales from the Help Desk" papers were a good source for tips.

## 4. Posts on the SAS-L internet newsgroup and sascommunity.org site.

I credit the author and provide a link to the original post.

## 5. SUGI and NESUG conference papers.

I credit the author and provide a link to the paper. Usually I greatly simplify the data and the material to make the tip sufficiently simple and narrowly defined, and its size manageable.

## 6. SAS manuals.

I usually generalize and simplify the material, and provide a link to the manual for more details.

**Preparation and maintenance.**

## 1. Creating new tips.

When I identify a topic for a new tip, I write a tip. This takes anywhere from a few minutes to a few hours.

## 2. Updating the web site with the Tip of the Day.

Every morning, I take about 5 minutes to do the following.

- Update the SAS Consulting web site home page with the current tip (see Figure 1 below).
- Add a link to the current tip to the Tip of the Day Archive page for the current month (see Figure 2 below).
- Add a link to the current tip to an archive page that contains links to all tips (see Figure 3 below).

### 3. Preparing tips for the following month.

Mid-month, I prepare the tips for the next month. This takes about 90 minutes and involves the following steps.

- Any new tips are added as the first tips of the month.
- I copy and update the dates for the oldest existing tips, which are used for the rest of the month.
- I create a Tip of the Day Archive page for the new month. A link to this page is added to the Tip of the Day Archive main page (Figure 4) on the first day of the next month.

### Tip of the day design considerations.

I suspect that users might employ the tips as follows.

1. To learn by example how to accomplish a specific task, they can read a tip or copy it to a file or a SAS session to execute.
2. To accomplish a small piece of a larger programming task, they can copy a tip into their application and change it as necessary to conform to their application.
3. The easiest way to copy code from a tip is to drag the mouse over the code in the browser and copy-and-paste the code into the desired destination.

Given that expected usage, the tips were designed as follows.

1. Most of the tips are small and simple, and perform a clearly defined task.
2. Data are created at the top of the tip before the rest of the code, with a DATALINES statement in a separate DATA step. The tips are self-contained and easy to incorporate into an application because users can copy the code but use their own data. An exception to this standard is that in tips that illustrate reading external files, data are read from external files.
3. Some programs (regressions, frequency counts, etc.) require certain types of data values and a meaningful quantity of data. Otherwise, the tips use as little data as possible, and the following conventions are used when feasible. These conventions make it easier to follow the flow of data values as they are transformed in a tip.
  - The number of observations and variables is similar but not equal. For example, three observations/two variables or two observations/three variables is used instead of three observations/three variables.
  - Data values are unique. For data with three observations/two variables or two observations/three variables, the values 1-6 are frequently used.
4. Most tips are independent of the platform and SAS software release. Tips specific to a platform or SAS software release contain documentation noting the limitations. The tip title also reflects the limitations if this can be done without making the title excessively long.
5. The web page shell for the tips is a standard page used for all of our SAS Consulting pages, and is similar to the page shell frequently used in the Board's Division of Information Technology on our internal web site.
6. The tips use minimal HTML tags.

### How users access the tips.

Users can access the tips from one of the following web pages.

1. The Board's main SAS Consulting page (Figure 1) has the following.

- A link to the current day's tip
- A link to the SAS Tip of the Day Archive page

2. The SAS Tip of the Day Archive page (Figure 4) provides access to previous tips in two ways.

- Links to old tips by month. Figure 2 shows a Tip of the Day Archive page for a typical month.
- A link to an archive page that contains links to all tips (Figure 3). This page is useful for search purposes.

Links are ordered chronologically, newest to oldest.

### Monthly tip emails

I maintain e-mail lists of SAS users. The first message I send to the lists each month includes a list of tips from the previous month. I don't send the list of tips as a standalone message because I am wary of overwhelming users with e-mails.

### Tip of the day: some examples

Figures 5-9 show some examples of Tips of the Day.

### CONCLUSION

This paper discussed the SAS Tip of the Day that I have posted on the Federal Reserve Board's intranet for the past four years. I discussed design considerations for the tips and displayed some tips. I hope this will inspire readers to consider similar endeavors at their sites.

For more information, contact the author, Bruce Gilson, at [bruce.gilson@frb.gov](mailto:bruce.gilson@frb.gov) or 202-452-2494.

### REFERENCES

- Gilson, Bruce (2003), "Deja-vu All Over Again: Common Mistakes by New SAS Users," *Proceedings of the Sixteenth Annual NorthEast SAS Users Group Conference*. <<http://www.nesug.org/Proceedings/nesug03/bt/bt010.pdf>>
- Gilson, Bruce (2007), "More Tales from the Help Desk: Solutions for Common SAS Mistakes," *Proceedings of the SAS Global Forum 2007 Conference*. <<http://www2.sas.com/proceedings/forum2007/211-2007.pdf>>
- Gilson, Bruce (2009), "Tales from the Help Desk 3: More Solutions for Common SAS Mistakes," *Proceedings of the SAS Global Forum 2009 Conference*. <<http://support.sas.com/resources/papers/proceedings09/137-2009.pdf>>
- Gilson, Bruce (2010), "Tales from the Help Desk 4: Still More Solutions for Common SAS Mistakes," *Proceedings of the SAS Global Forum 2010 Conference*. <<http://support.sas.com/resources/papers/proceedings09/137-2009.pdf>>
- Gilson, Bruce (2011), "Tales from the Help Desk 5: Yet More Solutions for Common SAS Mistakes," *Proceedings of the TwentyFourth Annual NorthEast SAS Users Group Conference*. <<http://www.nesug.org/Proceedings/nesug11/cc/cc07.pdf>>

### ACKNOWLEDGMENTS

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Board SAS Consulting: Home - Microsoft Internet Explorer provided by Federal Reserve Board

http://fedweb.frb.gov/fedweb/board/irm/sas/index.htm

Board SAS Consulting: Home

IT Home A-Z Index

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SAS Help Desk

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- [SAS Institute Online Documentation](#)
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- [Conferences/User Groups/Communities](#)

**Board SAS Consulting Group Home Page**

**Current SAS News**

- [Windows SAS Version 9.2 distribution](#) Updated 1/22/10
- [SAS Seminar Day July 13](#)

Four SAS seminars, Room M-2328, no advance registration.

10:00-11:00 am, Date Handling in the SAS System  
11:00-11:30 am, SAS/GRAPH Basics  
1:00-2:00 pm, SAS Arrays: A Basic Tutorial  
2:00-3:30 pm, SAS Reporting to Excel, HTML, PDF, and Word in One Step

- [SAS Tip of the Day, July 1, 2011](#)

[Remove the numeric variables that are missing in every observation from a data set](#)

**Mission Statement**

The SAS Consulting Group provides support for the SAS system, one of the most widely used computing tools at the Federal Reserve Board. The SAS system is used at the Board on the mainframe, Linux, and Windows platforms for tasks ranging from data processing applications to econometric research. Support includes

- technical consulting assistance to help you design and debug SAS applications
- developing SAS system tools to enhance the SAS system at the Board
- coordinating testing and cutover of new software releases and upgrades
- presenting SAS seminars
- sharing information from national, regional, and local SAS user group conferences

Last Update: 6/30/2011 7:00 PM

This page is maintained by [Steven Feder](#) and [Bruce Gilson](#)

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Figure 1 Board SAS Consulting web site home page

SAS Consulting Group - Microsoft Internet Explorer provided by Federal Reserve Board

http://fedweb.frb.gov/fedweb/board/rm/sas/tips/June2011/TipsJune2011.htm

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Links

- Current SAS Tip
- SAS Tip Archive

June 2011 SAS Tips

- Using the KEEP= and RENAME= options for the same variable on a SET statement. June 30, 2011
- PUTLOG: writing a message to the SAS log while writing data to an external file. June 29, 2011
- Assigning a variable name as the value of another variable. June 28, 2011
- VERIFY function: checking for invalid character values. June 27, 2011
- The period (.) as a delimiter (separator) to concatenate macro variables with text. June 24, 2011
- Determine the number of observations and variables in a SAS data set. June 23, 2011
- Round SAS time and datetime values with the ROUND function. June 22, 2011
- Range of variables: dash versus double dash. June 21, 2011
- The COMPRESS function: recent enhancements. June 20, 2011
- Speeding up programs by eliminating unnecessary sorts. June 17, 2011
- How to create, store, and use a permanent format. June 16, 2011
- Creating a data set containing the last 10 observations of an existing data set. June 15, 2011
- FIND and FINDC functions: searching for characters in a character string. June 14, 2011
- Copying unique values of a variable to a macro variable or series of macro variables. June 13, 2011
- Convert multiple blanks in a character string to a single blank. June 10, 2011
- Two ways to copy a value from a DATA set to a macro variable: PROC SQL and CALL SYMPUT. June 9, 2011
- Reading a SAS data set backwards (last observation to first). June 8, 2011
- Concatenating 2 data sets when a common variable has different lengths. June 7, 2011
- Ordering the variables in a SAS data set. June 6, 2011
- Create a data set containing an observation for each matching value of a common (BY) variable in two data sets. June 2, 2011

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Figure 2 June 2011 Tip of the Day Archive Page

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http://fedweb.frb.gov/fedweb/board/irm/sas/tips/SASTips/AllPriorTips.htm

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**SAS Tip of the Day Archive: all prior tips**

- Remove the numeric variables that are missing in every observation from a data set. July 1, 2011
- Using the KEEP= and RENAME= options for the same variable on a SET statement. June 30, 2011
- PUTLOG: writing a message to the SAS log while writing data to an external file. June 29, 2011
- Assigning a variable name as the value of another variable. June 28, 2011
- VERIFY function: checking for invalid character values. June 27, 2011
- The period (.) as a delimiter (separator) to concatenate macro variables with text. June 24, 2011
- Determine the number of observations and variables in a SAS data set. June 23, 2011
- Round SAS time and datetime values with the ROUND function. June 22, 2011
- Range of variables: dash versus double dash. June 21, 2011
- The COMPRESS function: recent enhancements. June 20, 2011
- Speeding up programs by eliminating unnecessary sorts. June 17, 2011
- How to create, store, and use a permanent format. June 16, 2011
- Creating a data set containing the last 10 observations of an existing data set. June 15, 2011
- FIND and FINDC functions: searching for characters in a character string. June 14, 2011
- Copying unique values of a variable to a macro variable or series of macro variables. June 13, 2011
- Convert multiple blanks in a character string to a single blank. June 10, 2011
- Two ways to copy a value from a DATA set to a macro variable: PROC SQL and CALL SYMPUT. June 9, 2011
- Reading a SAS data set backwards (last observation to first). June 8, 2011
- Concatenating 2 data sets when a common variable has different lengths. June 7, 2011

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Figure 3 Page with links to all old tips

The screenshot shows a web browser window titled "SAS Consulting Group - Microsoft Internet Explorer provided by Federal Reserve Board". The address bar contains the URL "http://fedweb.frb.gov/fedweb/board/rm/sas/tips/SASTips/TipArchive.htm". The page header features the "Division of Information Technology at the Board of Governors of the Federal Reserve System" logo on the left and the "SAS Consulting Group" logo on the right, with contact information "SAS Help Desk 202-452-2500 sas@frb.gov" below. Navigation links for "Home" and "A-Z Index" are in the top right. A "Links" sidebar on the left contains "Current SAS Tip" and "All prior tips on one page". The main content area, titled "SAS Tip of the Day Archive", lists a chronological list of tips from July 2011 down to July 2009. The Windows taskbar at the bottom shows the Start button, several open browser windows, and the system clock displaying 2:33 PM.

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- [All prior tips on one page](#)

SAS Tip of the Day Archive

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- [May 2011 Tips](#)
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- [March 2011 Tips](#)
- [February 2011 Tips](#)
- [January 2011 Tips](#)
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Figure 4 Tip of the Day Archive Page

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Links

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**SAS Tip of the Day, July 1, 2011**

**Remove the numeric variables that are missing in every observation from a data set**

This tip shows how to remove the numeric variables that are missing in every observation from a data set.

```

/* Make a data set for testing. AA and EE have missing values
in all observations, remove them from the data set. */
data one;
char1 = "abc";
input aa bb cc dd ee;
datalines;
. 1 2 3 .
. 5 . 7 .
. 9 10 11 .
. 13 . 15 .
. . . .
. 21 22 23 .
;run;

/* Macro variable NUM_VARS has the number of
numeric variables in the data set */
proc sql noprint;
select count(*)
into :num_vars
from dictionary.columns
where libname="WORK"
and memname="ONE"
and type = "num";
quit;

data two;
set one end=last;
array allnum (*) _numeric_ /* All numeric variables */

/* ALLMISSING is a temporary array corresponding
to the values in ALLNUM. Each element is initially
., and when a missing value is found in ALLNUM, the
corresponding element in ALLMISSING is set to 1. */

```

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start Br... S... S... M... R... Ex... N... ex... 10... e... S... W... to... M... RE... fa... 3:37 PM

Figure 5 July 1, 2011 tip (Part 1 of 2)

The screenshot shows a web browser window with the following content:

```

array allmissing (&num_vars) _temporary_;

/* ALLMISSINGVAR holds a concatenated list of variables
that are all missing, separated by a space. Increase
the length if necessary.
*/
length allmissingvars $1000;

length missingvar $32;

/* When find a missing value, set corresponding element
in ALLMISSING to 1 */
do i = 1 to dim(allnum);
  if allnum(i) ne . then allmissing (i) = 1;
end;

if last then do; /* At end of DATA step, when have read all
observations, any array element that has
value of missing has all missing values. */

do i = 1 to dim(allmissing);
  if allmissing(i) = . then do;
    /* Found a variable that is all missing. Concatenate
it to ALLMISSINGVAR, which contains a list of these
variables. CALL VNAME copies variable name to the
the variable MISSINGVAR so it can be concatenated. */
    call vname(allnum(i),missingvar);
    allmissingvars =
      trim(allmissingvars) || " " || missingvar;
  end;
end;

/* Macro variable ALLMISSINGNAMES has variable names that
are all missing */
call symput('allmissingnames',trim(allmissingvars));
end;
run;

/* Now use the macro variable in a DATA step to drop the
variables that are always missing */
data three;
  set one;
  drop &allmissingnames;
run;

/* Print the new data set */
proc print data=three;
run;

Last Update: 6/30/2011 7:00 PM

```

At the bottom of the browser window, there is a footer: "This page is maintained by Steven Feder and Bruce Gilzen" and navigation links: "Fedweb | Board Public Web Site | Board Phonebook". The Windows taskbar at the bottom shows the Start button, several open applications, and the system clock at 3:40 PM.

Figure 6 July 1, 2011 tip (Part 2 of 2)

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http://fedweb.frb.gov/fedweb/board/rm/sas/tips/June2011/30.htm

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**SAS Tip of the Day, June 30, 2011**

**Using the KEEP= and RENAME= options for the same variable on a SET statement**

This tip shows how to use KEEP= and RENAME= for the same variable. Since KEEP= takes effect first, use the old variable name in the KEEP= statement. The order of the RENAME= and KEEP= options does not matter.

```
/* create some sample data */
data one;
  input a b;
  cards;
1 2
3 4
5 6
;run;

/* Rename A to AAA. Data set TWO contains
   only variable AAA. */
data two;
  set one (rename= (a=aaa) keep= a);
run;

/* verify result */
proc print data=two;
run;
```

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Figure 7 June 30, 2011 tip

SAS Consulting Group - Microsoft Internet Explorer provided by Federal Reserve Board

http://fedweb.frb.gov/fedweb/board/rm/sas/tips/June2011/21.htm

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**SAS Tip of the Day, June 20, 2011**

**The COMPRESS function: recent enhancements**

The COMPRESS function has been greatly enhanced in Version 9. In Version 8, it removed all occurrences of one or more characters from a character string. In Version 9, an optional 3rd argument allows you to keep the character(s) instead of removing it/them, or keep or exclude entire classes of characters such as numbers, lowercase letters, and blanks.

```

data one;
  /* Character string to test with */
  char1 = "aA AA1b2c3abd4 44eE5";

  /* Remove all occurrences of a,b,c,d.
  This is how COMPRESS was used in Version 8.
  Note: COMPRESS is case-sensitive so A's are not removed. */
  char2 = compress (char1,'abd');

  /* Remove all occurrences of a,b,c,d and all upper-case
  letters */
  char3 = compress (char1,'abd','u');

  /* Remove all occurrences of a,b,c,d and all upper-case
  letters and blanks (blank, horizontal tab, vertical
  tab, carriage return, line feed, form feed) */
  char4 = compress (char1,'abd','us');

  /* Remove all upper-case letters.
  This is an example of how to use only the 3rd argument to
  specify what to remove - the 2nd argument is omitted. */
  char5 = compress (char1,,'u');

  /* Remove everything except all occurrences of a,b,c,d.
  'k' means keep the characters instead of removing them */
  char6 = compress (char1,'abd','k');

  /* Remove everything except all occurrences of a,b,c,d
  and all upper-case letters. */
  char7 = compress (char1,'abd','ku');

  /* Remove everything except all occurrences of a,b,c,d
  
```

Local intranet 100%

start Br... S... In... M... co... Ex... h... N... ex... 10... e... S... W... tp... M... RE... fa... 5:15 PM

Figure 8 June 20, 2011 tip (Part 1 of 2)

```

and all upper-case letters and blanks (blank,
horizontal tab, vertical tab, carriage return,
line feed, form feed). */
char8 = compress (char1,'abod','kus');

/* Print results. Some extra lines generated by "/" to help
the text fit in the browser window could be removed */
put "Checking character string " char1 ":" /;
put "Remove all a,b,c,d: " / char2= /;
put "Remove all a,b,c,d and upper-case letters: " / char3= /;
put "Remove all a,b,c,d and upper-case letters and blanks: "
/ char4= /;
put "Remove all upper-case letters: " / char5= /;
put "Remove all except a,b,c,d: " / char6= /;
put "Remove all except a,b,c,d and upper-case letters: "
/ char7= /;
put "Remove all except a,b,c,d and upper-case letters"
/ "and blanks: " char8= /;

run;

The following is written to the SAS log:

Checking character string aA 1b2c3abd4 44eE5 :

Remove all a,b,c,d:
char2=A 1234 44eE5

Remove all a,b,c,d and upper-case letters:
char3=1234 44e5

Remove all a,b,c,d and upper-case letters and blanks:
char4=123444e5

Remove all upper-case letters:
char5=a 1b2c3abd4 44e5

Remove all except a,b,c,d:
char6=abcabd

Remove all except a,b,c,d and upper-case letters:
char7=aAAAbcabdE

Remove all except a,b,c,d and upper-case letters
and blanks: char8=aA Abcabd E

Last Update: 6/17/2011 7:00 PM

```

**Figure 9** June 20, 2011 tip (Part 2 of 2)