FROM THE PRESIDENT

Do you miss our SANDS meetings? If so, our first SANDS meeting for 2017 will be here soon! The SANDS Executive Committee has decided to change the SANDS meetings from quarterly to semi-annual, starting this year, in order to put less pressure on EC members and to provide better quality meetings to our members. All SANDS EC members are volunteers; they work very hard to support the local SAS user community in addition to their busy daily work. We have long-term loyal EC members who have been working in the current EC for more than ten years. We have newsletters, the website, social media, and member databases to support our SANDS meetings. SANDS is incorporated, so we have to file tax reports and pay taxes to the state of California every year. All these tasks are done by our EC members behind the scenes in order to have successful SANDS meetings. Please acknowledge their work when you see them during the SANDS meetings.

When Art Carpenter left for Alaska at the beginning of 2008, I asked him how long he had served as the president of SANDS and he told me that he had been the president since around 1995. I thought that was a long time. Now, I realize that I have been the president of SANDS for almost ten years, and I have been a SANDS EC member for more than fifteen years. Time just flies! Our vice president, Archie Medrano, and our secretary/treasurer, Song Lin, have been working with me for the past ten years. Ren-Yu Tseng, our facilities coordinator, has been on our EC for more than ten years and we wouldn’t have had such a nice location and facility from Pfizer without her help. When you feast upon your scrumptious dinner at the SANDS meeting, please remember that it’s due to the dedicated work of our catering and sponsorship coordinator, Vivian Huang. Kirk Lafler came back to our EC last year as speaker/program coordinator. Kirk held a half-day SAS training class in March on building business intelligence dashboards, and he generously shared his profit from this class with SANDS. Thank you, Kirk!

In the upcoming June meeting, we will have three SAS speakers! Jane Eslinger will talk about how to build Excel files from PROC REPORT and ODS; Twanda Baker will present new features for Analytics in SAS 9.4; and Ed Summers will discuss the hot topic of Accessibility and SAS University Edition. SAS Institute will sponsor the dinner and door-prizes for this meeting. This will be the featured meeting of the year, so please RSVP through the SANDS web site (www.sandsug.org). You can get early bird rate if you register before the end of May.

It is also election time for SANDS! SANDS has three annually-elected positions on the Executive Committee, open to any SANDS member. They are: President, Vice President, and Secretary/Treasurer. If you are interested in running, please email me your name and the position you would like to apply for. At the meeting, we will take nominations from the floor as well. Please take this opportunity to step up and serve your local SAS community. I look forward to seeing you in the business portion of the meeting to vote!

This year, the WUSS Educational Forum and Conference (www.wuss.org) will be held in Southern California at Long Beach, from September 20th to September 22nd. It is their 25th year anniversary, so you won’t want to miss it!

Last but not least, I would like to thank our sponsors, advertisers, SANDS Executive Committee members, and the volunteers, who continuously support our local SAS community.

I look forward to seeing you at the meeting! - Wei Cheng
## MEETING AGENDA - JUNE 14, 2017

Location: Building CB1, Room 1147 (NEW ROOM!) - RSVP Now!

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>3:30 - 4:30</td>
<td>Jane Eslinger: The REPORT Procedure and ODS Destination for Microsoft Excel: The Smarter, Faster Way to Create First-Rate Excel Reports</td>
</tr>
<tr>
<td>4:30-5:30</td>
<td>Twanda Baker: What’s New for Analytics in SAS® 9.4?</td>
</tr>
<tr>
<td>5:30 - 6:30</td>
<td>Dinner / Networking</td>
</tr>
<tr>
<td>6:30 - 6:45</td>
<td>Welcome / SANDS Business - Wei Cheng</td>
</tr>
<tr>
<td>6:45 - 7:45</td>
<td>Ed Summers: Accessibility and SAS® University Edition: Tips for Students and Professors</td>
</tr>
<tr>
<td>7:45 - 8:00</td>
<td>Stump the Programmer and Coders’ Corner - Wei Cheng</td>
</tr>
<tr>
<td></td>
<td>Door Prizes and Giveaways</td>
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<td>Number Theory</td>
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Ask A Way Tutoring
Jane Eslinger
SAS
Jane Eslinger is a Senior Technical Support Analyst at SAS Headquarters in Cary, North Carolina. In the six years that Jane has been at SAS, she has earned certifications as an Advanced Programmer for SAS® 9 and as an Advanced Visual Business Analyst and authored The SAS® Programmer’s PROC REPORT Handbook: Basic to Advanced Reporting Techniques. She has presented at numerous conferences and users’ groups across the US, including a 2015 SAS Global Forum paper about compute blocks in PROC Report. In her day-to-day work, Jane enjoys supporting SAS customers in using ODS and Base SAS® procedures, with an emphasis on PROC REPORT. Before joining SAS, Jane served as a statistician and statistical programmer in the social science and clinical research fields. She earned her Bachelor of Science in Statistics from NC State University.

The REPORT Procedure and ODS Destination for Microsoft Excel:
The Smarter, Faster Way to Create First-Rate Excel Reports
Does your job require you to create reports in Microsoft Excel on a quarterly, monthly, or even weekly basis? Are you creating all or part of these reports by hand, referencing another sheet containing rows and rows of data? If so, stop! There is a better way! The new ODS destination for Excel enables you to create native Excel files directly from SAS®. Now you can include just the data you need, create great-looking tabular output, and do it all in a fraction of the time! This paper shows you how to use the REPORT procedure to create polished tables that contain formulas, colored cells, and other customized formatting. Also presented in the paper are the destination options used to create various workbook structures, such as multiple tables per worksheet. Using these techniques to automate the creation of your Excel reports will save you hours of time and frustration, enabling you to pursue other endeavors.

Twanda Baker
SAS
[See website.]

What’s New for Analytics in SAS® 9.4?
Many new analytical enhancements and procedures have been added for SAS 9.4 analytical products including Base SAS, SAS/STAT®, SAS/ETS®, and SAS® Enterprise Miner™. This session not only covers the new additions but also provides examples.

Ed Summers
SAS
Ed Summers is a blind software engineer and an accessibility specialist. He has a B.S. in Computer Science and more than 20 years of professional experience as a software developer and a development manager. Ed’s personal mission is to enable people with disabilities to realize their full potential in the classroom and the 21st century knowledge economy. He fulfills that mission as a leader in the software industry and disability-related not-for-profit organizations. Ed is a Distinguished Technical Leader and Senior Manager of Accessibility at SAS, the market leader in business analytics software and services that is used at more than 80,000 sites around the world. The SAS accessibility team enables users of all abilities to access the power of analytics. Ed also serves as the Chair of the North Carolina State Board of Education Advisory Council for the Governor Morehead School for the Blind.

Accessibility and SAS® University Edition: Tips for Students and Professors
Accessibility has become a hot topic on campus due to a flurry of recent investigations of discrimination against students with disabilities by the U.S. Department of Justice and the U.S. Department of Education. This paper provides an update on the latest improvements in SAS University Edition that are specifically targeted to enable students with disabilities to excel in the classroom and beyond. The paper will cover the entire SAS University Edition user experience including installation, documentation, training, support, SAS Studio, and new accessibility features in SAS 9.4M4.

SANDS Sponsorship
We would like to thank Pfizer for having once again generously provided our meeting room. This month, the SAS Institute is sponsoring all three presentations and providing the networking dinner and giveaways. It is our sponsors who make it possible for us to hold our meetings so, at the event, please do let sponsor representatives know how much you appreciate their support. If your company would like to sponsor SANDS activities, please contact the SANDS sponsorship coordinators, Tyler Smith and Vivian Huang.
TIPS FOR USING A DATA WAREHOUSE

In our last episode, we explored an easy way to use SAS Enterprise Guide to create a data dictionary of our SAS data sets. This time, we are going to explore how to create a WHERE statement dynamically based on the values in a variable in a SAS data set we specify. Hopefully, you made it to my presentation at the November 2016 SANDS meeting where I discussed how to dynamically create a WHERE statement. I will be describing a variation of that technique.

First, let’s create a scenario. You have a very large master data set of employee-related labor transactions containing millions of rows. Each time you access the data set, you will want the detail rows for employees based on an analysis variable you chose. For example, one time you may want to get the detail rows for all the employees in a particular department, while another time you may want to get all of the detail rows for all departments within a division. To accomplish this, you could summarize all of the rows in the master data set by employee for the selected department, giving you a new data set with one row for each employee in that department (we will call this data set “the control data set”). You would then merge the control data set back to the master data set using the control data set as the driver. However, to perform the needed Data Step with a MERGE statement on the employee ID will require sorting the master data set and then performing the merge. This will work, of course, but because the master data set is so large, this method will require a lot of resources.

An alternative method is to use the employee IDs from the control data set to dynamically create a WHERE statement and then use that WHERE statement in a simple Data Step to subset the master data set. Let’s assume that we first summarized our master data set by department and isolated department ABC which contains three employees, whose employee IDs are: A0012, A0013, and B1111. Our control data set has three rows and is called work.deptABC. Our master data set is called sands.labor. To create the subset, we need a Data Step that looks like the following:

```sas
data work.labor_subset;
  set sands.labor
  where empid in ("A0012", "A0013", "B1111");
run;
```

Our problem is that each time we want to use this program, the number of employee IDs will change and so will their values. So, how do we do that? We use this cute little macro code:

```sas
%macro wherein;
  %do i=1 %to &max;
    "&&mvar&i"
    %if &i ne &max %then %do;
      ,
    %end;
    %put Employee Number = "&&mvar&i";
  %end;
%mend wherein;
```

A key to making this macro code work is to get the number of rows from the control data set because we need to know how many employee IDs we need to include in the dynamic WHERE statement. And, we need to store each value of the employee ID variable into a separate macro variable. We do both in the Data _null_ Step, placing each value of the employee ID variable into a separate macro variable named “mvari”, where “i” is a numeral incremented each time the Data _null_ Step processes another row of the input data set work.deptABC. And, the number of rows is stored in the macro variable named “max”.

The %wherein macro takes each value stored in the series of macro variables named “mvari” and builds the IN list. [The %put statement is simply a safety value to write a note into the log so you know the macro is working correctly.]

Then, we modify our Data Step to replace the hardcoded list of employee ID numbers with the execution of our cute little macro:
data work.labor_subset;
set sands.labor;
where empid in (%wherein);
run;

When our cute little macro executes, the “%wherein” will be replaced with each value of employee ID surrounded by double-quoted marks, and separated by a comma. It won’t matter if sometimes we have only one employee ID in the control data set, or if we have hundreds. And, of course, we can adapt the macro to work on any variable in our master data set.

The explanation for the macro program that is critical to this process is found in my SUGI 24 article “Dynamically Create a Where Statement” (www2.sas.com/proceedings/sugi24/Coders/p101-24.pdf). By the way, way back when I first wrote this macro code, SANDS’ own Art Carpenter helped me with some of the tricky macro stuff.

Next time we will explore... well, I’m not sure what we will explore, but it will be interesting.

Thanks for reading.

Curtis A. Smith
DoD Project Manager
ca.smith86@att.net

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Upcoming SAS Conferences

2017 WUSS Educational Forum and Conference (September 20-22)
Hyatt Regency, Long Beach, CA

MWSUG (October 8-10, 2017)
Hyatt Regency, St. Louis, MO

SCSUG (October 15-17, 2017)
Crowne Plaza Dallas, Addison, TX

SESUG (November 5-7, 2017)
SAS Campus and Embassy Suites Raleigh-Durham/Research Triangle, NC

SAS Global Forum (April 8-11, 2018)
Colorado Convention Center, Denver, CO

PharmaSUG (April 29-May 2, 2018)
Westin Seattle, Seattle, WA
KIRK’S KORNER:
SAS TIP: DETERMINING THE SIZE OF A DATA SET

When developing SAS® data sets, program code and/or applications, efficiency is not always given the attention it deserves, particularly in the early phases of development. Since data sizes and system performance can affect a program and/or an application’s behavior, SAS users may want to access information about a data set’s content and size. To access, for example, how much disk space a data set is using, users can make a few calculations and/or learn how to access metadata content to obtain the information to this important information. This tip explores a few ways to determine, or estimate, the size of a data set – a question many users are curious about when discussing SAS performance and tuning techniques.

Using PROC SQL and DICTIONARY.TABLES

The SAS System collects valuable information (known as “metadata”) about all known SAS libraries, data sets (tables), catalogs, indexes, macros, system options, views and a collection of other “read-only” tables called Dictionary tables and SASHELP views. One specific Dictionary table, TABLES, and its SASHELP view equivalent, VTABLE, contains details about a SAS session’s data sets. In the following PROC SQL code, the specification of a PROC SQL SELECT-clause is illustrated to access the contents of four columns found in the TABLES Dictionary table, specifically LIBNAME, MEMNAME, MEMTYPE and FILESIZE to display the size of the CARS data set.

PROC SQL and DICTIONARY.TABLES:

```
PROC SQL;
  TITLE 'Filesize for CARS Data Set';
  SELECT LIBNAME, MEMNAME, FILESIZE FORMAT=SIZEKMG., FILESIZE FORMAT=SIZEK.
  FROM DICTIONARY.TABLES
  WHERE LIBNAME = 'SASHELP'
  AND MEMNAME = 'CARS'
  AND MEMTYPE = 'DATA';
QUIT;
```

Results:

```
<table>
<thead>
<tr>
<th>Library Name</th>
<th>Member Name</th>
<th>Size of File</th>
<th>Size of File</th>
</tr>
</thead>
<tbody>
<tr>
<td>SASHELP</td>
<td>CARS</td>
<td>192KB</td>
<td>192K</td>
</tr>
</tbody>
</table>
```

Analysis:

As shown in the results above, the CARS data set filesize is 192KB. Note: When the SIZEKMG. format is specified in a format= option, SAS determines whether to apply KB for kilobytes, MB for megabytes, or GB for gigabytes; and divides the numeric filesize value by one of the following values:

- KB 1024
- MB 1048576
- GB 1073741824
Using PROC PRINT and SASHELP.VTABLE

In the next example, the specification of a PROC PRINT is illustrated to access the contents of three columns found in the VTABLE SASHELP view, specifically LIBNAME, MEMNAME and FILESIZE to display the size of the CARS data set.

**PROC PRINT and SASHELP.VTABLE:**

```
PROC PRINT DATA=SASHELP.VTABLE NOOBS;
VAR LIBNAME MEMNAME FILESIZE;
WHERE LIBNAME = 'SASHELP'
AND MEMNAME = 'CARS';
FORMAT FILESIZE SIZEKMG.;
TITLE 'Filesize for SASHELP.CARS Data Set';
RUN;
```

**Results:**

<table>
<thead>
<tr>
<th>libname</th>
<th>memname</th>
<th>filesize</th>
</tr>
</thead>
<tbody>
<tr>
<td>SASHELP</td>
<td>CARS</td>
<td>192KB</td>
</tr>
</tbody>
</table>

Using DATA _NULL_ , SASHELP.VEXTFL and CALL SYMPUTX

In the final example, a DATA _NULL_ is illustrated to access the contents of the VEXTFL SASHELP view with a FILENAME statement. An assignment statement is specified to calculate the FILESIZE value for the size of the CARS data set. The CALL SYMPUTX left justifies and trims the trailing blanks from the numeric FILESIZE value of 196608.

**DATA _NULL_ and SASHELP.VEXTFL:**

```
filename myfile 'C:\Program Files\SAS9.4\SASFoundation\9.4\\CORE\SASHELP\Cars.sas7bdat';
DATA _NULL_;
SET SASHELP.VEXTFL (WHERE=(FILEREF='MYFILE'));
/* Calculate the Filesize in MB */
FILESIZE = FILESIZE / (1024 ** 2);
CALL SYMPUTX ('FILESIZE',FILESIZE);
RUN;
```

**Results:**

<table>
<thead>
<tr>
<th>file</th>
<th>xpath</th>
<th>xlevel</th>
<th>xengine</th>
<th>xmode</th>
<th>level</th>
<th>directory</th>
<th>exists</th>
<th>temporary</th>
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<tr>
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Kirk Paul Lafler
Senior SAS Consultant, Application Developer, Entrepreneur, Educator and Author
Software Intelligence Corporation
E-mail: KirkLafler@cs.com
LinkedIn: http://www.linkedin.com/in/KirkPaulLafler
Twitter: @sasNerd
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SANDS Membership

Membership in the San Diego SAS Users Group, Inc. (SANDS) provides an opportunity for SAS users to meet and keep updated on SAS issues. Seminars and presentations allow SAS users to gain knowledge with little or no cost. It is also an opportunity for consultants and prospective employees to meet possible employers, and companies to show their SAS-related products and host a meeting. We welcome those interested in giving presentations and writing articles for the newsletter. Presently, there is no charge to attend our meetings or to receive our newsletter; small fees may be asked for some special functions or workshops.

The SANDS membership list is not given out to others and is used only to disseminate SANDS related business, such as newsletters or special announcements. Those wishing to sell their products or services have the opportunity to advertise in the newsletter at reasonable rates.

To become a member, please email the following to Cathy Liu: Name, Title, Organization, Telephone, E-mail, Fax, Address, Work or Home indicator, Computer Platform, SAS version, and SAS related areas of interest.

Stump the Programmer #78

Symbol Table Selection

In the following DATA step, four macro variables are created successfully. As revealed by the %PUT, which macro variables are written to what symbol tables?

```sas
%macro a;
  data _null_;  
    call symput('a','a');  
    call symputx('b','b');  
    call symputx('c','c','l');  
    call symput('d','d');  
  run;  
%mend a;  
%a
```

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Map to Pfizer La Jolla Campus

Directions to the Campus Buildings

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</tr>
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<tr>
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</tr>
<tr>
<td>Full Page</td>
<td>7” x 9”</td>
<td>$225</td>
</tr>
</tbody>
</table>

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