HASUG FLASH

HARTFORD AREA SAS® USERS GROUP

Volume 13, Issue 4 **Fourth Quarter, November 2001**

Table of Contents

The HASUG Flash is available for reading on the World Wide Web at **http://www.hasug.org**

Note from the Chairperson

Barbara Moss, CIGNA

Similar to so many people, I gathered around the nearest radio in an otherwise eerily still office building the morning of September 11th. Listening to the tragic events unfold, has bound me to the airwaves, and has drawn me back each day since. Through the news, commentary, and talk shows one idea has stayed with me, perhaps because it is actionable. That is the notion of appreciating those around us and living each day to the fullest.

I realized that among the people in my Ground Zero and Pentagon circle of concern, were folks I've met through user groups, including members of the HASUG steering committee. Our local user group brings in people from all over the state, including commuters into New York City. National and international conferences - the friendliness of SUGI attendees is outstanding - have given me friends around the country.

As much as there is the chance that each HASUG meeting will offer me a piece of SAS knowledge to make some task easier, I look forward also to seeing the people. Certainly, the work, time and effort contributed to run a HASUG meeting is appreciated, but the success of the group can be attributed just as much to the community of the people.

As always - actually more than usual - I look forward to seeing all of you at the next HASUG meeting.

November Meeting Announcement

The fourth quarter HASUG meeting is to be held on **Wednesday, November 14, 2001, 9:00 a.m. to 11:30 at Bristol-Myers Squibb**, Research Parkway, Wallingford, Connecticut. ***Please note that this meeting is being held on a Wednesday instead of our traditional day, Thursday.*** Our host asks that you pre-register for the meeting via email by sending a message with your name to the address : register@hasug.org.

The first featured presentation will be **"I'll Have the TABULATEs a la ODS Please, With a Table of Contents On the Side** given by **Ray Pass**. The advent of the Output Delivery System (ODS) in Version 8 of the SAS System is truly monumental in scope. It required rewriting all SAS Procedures that produce output (not all do) and splitting out their "data components" from their "table definitions" (presentation format templates). SAS users now have the ability to combine these components into customized "output objects" and to send them to different output "destinations", including casting them as HTML pages.

The HTML destination gives users the ability to produce our main content output as one component frame of a multi-frame page. The other possible component frames can be either procedure output or a Tables of Contents (ToC). Although there are methods for customizing the contents of the ToC frames, they still do take up valuable screen real estate. This paper demonstrates a methodology for creating a separate stand-alone Table of Contents for a multi-output ODS-HTML run, with navigational tools included to go back and forth between the ToC and the content pages. Other data-driven techniques are also demonstrated for renaming ODS-HTML generated sequential body file names into more meaningful content-oriented names. The techniques are not difficult when based on the power of ODS and simple SAS programming tools.

Ray Pass, Ph.D., of Ray Pass Consulting, is an independent SAS consultant and has been using the SAS System for too many years. He is the co-author, with Ron Cody, of "Programming SAS by Example" (1995) and has delivered many invited papers at national, regional and local SAS user groups. Ray's primary areas of expertise in the SAS System are report generation and data manipulation. In addition to teaching SAS courses, Ray has also been quite active in organizing and participating in SAS user group activities on various levels. Ray was one of the founders of both the New York Area SAS Users Group (NYASUG) and the NorthEast SAS Users Group (NESUG.) Ray co-chaired the first two NESUG annual conferences ('88, '89) and has been a Section Chair at many SAS User Group International (SUGI) annual conferences.

(Continued on page 3)

(Continued from page 2)
The other featured presentation will be **"Using SAS ODS to Create Professional-Quality Reports "** given by **Rob Krajcik**. The SAS Output Delivery System (ODS) can create Rich Text Format (RTF) files with little coding effort. This presentation will show some of the steps the author went through to get from a standard line printer listing to an RTF document.

Rob Krajcik is a Principal Analyst in the Biostatistics and Data Management division at Bristol-Myers Squibb in Wallingford, Connecticut. Prior to joining Bristol-Myers Squibb, Rob was a consultant for pharmaceutical and health insurance clients. His early involvement with SAS, which goes back to the days when SAS was housed in a single building, was using MICS and MXG to undertake MVS capacity planning and performance management. Rob has successfully completed SAS V6 Certification.

The HASUG Sponsorship Policy

All parties are encouraged and welcome to attend our quarterly HASUG meetings scheduled during the months of February, May, August, and November of each year. Usually these meetings are scheduled the 3rd Thursday from 9:00 am to noon at various locations throughout Connecticut. Past locations have included Hartford, Meriden, Middletown, Norwalk, Glastonbury, and New Haven. We are always looking for new hosts within the state of Connecticut. If you feel your organization can host a meeting of up to 70 or so people, please contact one of the Steering Committee members.

The HASUG Recruiting Policy

HASUG's primary mission is to provide a forum for SAS professionals to meet and share experiences. HASUG also recognizes that searching for new employment opportunities is a normal activity when professionals meet. Since we depend on our respective employers to support HASUG by providing time for members to attend, prepare presentations, and provide meeting facilities, we do not wish to jeopardize those relationships we have all nurtured.

Therefore, when attending any of our quarterly meetings, we request that all parties engaged in recruiting activities be "professional and discreet", and suggest that such activities be carried outside and after our meetings. Those seeking or offering positions may display materials at a location designated by HASUG at each quarterly meeting. The materials may include resumes, job openings, contract opportunities, business cards, etc. None of the materials may include salary information. All such materials left after the meeting will be discarded. Violators of this policy may be asked to leave the meeting.

For other recruiting opportunities, please see the SAS CONSIG article elsewhere in this newsletter or visit www.sconsig.com.

Calendar of Events
Future General Meetings and Conferences:

November 14, 2001 Bristol-Myers Squibb, Wallingford, CT
February 21, 2002 The Hartford, Hartford, CT
April 14-17, 2002 SUGI27, Orlando, FL
May 16, 2002 Purdue Pharma, Stamford, CT

HASUG Steering Committee Meetings:
November 14, 2001 Immediately after HASUG meeting
December 13, 2001 Conference call, 12:00-1:00
February 21, 2002 Immediately after HASUG meeting
March 21, 2002 Conference call, 11:30-12:30
May 16, 2002 Immediately after HASUG meeting

August Highlights

Bernard M. Dubb, Online Associates
Barbara Moss, Cigna Managed Care Systems

The August meeting of HASUG was held at the SAS Institute Hartford Regional Office in Glastonbury. Thank you to Linda Kestenbaum for welcoming HASUG to their bright and comfortable site with fine meeting accommodations, food and drink and an unexpected gift bag for each attendee.

Our first presentation was a wealth of information presented by Sandy McNeill of SAS Institute. Sandy presented, "Changes & Enhancements for ODS by Example (through V8.2)" with all the examples promised. As manager of the Output Delivery and Reporting Department at SAS Institute, she also gave hints, details, and references that only an insider can share. For example, the best place to look for help on 8.2 topics, including those for ODS, is the Online Help Documentation. Changes for 8.2 have been incorporated into the Online Help Documentation. On the other hand, Online Documentation presents information separately by version. Online Doc is a helpful source with the older features of the product. For "all sorts of good information", please see:
http://www.sas.com/rnd/base/index.html.

HASUG's own Michael Davis, an independent consultant with Bassett Consulting Services gave the second presentation. His presentation was titled "Reading from Alternate Sources: What to Do When the Input is Not a Flat File". Michael noted that while many SAS applications involve reading either a SAS data set or a flat file, there are situations that may require data to be accessed from a web page, a TCP socket or through FTP from a remote network site. The presentation illustrated the new features in SAS software to handle these and other data input situations. Special attention was paid to version 7 and 8 features including the SAS/ACCESS LIBNAME engines that address RDBMS data formats. As always, Michael's presentation was illustrated by many examples. Michael continually stated that in order to fully appreciate the beauty and flexibility of SAS software you can try out various features. One last tip was offered: if OnlineDoc is not installed at a site, it is available from the SAS web site at:
http://v8doc.sas.com/sashtml

Change to HASUG

Email List Distribution

The HASUG Email List Distribution has changed within the past year. In most aspects, the process and privacy issues remain the same as before. The only obvious difference is when you sign up to be a member in the HASUG.org web site, you will see you have two choices to select which list to join (HASUG Email or SCONSIG). You are able to join either or both Email Lists at the same time by MARKING the CHECK BOXes to the left of each list.

Select your interests

☐ **HASUG Email**

☐ **SCONSIG**

Both SCONSIG and HASUG share the cost to make this feature available to its respective members, and both lists are separate and independent from each other.

If you were already a member prior to this change, your membership has been automatically transferred to the new list, and you do not have to do anything. However, in case you have changed your email address recently, your membership is automatically purged from either list due to bounced emails.

The List automatically checks for valid email addresses and if any should become invalid, your membership is cancelled without notice as your email address is no longer valid, hence no way to contact you.

If you do not get an email message from the HASUG Email List Distribution within 3 months (we normally send out messages once every 3 months to notify members of the upcoming meetings and to inform each member a new HASUG FLASH newsletter is ready for viewing), it is recommended to re-join the list with your new email address

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Book Reviews

Debugging SAS Programs: A Handbook of Tools and Techniques
By Michele M. Burlew
Publication # 57743
Approx. Cost: Under $40.00

Janet Stuelpner, Citigroup

They say that if ten programmers are given the same task, they will come up with ten different methods to achieve the same results. With that in mind, below are two differing points of view on the same book. Both reviewers agree that the author attempted a Herculean task in writing about debugging code and the associated error messages, including what those messages mean. The book is chock full of useful information that can't be found elsewhere. Where we differ is whether book successfully addresses the topic. So, here is the HASUG version of point/ counterpoint.

Reviewed by: Charles Patridge, PDPC, Ltd.

Michele Burlew has done an excellent job on a topic that is not well publicized – How to Debug A SAS Program. The book contains eight chapters that are well thought out and organized:

- Chapter 1-Understanding the Types of Errors in SAS Programs
- Chapter 2-Reading the SAS Log and Interpreting SAS Messages
- Chapter 3-Problem-Solving SAS Language Programs
- Chapter 4-Problem-Solving SAS DATA Steps with the DATA Step Debugger
- Chapter 5-Problem-Solving SAS Macro Language
- Chapter 6-Base SAS Messages
- Chapter 7-Macro Facility Messages
- Chapter 8-Review of SAS Processing Concepts

Chapter 4 gives an excellent explanation of the use of the DATA Step Debugger with several examples while chapter 5 provides an excellent clarification in debugging SAS macro and the errors that are associated with the macro language. A number of the examples provided are well documented with "callouts" providing reasons for common and not so common error messages including solutions to correcting these errors. In Chapter 6 and 7, the SAS messages are grouped NOTES first, followed by WARNINGS, and concluded with ERROR messages. Within each grouping, the messages are alphabetically arranged. It is obvious Michele has spent considerable time writing this book by supplying examples of SAS programs with errors, their messages, and solutions to correcting these errors.

I highly recommend this book for beginners, intermediate and advance SAS professionals as an excellent source for learning more about the SAS system, debugging your own SAS programs as well as programs written by other SAS professionals. Having used the SAS Software for 20 plus years, there were some errors in this book I have never seen before; either I programmed very well (GRIN) or there are some places I have never ventured to within the SAS Software.

Caution should be used when reading this book – It is like an excellent glass of wine, it should be sipped, savored and slowly digested to appreciate the full body of its contents.

Reviewed by: Janet Stuelpner, Citigroup

Michele Burlew undertakes a very difficult task in her new book How to Debug A SAS Program. This is a topic that has been discussed, but never written in such depth before. Although we have all seen a great number of the error messages that Ms. Burlew has encountered, she takes the time to explain the cause of the error, the message that SAS prints in the log and, in some cases, what method is used to correct or avoid the message. All types of messages are covered. We all know the differences between NOTES, WARNINGS and ERRORS, however, before this book, it was not as clear.

My big problem with the book is that it can't decide whether it wants to be a reference manual or a user manual. Although very thorough and informative, the author can't quite make up her mind. This book doesn't give 'user-friendly' advice to the reader as we have seen in other SAS Books By User. It contains a great deal of information that can be found in a reference manual. It would be a great addition to your library as a way to look up an error message when encoun-

(Continued on page 6)

(Continued from page 5)
tered. However, it is not the kind of book that can be read in one, two or three sittings. I would put this book in the category of messages and codes that are found in a reference manual.

Continuing With Education...
Peter Prause, The Hartford

The SAS Institute Regional Training Center in Glastonbury, CT. is offering these courses through December, 2001. Course information for these courses and many other non-local courses is available on the Internet at the SAS web site: www.sas.com. To register for a course or to get more information, phone SAS Institute at 1-800-333-7660.

SAS Programming II: Manipulating Data with the DATA Step	Oct 30 –
SAS Programming I: Essentials	Nov 13 -15
SAS Macro Language	Nov 28 -29
SQL Processing with the SAS System	Dec 12 -13

Local SAS training is available at Destiny Corporation, of Wethersfield, CT. Below is a list of their scheduled classes through December, 2001. You can reach Destiny at 1-800-787-2464 or at 860-721-1684, or send an email to info@destinycorp.com. Visit their web site at www.destinycorp.com.

Programming III: Advanced Techniques	Nov 5 – 6
Macros in SAS Software	Nov 12 -14
SQL Processing with SAS Software	Nov 19 -20
Programming IV: Optimizing Programs in SAS Software	Dec 3-4
Introduction to Programming Using SAS Software	Jan 14-15
Programming I: SAS Essentials	Feb 4-6
Programming II: Data Manipulation Using The Data Step	Feb 18-20
Programming III: Advanced Techniques	Mar 4-5
Programming IV: Optimizing Programs in SAS Software	Mar 25-26
Macros in SAS Software	Apr 8-10
SQL Processing with SAS Software	Apr 22-23

Please visit the SAS and Destiny web sites for the latest information.

Hyperlinks of Interest

The SAS Consultants Special Interest Group's web site URL has changed. Edit the bookmarks on your favorite Brower to point to:
http://www.sconsig.com

Read Past SUGI Proceedings Online at:
(link supplied by Curtis Smith):
http://www.sas.com/usergroups/sugi/proceedings/index.html

Information about the SAS Users Group International (SUGI), including information about the 2002 conference in Orlando can be found at: http://www.sas.com/usergroups/sugi/sugi27/index.html

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Editorial and Production Staff

Editor	Janet Stuelpner
Layout	Karol Katz
Member Lists	Charles Patridge
Webmaster	Michael Davis
Contributors	Michael Davis
	Janet Stuelpner
	Bernard Dubb
	Barbara Moss
	Charles Patridge
	Peter Prause

Tips and Techniques from SCONSIG

Disclaimer:

"Each tip included here addresses a problem, and presents a use of one or more SAS concepts. Use it to stimulate your thinking and help you on your way to solving your own problem. Some tips may or may not work in your environment or with your version of the SAS Software, and you should use these tips with this in mind. Neither HASUG nor contributing Author(s) should be held responsible for any direct and/or indirect damage to you or your applications from using these free tips."

List of Tips for November 2001

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Tips in blue are included in this newsletter beginning on page 9.
All tips can be located on the SCONSIG website at http://www.sconsig.com or the hyperlink is provided in blue.

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Do you know how to use value ranges to develop SAS/GRAPH charts? Take a look at author Thomas Miron's solution from "The How-To Book for SAS/GRAPH Software."

Read more at http://www.sas.com/service/doc/pdf/55203_ch16pg95.pdf

TIP00301 - A technique to Extract, Subdivide, Subset or breakup a Large SAS Dataset into smaller evenly divided SAS datasets
by David Ward and Bill Österlund

TIP00300 - Finding the LAST Occurence of a Character in a Character String
by David Ward

TIP00299 - Condensing/Collapsing/Mapping Data from a specific value to a range of values
by Ya Huang and Paul Dorfman

TIP00298 - Check Digits SAS Routine
by Ron Fehd

TIP00297 - How to check to see if a specific SAS variable has consistent attributes across all SAS datasets within a SAS library using SASHELP.VCOLUMN
by Charles Patridge

TIP00296 - How to read Multiple Data Lines for 1 Record (OBS)
by Paul Dorfman and B. Rogers

Quick Tip: SAS Reports in Your PC Worksheet EASY AS PIE!
By David Beam, Steve First and Katie Minton-Ronk, Systems Seminar Consultants
http://www.sas.com/service/techtips/quicktips/pcwrksheet.html

Sample of how to do a VENN Diagram in SAS Graph (submitted by Ya Huang - Ya.huang@agouron.com)
http://ftp.sas.com/techsup/download/sample/graph/other-venn.html

Delete User-Defined Macro Variables from Your Global Symbol Table
When a macro variable is created, it is added to a macro symbol table. A new SAS 8.2 macro function lets you

(Continued on page 8)

(Continued from page 7)

easily delete user-defined macro variables from your Global Symbol Table. Read more at http://www.sas.com/service/techtips/ts_qa/globalsymbol.html

TIP00295 - How to write Excel functions using SAS code
by Koen Vyverman

TIP00294 - here are 3 examples of how to quickly access Oracle tables from SAS version 8
by Travis Jarrell

TIP00293 - Need varying number of macro arguments?
by Mark Terjeson

TIP00292 - How to write a trademark sign using SAS? Or, how to determine the Character Set on a specific Platform
by Jeff Voeller

Interpreting DATA Step Messages for Raw Data Files

Our July 10 Technical Tip covered some of the intricacies of using the INFILE and INPUT statements with the DATA step to read raw data into SAS. The flexibility of the INPUT statement can, however, make it tricky to debug. This week, Bits and Bytes columnist Melinda Thielbar focuses further on how SAS reads raw data. She discusses some common symptoms of logic errors on the INPUT statement and how you can deal with them.

Read more at http://www.sas.com/service/techtips/bitsandbytes/bbinfile.html

Numeric Precision 101

This paper from SAS Technical Support is intended as a basic introduction to numeric precision. Maybe you're just beginning to program with SAS or maybe it's been a long time since you studied number theory. This paper provides an overview of numeric precision and representation issues within SAS applications.

Read more at http://ftp.sas.com/techsup/download/technote/ts654.html

TIP00291 - Get Zipcode from State Code
by Charles Patridge

TIP00290 - HTML Email in SAS V 8.2
by Simon Pickles

TIP00288 - Character Pattern Matching
by Greg Snell, Dennis Diskin and Richard DeVenezia

TIP00287 - Writing Catalog Content to an External File with PROC BUILD
By SAS Institute Inc

TIP00286 - Quick Tip: Making Sense of the INFILE and INPUT Statements or MISSOVER, TRUNCOVER, and PAD, OH MY!
By Randall Cates, SAS Technical Training Specialist

Consultants' Special Interest Group (SCONSIG)

The SAS Consultants' Special Interest Group (SCONSIG) operates and maintains a web site located at www.sconsig.com. This site lists employment opportunities, contracts, vitas, resumes, and companies seeking SAS professional talent. It is updated weekly.
You are encouraged to visit that web site or to contact Charles Patridge. E-mail: Charles_S_Patridge@prodigy.net) for further information.

Tips and Techniques from SCONSIG

/*** TIP 00284 ***/

N % sample size of a subgroup in SQL
Author: Mark Terjeson
Washington State Department of Social and Health Services
Division of Research and Data Analysis (RDA)
Email: terjemw@dshs.wa.gov

This approach will get you within just a couple records of X%. If this is close enough, then maybe the approach below will work okay for you.

Your PERCENT parameter can be changed by replacing the PERCENT found in the code below.

If your "criteria" extends beyond just checking 1 SAS Variable, then add the additional criteria in the nested WHERE (&CLAUSE), where you find the &CLAUSE test as shown below.

The RANUNI(1) function below is for running in the SAS environment. For running in the DB2 environment the RAND(1) function should substitute.

```
%macro pctsamp ( outdata, percent, insasdsn, sasvar, clause );
 /*** outdata - name of output SAS Dataset                ***/
 /*** percent - what percent sample required, 0.00 to 1.00  ***/
 /*** insasdsn- what SAS Dataset to use for sampling       ***/
 /*** sasvar  - what SAS Variable to use with SAS Dataset   ***/
 /*** clause  - WHERE clause to select group(s) if desired  ***/
 /***         by using NO clause parameter the entire SAS  ***/
 /***         datatset is sampled                          ***/

proc sql;
   create table &outdata as
   select *
   from &insasdsn
   where
       &sasvar in ( select &sasvar
                  from  &insasdsn
                  where &clause
                  ranuni(1) le &percent
            )
   ;
quit;
%mend pctsamp;
```

(Continued on page 10)

(Continued from page 9)

```
*** %pctsamp( MySample     , 0.05, cfdata.aaalines, custseg, custseg ne ' ' and );
*** %pctsamp( MySample     , 0.10, cfdata.aaalines, custseg, group   eq 'A' and );
*** %pctsamp( cfdata.sample, 0.25, cfdata.aaalines, order  , order   ne .   and );
*** %pctsamp( cfdata.sample, 0.25, cfdata.aaalines, order  ,                   );
```

/*** end of tip 00284 ***/

/*** TIP00285 ***/
How to Read A Report File as Input to a SAS Program

I need help reading in a text file that appears to have been printed off of a "report". The following is an example (obviously it is not the real data): There are a few lines of "garbage", a space, the variable names, a space and then the records with spaces between each record. How do I get sas to read in this data - the same patterns follows through the entire text document.

Author: Bob Burnham
Email: bburnham@dartmouth.edu
Web: http://www.dartmouth.edu/~bburnham

Try testing for something that is unique for the records that you want to keep, then only input those records. For example, in your data, the first character for each good record was numeric -- so we can test for that:

```
data test (drop = c);
 input c $1. @;
    if(indexc(c, '0123456789')) then do;
    input @1 ptid fname $ lname $ ekg $ bp $ hr;
        output;
    end;
    else input;
    cards;
   garbage line1
   garbage line2
   gargabe line3

   ptid name ekg  bp   hr

   001  john doe  yes  140/90       100

   002  jane doe  no   150/85       120
```

(Continued on page 11)

(Continued from page 10)

```
    003  jack doe  yes  120/95        112

    garbage line1
    garbage line2
    gargabe line3

    ptid name ekg  bp   hr

    004  john miller    yes  140/90       100

    005  jane miller    no   150/85       120

    006  jack miller    yes  120/95       112
    ;;;;
    run;

/*** end of tip 00285 ***/
```

/*** Tip00296 ***/
Multiple Data Lines per Record (obs)

I was hoping someone might be able to assist me with the following. Each record begins with county name and is followed by a number a series of numbers representing various different types of vehicles, the final number being the total number of registrations for the county.

Can we assume that there's a pattern, e.g. a record each for certain predefined types of vehicles, in an established sequence?

If so, here are two possible solutions:

Solution #1 by
Paul Dorfman
Email: paul_dorfman@HOTMAIL.COM

```
    data first ;
       informat name $8. cnt1-cnt12 total
comma. ;
       input (name cnt1-cnt12 total) (&)
@@;
    cards ;
ADAMS
20,242
194
543
331
4
2,317
8,986
346
27
757
1,166
94
35,007
ALLEN
78,840
742
2,807
1,481
278
6,513
17,106
289
150
4,412
6,558
855
120,031
 ;
 run;
```

Alternate Solution #2
Author: Bruce Rogers
Email: b.rogers@VIRGIN.NET

```
    data second (drop=recnum val);
    retain county vt1-vt12 ;
    array vtypes (12) vt1-vt12 ; /*assuming
12 types of vehicle */
    recnum = mod(_n_,14) ;
    if recnum = 1 then input county $10. ;
    else do ;
```

(Continued on page 12)

(Continued from page 11)

```
      input  val $8.;
      if 0 le recnum le 14 then vtypes(recnum-
1) = input(val,comma8.) ;
      else do ;
        vtotal = input(val,comma8.) ;
        output ;
      end;
    end;

cards;
ADAMS
20,242
194
543
331
4
2,317
8,986
346
27
757
1,166
94
35,007
ALLEN
78,840
742
2,807
1,481
278
6,513
17,106
289
150
4,412
6,558
855
120,031
;
run;
/*** end of tip 00296 ***/
```

/*** TIP00301 ***/
Keywords: Extract, Subdivide, Subset, divide, breakup, evenly...

I have a data with 60,000 observations and I want to extract 1000 obs to a new file. Finally, I will get 60 files. The obs doesn't need to be random, it can be in the order like this: 1-1000 (1st file),1001-2000 (2nd file),2001-3000 (3rd file),.....

Solution by David Ward
Email: dward@sashelp.com

One way to do this is to use macros to generate the long lists of data set names and data step code that needs to output records to the many different data sets. Recall that you can use the following syntax to create several data sets:

```
data out1 out2 out3 ...;
set bigone;
if 1<=_n_<=1000 then output out1;
if 1001<=_n_<=2000 then output out2;
if 2001<=_n_<=3000 then output out3;
 ...
run;
```

This becomes fairly tedious to write and it exactly what the SAS Macro language excels at - creating lists of base SAS code. Here is a solution that is some flexible in that you can specify the number of segments and the if ... then ... output statements will be created accordingly.

Modified Solution by
Charles Patridge
Email: Charles_S_Patridge@prodigy.net

David's Solution is almost 100% perfect except it will fail should you have a SAS dataset that has OBS not divisible by the number of datasets you wish to create, such as 60.

(Continued on page 13)

(Continued from page 12)

Here is a slightly modified version of David's Solution that will catch the remaining OBS that would have been dropped and places it into N+1 dataset so that ALL 100% OBS are captured into smaller datasets using If...THEN...ELSE
statements.

```
*** options mprint;
** CREATE TEST DATA **;
data test;
  do i = 1 to 60011 ;
    output;
  end;
run;

%macro dsnlist(prefix,n);  /* GENERATE A LIST OF DATA SET NAMES */
  %do i = 1 %to &n;
    &prefix&i
  %end;
%mend;

%macro select(prefix,n); /* GENERATE IF STATEMENTS FOR DATA STEP */
  if ( ( 1-1)*int(_nobs/&n)+1 <= _n_ <=  1*int(_nobs/&n) )
  then output &prefix.1;
  %do i = 2 %to &n;
    else if ( (&i-1)*int(_nobs/&n)+1 <= _n_ <= &i*int(_nobs/&n) )
    then output &prefix&i;
  %end;
  else   output &prefix&i;
%mend;

** SEPARATE THE LARGE DATA SET INTO SMALL PIECES **;
data %dsnlist(out,61); /*** make this 1 more than needed for any leftovers ***/
  set test nobs=_nobs; * MAKE SURE THE SELECT MACRO CAN USE _NOBS *;
  %select(out,60);
run;
```

Solution #2 by Bill Österlund
Email: billiboj@HOTMAIL.COM

assumption that dataset "test" exists (as in above solution).

```
  %macro m;
   data b;
   set test;
```

(Continued on page 14)

(Continued from page 13)

```
        rows=_n_;
        run;

        proc sql noprint;
          select max(ceil(rows/1000))
            into :max from b;

        %do n=1 %to &max;
         data _null_;
           set b;
           call symput('start',(&n*1000)-999);
           call symput('end',&n*1000);
         run;
         data d&n;
           set b (firstobs=&start obs=&end);
         run;
        %end;
       %mend;

        %m;
```

/*** end of tip 00301 ***/

/*** TIP00300 ***/

Finding the LAST Occurrence of a Character in a Character String

The INDEX function will find the first occurrence of a specified character, by scanning left to right.

Is there a way to specify that it scan from right to left, so that it will find the last occurrence?

Author: David Ward
Email: dward@SASHELP.COM

You will need to reverse the character string as well as the search criteria to find the last occurrence.

```
    data test;
       str = "Happy Days are Here Again unless you did not wake up today";
      search = "a";

      pos=length(str)+1-index(reverse(str),reverse(search));
      search1= "ay";
      pos1=length(str)+1-index(reverse(str),reverse(search1));
    run;
```

/*** end of tip 00300 ***/

Steering Committee Members

Name	Organization	Telephone	E-Mail
Barbara Moss, Chairperson	CIGNA	(860) 226-1504	Barbara.Moss@CIGNA.com
James Alling	Independent	(860) 447-2253	jtalling@home.com
Michael Davis	Bassett Consulting	(203) 562-0640	michael@bassettconsulting.com
Bernard Dubb	Online Associates	(860)-487-1917	kb1dgy@yahoo.com
Miguel Hernandez	Independent	(860) 633-4373	mahernandezjr@hotmail.com
Cindy Johnson	Bristol-Myers Squibb	(203) 677-3922	cynthia.johnson@bms.com
Karol Katz	Yale University	(203) 764-4338	Karol.Katz@yale.edu
Rene Laurencot	Pfizer	(860) 228-4786	renehana@gateway.net
Albert Lavoie	Bristol-Myers Squibb	(203) 677-6166	albert.lavoie@bms.com
Tom Mansfield	Purdue Pharma	(203) 937-5126	Tom.Mansfield@pharma.com
Chuck Patridge	The Hartford	(860) 547-6644	Charles_S_Patridge@prodigy.net
Peter Prause	The Hartford	(860) 547-7484	Peter.Prause@thehartford.com
Clinton Rickards	Purdue Pharma	(203) 588-7547	Clinton.Rickards@pharma.com
Janet Stuelpner	Citibank	(718) 248-5814	jstuelpner@att.net
Gerald Zuckier	Bayer	(203) 624-0940	GZuckier@alum.mit.edu

Directions to Bristol-Myers Squibb, Research Parkway ,Wallingford ,CT
Wednesday, November 14, 2001 at 9:00 a.m.

Via Route 15 (Merritt / Wilbur Cross Parkways)

Exit 66 in Wallingford
Left at light at end of ramp onto Rte. 5 South
Stay on Rte. 5 for approx. 1/2 mile
Left immediately past Shell station onto access road for Rte. 68
Left at light onto Rte. 68 East
Follow Rte. 68 past Courtyard Hotel (on left), past entrances to I-91
Left at 1st traffic light past I-91 (not incl. Entrance to I-91 North) onto Research Parkway
Bristol-Myers Squibb is the 1st building on the right

Map can found at http://www.hasug.org/next_mtg.htm

Via I-95 (New England Thruway) and New Haven Area

I-95 North to Exit 48 (left exit) onto I-91 North
Stay on I-91 for about 15 miles to Exit 15 (Rte. 68)
Right off exit onto Rte. 68 (east toward Durham)
Left at 1st light onto Research Parkway
Bristol-Myers Squibb is the 1st building on the right

Via I-91 (from Hartford)

I-91 South to exit 15 (Rte. 68)
Left at light at end of ramp
Left at 1st traffic light past I-91 (not incl. Entrance to I-91 North) onto Research Parkway
Bristol-Myers Squibb is the 1st building on the right