



## HARTFORD AREA SAS® USERS GROUP

<b>Volume 18 Issue 1</b>	<b>First Quarter, February 2006</b>
--------------------------	-------------------------------------

### Table of Contents

<b>Notes from the Chairman</b>	<b>2</b>
<b>Meeting Announcement, Boehringer-Ingelheim Pharmaceuticals</b>	<b>2</b>
<b>Editorial and Production Staff</b>	<b>2</b>
<b>Continuing with Education</b>	<b>3</b>
<b>Book Reviews</b>	<b>4</b>
<b>HASUG Recruiting Policy</b>	<b>4</b>
<b>Calendar of Events</b>	<b>5</b>
<b>HASUG Sponsorship Policy</b>	<b>5</b>
<b>HASUG Email Distribution List</b>	<b>5</b>
<b>November Meeting Highlights</b>	<b>5</b>
<b>Hyperlinks of Interest</b>	<b>6</b>
<b>Consultants' Special Interest Group</b>	<b>6</b>
<b>Tips and Techniques, Disclaimer</b>	<b>6</b>
<b>Tips and Techniques</b>	<b>6-8</b>
<b>Steering Committee</b>	<b>9</b>
<b>Directions to: Boehringer-Ingelheim Pharmaceuticals, Inc</b>	<b>10</b>

<p>The HASUG Flash is available for reading on the World Wide Web at <a href="http://www.hasug.org">http://www.hasug.org</a> SAS is a registered trademark of SAS Institute Inc. Cary, North Carolina</p>
---

## CHAIR NOTES

### Robert Krajcik

I was pleased to see a good turnout of about 60 people at our November meeting. Venky Chakravarthy couldn't be there, so I presented his paper on Multilabel Formats. Xiu Chen had an interesting paper on generating SAS code, and Tim Muir did a great job on presenting SAS V9 character functions. I want to thank Cindy Johnson and all the folks at Bristol-Myers Squibb for hosting this meeting and making it a success.

We have lined up a couple of highly experienced and knowledgeable speakers for our February meeting in Ridgefield. Janet Stuelpner will present the basics of ODS, the powerful but underutilized Output Delivery System that has been part of SAS since Version 7 came out in 1999. Macro whiz and all-around SAS guru Bob Virgile will present some perplexing macro language problems and their solutions. See the HASUG website for the problems, but if you want to hear the solutions, you need to attend this meeting.

I look forward to seeing you at our February meeting. Please use our online registration form to register. Should the number of registered attendees come close to reaching the room's capacity we will shut off further registrations. If your plans change, please cancel your registration. Failure to do this might prevent someone else from attending this meeting. Finally, HASUG will confirm your registration via email as soon as possible to be sure you know you have a seat to attend.

## HASUG MEETING ANNOUNCEMENT

**Our next meeting is Thursday February 16th, 2006 at Boehringer-Ingelheim Pharmaceuticals 900 Ridgebury Road Ridgefield, CT 06877**

**From 9:00 am to noon**

Our Topics and Speakers are:

### ODS: Odious or Not

Janet Stuelpner, Left Hand Computing .  
For years you have been producing a listing for output from your procedures and it has been just what management wanted and needed. But now they want the output in a format that they can share with others. We all know that the ordinary listing can be quite limiting. Now we have the ability with the Output Delivery System to make our output fancier and more user friendly. But how do we do it? What do we need to know about ODS in order to produce output that our managers will read? This presentation will give you the basics of ODS. It will take you from the simple commands to the changes that are needed to produce different types of output files.

Janet Stuelpner provides programming support in the areas of clinical trials, outcomes research and the financial industry. She also provides both individual and group technical training when needed at the client sites. Janet has several degrees in the sciences. She has been a SAS user for over 20 years on many different platforms. Originally a systems programmer, she has now turned her focus to applications programming and teaching. She has been a presenter at users groups at all levels.

### Macro Mania

Bob Virgile, Robert Virgile Associates, Inc.  
So you're a macro whiz? Not good enough! To solve these problems, you'll also need imagination and cleverness, with a little genius (or is it madness?) thrown into the mix. These problems all involve macro language. They're reasonably short, but more than reasonably difficult. Assume that any named data sets or variables actually exist, and that there are no typographical errors. Unless a problem explicitly states otherwise, assume there are no error or warning messages. This implies that all %if and %do statements appear within a macro definition. All words mean what they appear to mean. For example, statement style macros are not permitted. The code which precedes each problem is not permitted to begin an unfinished comment statement. While the problems may be tricky, the wording is intended to be as clear as possible.

To get the most out of the problems, work on them before the HASUG meeting. Note that solutions will be presented, but there will not be a written handout. Only the problems will be published, so if you want to see solutions you have to attend the meeting!

Bob Virgile is an independent SAS trainer and consultant, with over 20 years of experience designing and teaching SAS courses. He has written two books for SAS Institute, formerly composed problem-solving contests for SUGI and NESUG, and has been barred from the NESUG SAS Bowl due to superior SAS knowledge.

## EDITORIAL and PRODUCTION STAFF:

Editor:	Janet Stuelpner
Layout:	Albert Lavoie
Member Lists:	Charles Patridge
Web master:	Rob Krajcik
Contributors:	Karol Katz
	Rob Krajcik
	Chuck Patridge
	Peter Prause
	Gerald Zuckier

## CONTINUING With EDUCATION...

Peter Prause, The Hartford

**The SAS Institute Regional Training Center** in Glastonbury, CT is offering the following courses. Course information for these courses and many other non-local courses is available on the Internet at the SAS web site: [support.sas.com](http://support.sas.com) To register for a course or to get more information, phone SAS Institute at 1-800-333-7660.

Creating and Exploiting OLAP Using the SAS System	Feb 2-3	Programming II: Data Manipulation Using the Data Step	Feb 1-3
SAS Programming II: Manipulating Data with the DATA Step	Feb 27-Mar 1	Macros in SAS Software	Feb 6-8
SAS Programming I: Essentials	Mar 29-31	SAS Version 9 Changes and Enhancements	Feb 20-21
Creating Detail and Summary Reports	Apr 5-7	Programming I: SAS Essentials	Mar 6-8
SAS Programming III: Advanced Techniques	Apr 19-21	Output Delivery System (ODS) Basics	Mar 9-10
SAS Macro Language	May 3-4	SQL Processing in SAS Software	Mar 16-17
SAS Macro Programming: Advanced Topics	May 5	Programming III: Advanced Techniques	Apr 3-4
SAS Programming I: Essentials	May 22-24	Report Writing: A Programming Approach in SAS Software	Apr 5-7
SAS Programming II: Manipulating Data with the DATA Step	May 31-Jun 2	Programming II: Data Manipulation Using the Data Step	Apr 17-19
Querying and Reporting Using SAS Enterprise Guide	Jun 8-9	Programming I: SAS Essentials	May 3-5
SQL Processing with SAS	Jun 15-16	Enterprise Guide: Querying and Reporting	May 15-16
		Report Writing: A Programming Approach in SAS Software	Jun 5-7
		SQL Processing in SAS Software	Jun 8-9
		Output Delivery System (ODS) Basics	Jun 19-20

When time and distance are an issue, SAS Institute offers Live Web classes and self-paced e-learning to help you get the training you need while accommodating your busy schedule. Call for more details.

**Destiny Corporation** is offering the following public courses at their training facility located at 2075 Silas Deane Highway, Rocky Hill, CT. You can reach Destiny at 1-800-787-2464 or at 860-721-1684, or send email to [info@destinycorp.com](mailto:info@destinycorp.com). You can visit their web site at [www.destinycorp.com](http://www.destinycorp.com).

In addition to Destiny's public course offerings, many of Destiny's courses are offered in a Virtual Learning Environment. Experience the quality and benefits of "Instructor Led" training from the comfort of your own PC. These courses cover the same basic content as traditional classroom training with the benefit of year long access and instructor support. Call or visit [www.destiny.com](http://www.destiny.com) for more details.

## BOOK REVIEW

By Karol Katz, Programmer Analyst

**Title:** *Using SAS for Univariate and Multivariate Statistics, Second edition*

**Authors:** Norm O'Rourke, Larry Hatcher, Edward Stephanski

**Order Number:** 58929

**ISBN number:** 1-59047-417-1

**Cost:** \$64.95 USD

**Length** 552 pages

This is an excellent book which provides detailed descriptions of univariate and multivariate statistical procedures followed by a corresponding short SAS program. The chapters are ordered from basic to the more complex procedures.

The early chapters offer an explanation of statistical terminology and how to input data into SAS for analysis. The later chapters offer details about when and how to use a particular test, including assumptions which must be met. This is followed by examples of the SAS/STAT procedure and interpretation of the SAS output. Particular sections of the output which result in statistical decisions are described in detail.

Anyone learning statistics would appreciate this book because it is easy to understand. Someone new to SAS can run the step-by-step examples and compare their results with the output in the text. Since the purpose of each line in the SAS/STAT procedure is explained, knowledge gained can soon be transferred to one's own data.

I would also recommend this book for experienced BASE/SAS programmers, unfamiliar with statistics, who may need or wish to gain new SAS/STAT skills.

## BOOK REVIEW

By Charles Patridge, Full Capture Solutions, Inc.

**Title:** *The Complete Guide to SAS Indexes – Preview Copy*

**Authors:** Michael A. Raithel

**Publication Date:** February, 2006

This book contains "everything you wanted to know about SAS indexes but were afraid to ask"! At first, I wondered how anyone could find enough information about a very specific topic, such as SAS indexes, to write a book about it. Well, Michael Raithel did more than that – it's an excellent learning and reference manual about SAS indexes.

This book was well thought out and it is easy to learn more about SAS indexes. The information is presented so aptly that it can be used by a SAS

beginner and all the way up to the most advanced SAS developer. Michael covers the area of indexes so that you will understand when, why and where to use indexes with plenty of easy to follow code examples so that you will fully comprehend the strength and weaknesses of indexes. Mr. Raithel also covers the area of when and where NOT to use indexes, hence a thorough understanding can be gained by having this manual in your SAS library when building SAS applications involving the need for performance and speed to deliver your data to your end users or clients.

I highly recommend and strongly encourage ALL (beginners to advance levels) SAS users to convince yourselves or your supervisors to purchase this manual for your SAS library as an effective learning and reference tool. Your money will be well spent on this book.

I appreciated the opportunity to have been asked to review Michael's new book and am pleased to add this to my "must have" SAS manuals. Now that I have read Michael's new book, I will be looking for more books by this author knowing how well he presents his materials to an audience of varied experiences and skill levels.

## 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](http://www.sconsig.com)

## CALENDAR OF EVENTS

### Future General Meetings and Conferences:

Feb. 16, 2006 Boehringer–Ingelheim, Ridgefield, CT  
Mar. 26-29, 2006 SUGI, San Francisco, CA  
May 18, 2006 Bayer, West Haven, CT  
Aug. 17, 2006 TBD  
Sept. 17-20, 2006 NESUG, Philadelphia, PA

### HASUG Steering Committee Meetings:

Feb. 16, 2006 Immediately after HASUG meeting  
Mar. 16, 2006 Conference call, 11:30-12:30  
May 18, 2006 Immediately after HASUG meeting  
June 15, 2006 Conference call, 11:30-12:30

## 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, Stamford 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.

## HASUG2-L DISTRIBUTION LIST

This service is provided free of charge to all who wish to subscribe to the email notification process. In order to sign up for this service, you need only point your browser to the HASUG web site, <http://www.hasug.org>, and click the hyperlink

[Join HASUG Email Distribution List](#)

Or go directly to

<http://listserv.pace.edu/archives/hasug2-l.html>

then click on

[Join or leave the list \(or change settings\)](#)

After entering your name and e-mail address, there are a number of options available under "Subscription Type". If you know and understand the various options, feel free to alter them as desired. However, HASUG suggests you leave them "as is". Your name and email address are not displayed nor given out to any party, including members of the HASUG steering committee. Only the list administrators have access to subscription information.

If you should change your email address under which

you subscribed, you will need to unsubscribe with your old email address, and then re-subscribe using your new email address.

Typically, a notice is sent approximately 3 weeks before meetings, as well as a couple of days beforehand to remind people of the date, time, location and topics to be presented.

**Only List administrators will be able to send out email messages to the HASUG2-L members.**

## NOVEMBER MEETING HIGHLIGHTS

### Gerald Zuckier

The November 2005 meeting of HASUG was held at Bristol-Myers Squibb in Wallingford with a substantial crowd in attendance. The speakers were Rob Krajcik presenting Venky Chakravarthy's paper about the *MULTILABEL* option of *Proc Format*, Tim Muir on the new, improved character and string functions in Version 9 SAS, and Xiu Chen on creating and running SAS program statements within a SAS program.

Rob Krajcik explained the features in Venky Chakravarthy's presentation showing how *MULTILABEL* allows a single value to be formatted into several overlapping or subsetted classes (e.g., greater than 0, greater than 1, greater than 10, etc.) and thereby appear several times within *Proc Means*, *Proc Summary*, or *Proc Tabulate* output. Unfortunately, other *PROCs* cannot utilize this feature, but it is hoped that its function will be extended, particularly if enough customers ask for it.

Tim Muir introduced the audience to the greatly enhanced list of string and character manipulation functions in Version 9, including a large number of *ANY* and *NOT* functions (i.e., *ANYALPHA*, or *NOTLOWER*) resembling the traditional *INDEXC* function in their use, a new set of *CAT* functions for concatenating variables with different ways of handling blanks, as well as new functions with *CHOOSE*, *COUNT*, *IF*, *LENGTH*, *CASE*, *SCAN*, *STRIP* and *SUBSTRING* functionality.

Xiu Chen presented three examples of how a generalized SAS program can be written so as to generate project-specific code to accomplish a defined task, even though things like precise file and variable names are not standardized. These included extracting all date variables, extracting comment-type variables, and identifying only data points that are populated with values.

As usual, attendees were treated to the gracious hospitality of Bristol-Myers Squibb, as well as the opportunity to win some SAS-related items.

## HYPERLINKS OF INTEREST

SAS Users often ask, "How can I find any recent SUGI papers that deal with a particular subject?" Lex Jansen has put up the following link that lets one search the online SUGI proceeds using the Google search engine:

<http://www.lexjansen.com/sugi/>

Similarly, to search the SAS-L archives, one can use the following two links:

<http://www.axomsoftware.com/sas-l.php>

<http://groups.google.com/groups?hl=en&lr=&ie=UTF-8&group=comp.soft-sys.sas>

The SAS Consultants Special Interest Group's web site URL is:

<http://www.sconsig.com>

Read Past SUGI Proceedings Online at:

(link supplied by Curtis Smith):

<http://support.sas.com/usergroups/sugi/proceedings/index.html>

Information about the North East SAS Users Group (NESUG), including information about the 2004 conference in Baltimore can be found at:

<http://www.nesug.org>

SAS OnlineDoc is available from SAS on the World-Wide Web. To register to view SAS Version 8 OnlineDoc on the web, register at the following URL:

<http://www.sas.com/v8doc>.

To register to view SAS Version 9 Online Doc on the web, register at the following URL:

<http://www.sas.com/v9doc>.

Some of the papers and other handouts distributed at recent HASUG meetings can be found at the following two web sites:

<http://www.hasug.org>

<http://www.bassettconsulting.com>

## CONSULTANTS' SPECIAL INTEREST GROUP(SCONSIG)

The SAS Consultants' Special Interest Group (SCONSIG) operates and maintains a web site located at [www.sconsig.com](http://www.sconsig.com). The 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 at:

[Charles\\_S\\_Patridge@prodigy.net](mailto:Charles_S_Patridge@prodigy.net)

## TIPS and TECHNIQUES

Compiled by Charles Patridge

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."

*SAS, SAS/ACCESS, SAS/CONNECT, SAS/FSP, SAS/GRAPH, SAS/IntrNet, and SAS/STAT are registered trademarks of SAS Institute Inc., Cary, North Carolina.*

*Tips in blue/bold are located within this newsletter.*

## Tips and Techniques

Reading Messy Raw Data - By Lora Delwiche (University of California, Davis) and Susan Slaughter (Avocet Solutions)

**[http://support.sas.com/publishing/bbu\\_tip/delwiche\\_reading\\_messy\\_data.html](http://support.sas.com/publishing/bbu_tip/delwiche_reading_messy_data.html)**

Adding Custom Content to the SAS Help and Documentation System - By Jodie Gilmore

**[http://support.sas.com/publishing/bbu\\_tip/gilmore\\_custom\\_help.html](http://support.sas.com/publishing/bbu_tip/gilmore_custom_help.html)**

Using the MISSING function from SAS Functions by Example - By Ron Cody

**[http://support.sas.com/publishing/bbu\\_tip/cody\\_missingFunction.html](http://support.sas.com/publishing/bbu_tip/cody_missingFunction.html)**

Customize the data set browser for the SAS Explorer window -By Lynn Curley

**<http://support.sas.com/sassamples/quicktips/05mar/viewtable.html>**

When do I use a WHERE statement vs. an IF statement to subset a data set?

**<http://support.sas.com/faq/042/FAQ04278.html>**

Manipulating Data with PROC SQL

**<http://support.sas.com/ctx/samples/index.jsp?sid=551>**

PROC SQL Summary Functions

**<http://support.sas.com/ctx/samples/index.jsp?sr=+&sid=820&os=+&summary=Y&srch=y&product=+&PROCS=+&text=>**

DATA Step vs. PROC SQL - By Curt Edmonds, Simulstat Incorporated, and Sunil Gupta, Gupta Programming

[http://support.sas.com/documentation/whitepaper/technical/datastep\\_sunil.pdf](http://support.sas.com/documentation/whitepaper/technical/datastep_sunil.pdf)

SAS9 Perl Regular Expressions Tip Sheet - [http://support.sas.com/rnd/base/topics/datastep/perl\\_regexp/regexp-tip-sheet.pdf](http://support.sas.com/rnd/base/topics/datastep/perl_regexp/regexp-tip-sheet.pdf)

SAS9 Hash Object Tip Sheet - <http://support.sas.com/rnd/base/topics/datastep/dot/hash-tip-sheet.pdf>

-- Quick Tip: A Simple Server Monitoring Technique  
This coding approach by Bryan Beverly of BAE Systems Information Technology demonstrates how to use SAS to detect UNIX and Windows server response anomalies, and then notify key personnel by e-mail or cell phone text messages. The crux of this approach is the PING command.

Read More at: <http://support.sas.com/ctx/samples/index.jsp?sid=1556&ETS=2809&PID=44951>

-- Quick Tip: DATA Step vs. PROC SQL  
This tech tip by Curt Edmonds of Simulstat Inc., and Sunil Gupta of Gupta Programming, covers the issues with common variables when combining data sets. It offers general rules on how attributes and data values from two data sets are assigned for both the DATA Step and PROC SQL when you have common non-BY variables in both data sets.  
Read More at: [http://support.sas.com/documentation/whitepaper/technical/datastep\\_sunil.pdf?ETS=2809&PID=44951](http://support.sas.com/documentation/whitepaper/technical/datastep_sunil.pdf?ETS=2809&PID=44951)

Exploring the World of Indexes by Kirk Lafler - [http://www.sconsig.com/sastips/exploring\\_the\\_world\\_of\\_indexes.pdf](http://www.sconsig.com/sastips/exploring_the_world_of_indexes.pdf)

**TIP00411** - Get the full file path name within a UNIX environment by Charles Patridge

**TIP00412** - [Create Sample Transaction Dataset of a Master Transaction Dataset of the Top X and Bottom Y Records based upon frequency \(top most occurrences or least occurrences\) of a Key variable](#) by Charles Patridge

```
*****  
***** extract_top_bottom_freq.sas  
*****.  
/*****
```

The purpose of this macro is to select a sample of those keys within a SAS dataset that have the most number of frequencies (top) and the least number of frequencies (bottom) to create a representative

extract of the master file (\_sasdsnin\_) and save them to a sample dataset (\_sasdsnout\_)

It is strongly recommended the \_sasdsnout\_ dataset is deleted before this macro is executed to ensure all variables are processed as expected due to use of proc append.

1st parameter \_sasdsnin\_ =name of sas dataset to draw sample from (ex: r2.trv0200)  
2nd parameter \_sasdsnout\_ =name of sas dataset to put sample into (ex: r2.trv0200\_sample)  
3rd parameter \_top\_ =How many of top keys to keep (ex: 10)  
4th parameter \_bottom\_ =How many of bottom keys to keep (ex: 15)  
5th parameter \_key\_ =What is KEY variable to base selection on (ex:claim\_number);  
\*\*\*\*\*/

```
%macro extract_top_bottom_freq( _sasdsnin_ =,  
_sasdsnout_ =, _top_ =, _bottom_ =, _key_ =);  
/***** do a frequency of _key_ variable first *****/  
proc freq data=&_sasdsnin_ order=freq ;
```

```
table &_key_ / missing noprint out=_extract_  
(keep=&_key_ count);  
run;  
/**** get only the _top_ frequencies number of _key_  
****/  
data extract_top;  
set _extract_ (keep=&_key_ obs=&_top_);  
run;
```

```
/**** now extract those _top_ _key_ records from  
_sasdsnin_ ****/  
proc sql;  
create table extract_top_sample as  
select *  
from &_sasdsnin_ m,  
extract_top s  
where m.&_key_ eq s.&_key_ ;  
quit;
```

```
/**** go back and get _bottom_ frequencies of _key_  
records ****/  
proc sort data=_extract_ out=_extract_; by count;  
run;
```

```
/**** keep only the _bottom_ _key_ records ****/  
data extract_bottom;  
set _extract_ (keep=&_key_ obs=&_bottom_);  
run;
```

```
/**** now extract those _bottom_ _key_ records from  
_sasdsnin_ ****/  
proc sql;  
create table extract_bottom_sample as  
select *
```

```

from &_sasdsn_ m,
  extract_bottom s
where m.&_key_ eq s.&_key_;
quit;

/** now join _top_ and _bottom_ records into a
single SAS dataset _sasdsnout_ */
proc append base=&_sasdsnout_
data=extract_top_sample ; quit;
proc append base=&_sasdsnout_
data=extract_bottom_sample; quit;

/** clean up the temporary files */
proc datasets library=work nolist; delete _extract_
extract_top extract_bottom
extract_top_sample
extract_bottom_sample;
quit;

%mend extract_top_bottom_freq;

/** sample run and call to extract_top_bottom_freq
macro
proc datasets library=r2 nolist; delete
trv0200_sample ; run;

%extract_top_bottom_freq( _sasdsn_=r2.trv0200,
_sasdsnout_=r2.trv0200_sample,
_top_=15,
_bottom_=15,
_key_=claim_number);
***/

/** end of extract_top_bottom_freq.sas - tip
00412***/

```

**TIP00410 - A macro to determine the Attribute Type of any SAS Variable within a SAS Dataset by Charles Patridge**

```

%macro getVarType( _sasdsn_=, _varname_=,);
  /** getVarType macro
  Author: Charles Patridge
  Its purpose is to determine the Attribute Type of
  any SAS Variable within the SAS Dataset
  specified.
  1st parameter - _sasdsn_ - is name of SAS
  Dataset to search for the variable
  2nd parameter - _varname_ - is name of SAS
  variable to determine its type

```

This macro will create a global macro variable named the same as the variable in the 2nd parameter with "\_Type" added to its name as a suffix; for example, if variable given as 2nd parameter is "salary", the created macro name will be "salary\_Type"

The values of created macro variable will be  
 "C" - Character  
 "N" - Numeric  
 "" - variable given as 2nd parameter Does NOT EXIST (DNE) within the SAS Dataset in the 1st parameter.

This macro can be called on its own or within a DataStep - however it is more efficient if called on its own as a SAS variable can NOT change its type within a SAS Dataset.

```

***/

%let dsid=%sysfunc(open(&_sasdsn_,i));
%global &_varname_._Type;
%let &_varname_._Type = ;
%do i=1 %to %sysfunc(attrn(&dsid,nvars));
  %if %upcase(&_varname_) = %upcase(%sysfunc(
varname(&dsid,&i))) %then %do;
    %let &_varname_._Type = %sysfunc(vartype
(&dsid,&i));
    %goto _alldone_;
  %end;
%end;
%_alldone_: %let rc=%sysfunc(close(&dsid));
%mend getVarType;

```

```

/** example use of macro */
/**

```

```

libname mylib 'c:\download\sas_salary\'; run;
%let mysasfile = mylib.salary;

```

```

%getVarType( _sasdsn_=mylib.salary,
_varname_=salary);

```

```

data test;
set mylib.salary;
  /** determine if salary is Numeric, Character, or
Does Not Exist at all;

```

```

salary_type = "&salary_Type" ;

if salary_Type = "N" then flag = "Numeric ";
else if salary_type = "C" then flag = "Character
";
else flag = "DNE ";
run;
***/

```

```

/** end of TIP 00410 ***/

```

## THE HASUG STEERING COMMITTEE

<u>Name</u>	<u>Organization</u>	<u>Telephone</u>	<u>E-Mail</u>
Jim Blaha	CCSU	(860) 832-1737	blahajam@ccsu.edu
Cindy Johnson	Bristol-Myers Squibb	(203)-677-6547	GjCjtwink@aol.com
Karol Katz	Yale University	(203) 764-7527	Karol.Katz@yale.edu
Robert Krajcik	Bristol-Myers Squibb	(203)-677-6125	Robert_krajcik@yahoo.com
Rene Laurencot	Pfizer	(860) 686-1574	husky_123@yahoo.com.
Albert Lavoie	Independent	(860) 644-7632	alavoie1@cox.net
Barbara Moss	CIGNA	(860)226-1504	Barbara.Moss@CIGNA.com
Tim Muir	Boehringer-Ingelheim	(203) 300-9500	tmuir@rdg.boehringer-ingelheim.com
Chuck Patridge	Full Sapture Solutions	(860) 291-9517 x 106	Charles_S_Patridge@prodigy.net
Peter Prause	The Hartford	(860) 547-7484	Peter.Prause@thehartford.com
Kevin Smith	Oxford Health Plans	(203) 459-6145	KevSmith@oxhp.com
Janet Stuelpner	Left Hand Computing	(203) 966-7520	jstuelpner@usa.net
Mahinda Yapa	Pitney Bowes	(203) 922-4662	myapa@yahoo.com
Gerald Zuckier	Aetna	(203) 288-8590	GZuckier@alum.mit.edu

**Directions to:  
Boehringer-Ingelheim Pharmaceuticals, Inc.  
900 Ridgebury Road  
Ridgefield, CT 06877**

From White Plains, NY and Westchester County

- Take I-84 East to Exit 2.
- Turn left at the light.
- Go to next traffic light, continue straight, and at the next traffic light, turn right onto Mill Plain Road.
- Continue a few feet on Mill Plain Road, turn right at traffic light onto Ridgebury Road.
- Go straight through one traffic light; at the second light turn left on Briar Ridge Road.
- Turn right at the BI entrance.

From New Haven

- Follow CT-34 West / DERBY AVE. until I-84
- Take I-84 West (towards Danbury)
- Merge onto Old Ridgebury RD via EXIT 2A
- Go straight through one traffic light; at the second light turn left on Briar Ridge Road.
- Turn right at the BI entrance.

From Hartford

- Take I-84 West (towards Danbury)
- Merge onto Old Ridgebury RD via EXIT 2A
- Go straight through one traffic light; at the second light turn left on Briar Ridge Road.
- Turn right at the BI entrance.

