

VIEWS

International SAS Programmer Community



News, Hints, Tips and Information for SAS® Users

Issue 40, 4th Quarter 2007

Note that SAS 9.1.3 Service Pack 4 is already supported on the business-related editions of Microsoft Vista.

Philip R Holland (Newsletter Editor)

It is always a pleasure to bring you good news, so I have included some of the latest news about the release dates for SAS 9.2 in the Stop Press News section. Also in this issue of *VIEWS News* I have a number of articles from familiar sources: including SAS graphics in Excel from LeRoy Bessler, database performance warnings from Steve Morton and some more useful tips from the Amadeus Software Consultancy Team. I would also like to welcome a new *VIEWS* Consultant, Methodios Typou, who has written a report on the recent SAS Forum UK. Along with our regular sections, I hope you will find them all interesting and helpful.

If you would like to contribute an article, or discuss the possibility of doing so, please send an email to me at newsletter@views-uk.org. A list of possible subjects for your articles can be found on the *VIEWS* web site, and anyone is very welcome to add to that list by sending emails with your own questions to newsletter@views-uk.org.

Philip R Holland (Newsletter Editor)

Membership of *VIEWS* is **free** and you can register for notification of all future *VIEWS* events by emailing us at membership@views-uk.org, making certain you include your name and postal address. If you would like to receive email notification whenever a new issue of the free quarterly *VIEWS News* is published on the web site, please remember to also include your email address.

Stop Press News

SAS 9.2 Coming Out Sooner!

Keith Collins, SAS Institute's Senior Vice-President and Chief Technology Officer, announced at the SAS Forum UK that "Classic" SAS 9.2, i.e. Base SAS with ODS, etc., will probably be released in late 1st Quarter or early 2nd Quarter 2008, which is earlier than the expected release date of 3rd Quarter 2008. Technical Solutions, e.g. Business Intelligence and Enterprise Guide, are likely to be released in early 3rd Quarter 2008, with the Analytic Solutions, e.g. Customer Intelligence, being released in the 4th Quarter 2008.

Other features scheduled to appear in SAS 9.2 include:

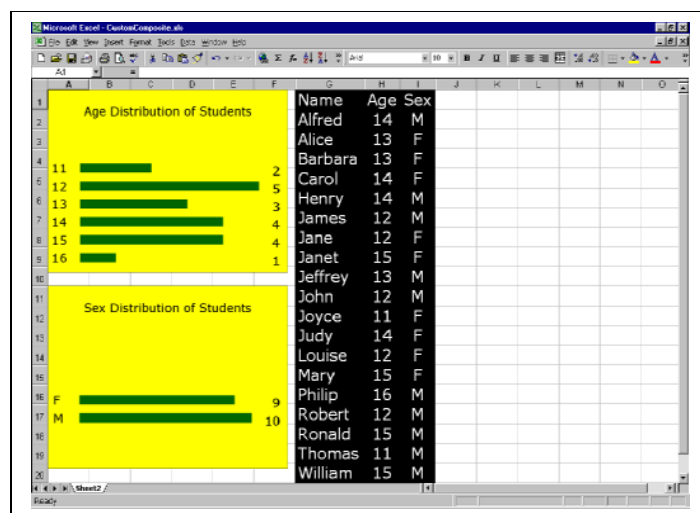
- Business Intelligence: Support for IE7 and Firefox.
- Microsoft Add-in 4.2: PROC REPORT-based wizard and support for ODS Statistical Graphics.
- Enterprise Guide 4.2: Conditional links.
- ODS: ODS Graph Editor and PROC SG PANEL, which will simplify the use of ODS Statistical Graphics.

Did You Know?

If you have a useful hint or tip, please send it to the Editor, and share it with the *VIEWS* membership.

SAS/GRAPH & Tabular SAS Output to Excel

[SAS 9] Having published a paper on SAS-with-Excel using Dynamic Data Exchange (DDE), I received inquiries about getting graphs into Excel. Since DDE enables your SAS program to send commands to Excel, as a substitute for manual mouse and keyboard work, that could be construed as "How can I create an Excel graph from SAS?". That is NOT the question I propose to answer. My preferred graphic tool is SAS/GRAPH. Below is a composite of two graphs and one reformatted table.



Here is the code used to create the worksheet above:

```
GOPTIONS RESET = ALL;
GOPTIONS DEVICE = gif CBACK = CXFFFF00 BORDER;
GOPTIONS HTEXT = 8 PCT FTEXT = 'Verdana';
GOPTIONS GSFMODE = REPLACE GSFNAME = anyname;

FOOTNOTE1 ANGLE = +90 FONT = NONE
           HEIGHT = 1 ' ';
PATTERN1 V = SOLID COLOR = CX006600;
AXIS1 LABEL = NONE MAJOR = NONE MINOR = NONE
STYLE = 0;
AXIS2 LABEL = NONE MAJOR = NONE MINOR = NONE
STYLE = 0 VALUE = NONE
OFFSET = (5 PCT, 5 PCT);
```

```

PROC GCHART DATA = sashelp.class;
  FILENAME anyname "C:\VIEWS\image1.gif";
  TITLE1 ' ' JUSTIFY = CENTER FONT = 'Verdana'
    HEIGHT = 8 PCT
    "Age Distribution of Students";
  HBAR Age / DISCRETE FREQ FREQ LABEL = ' '
    MAXIS = AXIS1 RAXIS = AXIS2
    WIDTH = 2.25 SPACE = 2.25;
RUN;

  FILENAME anyname "C:\VIEWS\image2.gif";
  TITLE1 ' ' JUSTIFY = CENTER FONT = 'Verdana'
    HEIGHT = 8 PCT
    "Sex Distribution of Students";
  FOOTNOTE2 ANGLE = -90 FONT = NONE
    HEIGHT = 1 ' ' ;
  HBAR Sex / DISCRETE FREQ FREQ LABEL = ' '
    MAXIS = AXIS1 RAXIS = AXIS2
    WIDTH = 2.25 SPACE = 2.25;
RUN;
QUIT;

OPTIONS NOXWAIT NOXSYNC;

* For your version of the Microsoft Office
  suite, you might need to use a path different
  from that below. *;
X "C:\Program Files\Microsoft Office\Office\Excel.exe";

* wait for Excel to start *;
DATA _NULL_;
  z = SLEEP(3);
RUN;

FILENAME ddecmds DDE "EXCEL|SYSTEM";

* insert table labels *;
FILENAME labels DDE "EXCEL|Sheet2!R1C7:R1C9";

DATA _NULL_;
  FILE labels;
  label1 = 'Name';
  label2 = 'Age';
  label3 = 'Sex';
  PUT label1 label2 label3;
RUN;

* load the data *;
FILENAME tbldata DDE "EXCEL|Sheet2!R2C7:R20C9";

DATA _NULL_;
  FILE tbldata;
  SET sashelp.class;
  PUT Name Age Sex;
RUN;

* format the table *;
DATA _NULL_;
  FILE ddecmds;
  PUT '[WORKBOOK.ACTIVATE("Sheet2")]';
  PUT '[SELECT("R1C7:R20C9")]';
  * 18 pt Verdana white text for the data: *;
  PUT '[FONT.PROPERTIES("Verdana",,
    18,,,,,2)]';
  * black background for the cells: *;
  PUT '[PATTERNS(1,,1,TRUE)]';
  * autofit all of the columns: *;
  PUT '[COLUMN.WIDTH(,,3)]';
  PUT '[SELECT("C8:C9")]';
  * centre the Age and Sex column content: *;
  PUT '[ALIGNMENT(3,FALSE,3,0)]';
RUN;

```

```

* insert & size the graphs *;
DATA _NULL_;
  FILE ddecmds;
  PUT '[WORKBOOK.ACTIVATE("Sheet2")]';
  PUT '[SELECT("R1C1")]';
  PUT '[INSERT.PICTURE(
    "C:\VIEWS\image1.gif")]';
  PUT '[FORMAT.SIZE(280,210)]';
  * default size is 600,450 *;
  PUT '[SELECT("R11C1")]';
  * you could select R18C1 if font resizing *;
  * had not increased the cell heights *;
  PUT '[INSERT.PICTURE(
    "C:\VIEWS\image2.gif")]';
  PUT '[FORMAT.SIZE(280,210)]';
  PUT '[SELECT("R1C1")]';
RUN;

* delete extra worksheets & save workbook *;
DATA _NULL_;
  FILE ddecmds;
  PUT '[ERROR(FALSE)]';
  PUT '[WORKBOOK.DELETE("Sheet1")]';
  PUT '[ERROR(FALSE)]';
  PUT '[WORKBOOK.DELETE("Sheet3")]';
  PUT '[ERROR(FALSE)]';
  PUT '[SAVE.AS(
    "C:\VIEWS\CustomComposite.xls")]';
  z = SLEEP(3);
  PUT '[ERROR(FALSE)]';
  PUT '[QUIT()]';
RUN;

```

The layout of results may differ slightly, depending on the Version of Excel. The screen image above was captured from Excel 2000. For more information about (graph-unrelated) DDE tools and techniques, as well as a URL for the Microsoft documentation and a few references to work by other authors, please see www2.sas.com/proceedings/sugi31/022-31.pdf.

LeRoy Bessler, Assurant Health

Efficient Access to DBMS Data

[SAS 9] Have you ever accessed Oracle (or other relational DBMS data) from an Enterprise Guide session and got much worse performance than you expected? Do you still have libname statements for relational data coded in autoexec.sas, or worse in individual SAS programs? By correct definition of SAS 9 metadata and options you can avoid both these issues, and simplify your management of data access.

For the performance issue, it's important to understand what SAS may be doing for you behind the scenes. SAS Enterprise Guide, in particular, aims to help the desktop user to work with any available data source, and to do that it will make the best attempt it can to retrieve the data for you. The first, and perhaps obvious, mistake when using relational DBMS data is to have local PC resources connecting directly to the database. This can happen if you open a locally-defined ODBC source, or if your Enterprise Guide execution options are set to use Local SAS.

Clearly the sensible approach is to use server-side processing of these data sources, but this is not without potential pitfalls if the libname does not directly use the SAS/ACCESS engine. This occurs when SAS Enterprise Guide requests the library allocation for you, because it will use the META engine to make the connection; this in turn will get data through the SAS/ACCESS engine using the layered Multi-Engine

Architecture. However the META engine does not activate implicit pass-through on any query and simply asks the DBMS to **send all the data to SAS!** The good news is that this can be avoided by getting the libname correctly defined by pre-allocation in the SAS servers, as explained below.

SAS 9 metadata definitions allow us to manage access to relational data by centrally defining schema and library metadata. In most environments a shared identity will be used, and SAS 9 allows this to be defined so that individual users do not need to enter the password for this account. To manage definitions this way, create the following metadata definitions using the SAS Management Console (SMC):

- Define a 'DBMS Users' Group in the metadata (for example 'Oracle Users') and add an outbound login to the Group that contains the shared userid and password. This should be associated with a specific authentication domain (e.g. 'OracleAuth', but do not use the DefaultAuth domain for this purpose!).
- Make each authorised user of DBMS data a member of this Group, and make the SAS General Servers group a member of this Group as well (this allows SAS servers acting on a user's behalf to access the data for you).
- Define the Schema metadata for your DBMS, entering the required properties for your data; then define the Library metadata to reference the schema. In the properties window, select the Advanced Options panel and ensure the check box 'Library is Pre-Assigned' is ticked. In the database server window, select as Default Login the outbound login defined in step 1. Finally, in the SAS Servers window make sure you explicitly select the SAS logical servers in which the definition should be available. It is stated to be 'optional' to do this, but I have found this is often not the case!
- After saving the Library metadata, re-open its properties, go to the Authorisations tab and add the Group defined in step 1; make sure this has the permissions 'Read Data' and 'Read Metadata' granted.
- To activate auto-allocation, open the properties in Server Manager for the SAS Workspace Server, click the Options tab and add the option METAUTOINIT to the Object Server Parameters. Do the same for the SAS Stored Process Server.
- Finally, restart your SAS Object Spawner on the server to have these changes take effect.

After this you should find that your RDBMS libname is automatically allocated using the SAS/ACCESS engine and the data will be available via all SAS clients that use the metadata server to connect, including SAS Enterprise Guide and the SAS Add-In for Microsoft Office. Any new users who need to access the data simply then need to be made members of the 'DBMS Users' Group.

Over time you may need to change the password on the shared DBMS account; this is simply done by changing the outbound Login on the Group metadata. Remember, to do this the SMC administrator needs permission to change the Login details, e.g. by ensuring they are also made a member of the 'DBMS Users' Group but with 'Write Metadata' privileges granted.

If you experience difficulties with pre-allocation, I recommend following the steps given in SAS Usage Note 17720, which I have found very effective in troubleshooting.

Steve Morton, Applied System Knowledge Ltd

Ask The Consultant

This part of VIEWS News is where you can get your technical questions answered. Send your questions to the Editor.

Useful Functions in SAS 9

Q: Are there any new character functions in SAS 9?

A: [SAS 9] **STRIP(string)**: Removes leading and trailing blanks in one go. This is the same as **TRIM(LEFT(string))** that you would use in SAS 8.

SCANQ(string, position): The **SCANQ()** function allows the returning of separated words within a string, like the **SCAN()** function, e.g. **SCAN('Amadeus Software', -1) = 'Software'**. The **SCANQ()** function, however, allows you to ignore separators enclosed in quotation marks.

```
DATA _NULL_;
  return = SCANQ(
    "VIEWS '- 'News '- 'Amadeus-Software Ltd",
    2, '- ');
  PUT return =;
RUN;
```

```
return=Software Ltd
```

SUBSTRN(): One of the annoying things with the **SUBSTR()** function is the note you get in the Log when the function returns a blank value.

```
68 DATA _NULL_;
69   return = SUBSTR("Amadeus", 10, 2);
70 RUN;
```

```
NOTE: Invalid second argument to function
      SUBSTR at line 69 column 32
return= _ERROR_=1 _N_=1
```

A way around this is to use the **SUBSTRN()** function, which allows the returning of missing values with no messages in the Log.

```
71 DATA _NULL_;
72   return2 = SUBSTRN("Amadeus", 10, 2);
73 RUN;
```

Amadeus Software Consultancy Team

Conditionals in Macros

Q: Is there an easy way to avoid missing semicolons in macros?

A: Here is a line of code from a macro definition. It is supposed to be issuing a UNIX command to delete a file. Spot the deliberate mistake!

```
%IF (&a = &b) %THEN %SYSEXEC rm oldfile.txt;
```

Yes, we have left off a semicolon. We needed to say:

```
%IF (&a = &b) %THEN %SYSEXEC rm oldfile.txt;;
```

Intuitive, isn't it? One semicolon is needed to terminate the **%IF...%THEN** construction, and then a second to terminate the **%SYSEXEC** command.

With only one semicolon, it is the %SYSEXEC command that remains without a semicolon, and so our next line of code is going to be interpreted as the names of more files to be deleted. Better hope it doesn't contain an asterisk anywhere!

Moral: always use %DO...%END, even if you're only generating one line (or less), e.g.

```
%IF (&a = &b)
  %THEN
    %DO;
      %SYSEXEC rm oldfile.txt;
    %END;
```

Incidentally, if &a and &b are numeric strings it would be better to write the test as:

```
%IF %SYSEVALF(&a = &b)
```

The macro processor will regard &a and &b as character strings, and so would, e.g. regard "3" as different from "3." and "4.7" as different from "4.700". Using an evaluation macro will prevent such potentially confusing results.

Amadeus Software Consultancy Team

Formats, Options, and Functions

This section is devoted to the description of useful, or unusual, SAS Formats, Options, and Functions.

[SAS 9] The **SIZEKw.d** and **SIZEKBw.d** SAS formats convert numeric values into kilobytes (as "~~~K" and "~~~KB", respectively), and the **SIZEKMw.d** SAS format converts them into kilobytes (as "~~~KB"), megabytes (as "~~~MB") or gigabytes (as "~~~GB"), as appropriate. There is also a related SAS informat **SIZEKMw.d** which can be used to input character values ending in "KB", "MB" or "GB". These formats and the informat are currently undocumented, so may not be suitable for production processes.

The **BUFSIZE=** system and data set options specifies the minimum number of bytes in a page in the data set, and is valid only for output data sets, that is, data sets that are created in a data step or by a SAS procedure. Once it is specified, the buffer size is a permanent attribute of the data set, and the specified buffer size is used whenever the data set is processed. Using the **BUFSIZE=** option can speed up execution time by reducing the number of times SAS has to read from or write to the storage medium. However, the improvement in execution time comes at the cost of increased memory consumption. If the **BUFSIZE=** data set option is not specified, then the **BUFSIZE=** system option value is used. If both are specified in the same SAS session, the value specified in the **BUFSIZE=** data set option overrides the **BUFSIZE=** system option value.

[SAS 8] The **%SUBSTR()** macro function can be used to extract sub-strings into macro variables. The macro functions require in the same arguments as the related Data Step functions. The **%QSUBSTR()** macro function is similar to **%SUBSTR()**, but returns a quoted value.

News

First-Timer Highlights of the SAS Forum UK

One of the most striking characteristics of this conference was the diversity of the presentations. This is a truly cross industry conference.

A number of presentations were given by SAS, the focus of several of which was on new features and developments around SAS technologies (e.g. The Future of Business Intelligence in Practice). In others, and by dipping into their interactions with their many customers, SAS presented their view of industry specific issues, (e.g. Key Issues within the Communications Sector).

The rest of the presentations were given by SAS partners. Although some of them were tactical and technology-centric, most of them were strategic and solutions focused. Interestingly, SAS partners could be split into SAS Consultancies and SAS Clients. SAS consultancies presented various solutions that they offer, or have implemented for their clients (e.g. "Unlocking the Unknown: An Introduction to NetReveal" from Detica). Whereas SAS clients presented how they deploy SAS technologies and solutions to address their business needs (e.g. "Event and Trigger Marketing: The SAS Solution" by Orange). A detailed agenda can be reviewed on the SAS UK web site: www.sas.com/uk/events/sasforum.

The Halloween-themed networking party in the evening of the first day, was a very pleasant surprise. I felt very lucky for this, but only until later I found out that the networking party is a standard item of the agenda every year! It was the first time I had attended the SAS Forum UK, and evidently it was worth it. A great two day opportunity to network, exchange and share ideas with other SAS professionals, and last, but not least, have fun!

Methodios Typou, AEOLUS Consultancy

PhUSE News

Lisbon 2007 - PhUSE Conference report

Approximately 300 delegates, presenters and exhibitors, representing statistical programming in the pharmaceutical industry, gathered in the Portuguese capital of Lisbon from 8-10 October, and enjoyed a very successful 3-day conference covering a wide range of relevant topics.

This was the third such conference, following Heidelberg in 2005, and Dublin last year. As ever, there was a healthy mix of companies, nationalities (including delegates from US, India and Australia) and experience, with plenty of opportunities to network with peers in other organizations. New for this year was a management stream, specifically for those who have moved into the supervision of programming groups, and also a University Day, where students from the University of Lisbon were invited to attend sessions relevant to them and learn more about our industry. Due to the number and quality of papers received it was also possible for the first time to run four streams concurrently.

Keynote speaker for this year was Dr Armando Oliva of the FDA's Office of Critical Path Programs, who gave an interesting insight into his expectations for the future of bioinformatics at the FDA, and also how the Agency handles submission data currently.

The PhUSE committee also used the conference to launch the PhUSE Society. PhUSE are looking to branch out in providing additional services to programmers in the pharmaceutical industry, with plans for a bi-annual pharmaceutical programming journal, 1-day training events, e-learning courses and quarterly newsletters. Of course, PhUSE will also continue to run the annual conference. More details on all of this will be available on the PhUSE website, www.phuse.eu, in the coming weeks.

Locations for next year's conference are still under discussion, but it looks likely for the first time we'll be somewhere in the UK.

We'll look forward to seeing then.

Kevin Kilminster, PhUSE Committee

In Brief

- Back issues of *VIEWS News* are available from the *VIEWS* web site.
- Phil Mason now has a SAS tips newsletter, which can be requested by going to www.woodstreet.org.uk and then clicking on Tips. Previous tips can also be found on the web site.
- More SAS hints and tips can be found on the SAS FAQ pages www.hollandnumerics.com/sasfaq and also on the Amadeus Software Tips pages at www.amadeus.co.uk/TipsList.aspx?ST=1.
- Looking for a SAS-related job? Try the following web pages: www.hollandnumerics.com/careers and www.amadeus.co.uk/Careers.aspx.
- Looking for a SAS-related present, then how about a book from SAS Press? Phil Holland's new book, "*Saving Time and Money Using SAS*", can be bought using links at www.hollandnumerics.com. You can find other SAS-related books at the SAS Press web pages: support.sas.com/publishing.

Diary

Are you organising an event that would be of interest to the VIEWS readership? Let us know as we are interested in all non-profit making events related to SAS.

November 2007

29 SAS9 Business Intelligence-Delivered, Oxfordshire

See the Amadeus Software web site www.amadeus.co.uk for further details.

December 2007

4 How-To Seminar for SAS Programmers, Oxfordshire

See the Amadeus Software web site www.amadeus.co.uk for further details.

February 2008

27 How-To Seminar for SAS Programmers, Oxfordshire

See the Amadeus Software web site www.amadeus.co.uk for further details.

March 2008

16-19 SAS Global Forum, San Antonio, Texas, USA

The SAS Global Forum (SGF, formerly called SUGI) is held each year and focuses on the technical aspects of SAS software. See www.sasglobalforum.org for more details.

27 SAS9 Business Intelligence-Delivered, Oxfordshire

See the Amadeus Software web site www.amadeus.co.uk for further details.

April 2008

8 How-To Seminar for SAS Programmers, Oxfordshire

See the Amadeus Software web site www.amadeus.co.uk for further details.

June 2008

18 How-To Seminar for SAS Programmers, Oxfordshire

See the Amadeus Software web site www.amadeus.co.uk for further details.

July 2008

17 SAS9 Business Intelligence-Delivered, Oxfordshire

See the Amadeus Software web site www.amadeus.co.uk for further details.

September 2008

11 How-To Seminar for SAS Programmers, Oxfordshire

See the Amadeus Software web site www.amadeus.co.uk for further details.

October 2008

6-8 PhUSE Conference, tba

The Pharmaceutical Users Software Exchange (PhUSE) conference is the premier programming event for the pharmaceutical industry in Europe. See www.phuse.eu for more details.

22 SAS9 Business Intelligence-Delivered, Oxfordshire

See the Amadeus Software web site www.amadeus.co.uk for further details.

November 2008

tba SAS Forum UK, tba

The SAS Forum UK is held each year and focuses on the latest SAS software releases. For more details please go to www.sas.com/uk/events/sasforum.

20 How-To Seminar for SAS Programmers, Oxfordshire

See the Amadeus Software web site www.amadeus.co.uk for further details.

December 2008

11 SAS9 Business Intelligence-Delivered, Oxfordshire

See the Amadeus Software web site www.amadeus.co.uk for further details.

All VIEWS event information will be posted and/or emailed to registered members of VIEWS, and will include an event application form. Please send your queries about any VIEWS events to event@views-uk.org, and don't forget to look at the web site for the latest news.

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<u>IEWS</u>	
Web Site	Web: www.views-uk.org
Chairman	Email: chair@views-uk.org
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