

VIEWS

NEWS

Issue 5 Winter 1999

News, Hints, Tips, and information for UK SAS Users

Welcome to the first birthday issue of *VIEWS News*. To celebrate, we've added four extra pages of hints, tips, and news. *VIEWS* strives to serve the whole UK SAS community, so the articles in this issue range from data steps to SCL, from statistics to application development, and from PCs to mainframes.

As *VIEWS News* moves into its second year, so does our support from ASA recruitment and contract consultants. *VIEWS* is an independent user group and relies upon the generosity of its sponsors and supporters for its events and activities. ASA are the sole official sponsors of this and future editions of *VIEWS News*. ASA, who have a specialist division for SAS consultants, are keen supporters of the user group and we are very pleased that they should wish to demonstrate their support in this way.

The big news this quarter is the merger between *VIEWS* and *IBIS*. This must surely be good news for all users of SAS® software in the UK. See News for further details of this exciting development.

In total there were 84 delegates for the third *VIEWS* subgroup ("Applications Development Now and in the Future"). With a late rush in demand, we were able to arrange and fill a further 23 additional places. Despite freezing fog, the meeting went exactly to plan. Actually, it exceeded the plans because we had a really great bunch of SAS users who lapped up the presentations made by Don Stanley and Rob Owen. Read more in Don's article in this issue.

It's now February. Christmas is but a long-forgotten blur. However, I hope your *VIEWS* calendar still holds pride of place on your desk.

Andrew Ratcliffe (Editor)

The Consultant

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

Euro Supporter

Q: We all know that SAS® software comfortably handles Y2K issues, but I've not heard anything about the euro. Are there any issues I should consider?

A: In view of the fact that SAS® software has never provided support for any currency other than the Dollar, it comes as a surprise to find that support for the euro has been developed. In fact, Cary appears to have provided a whole raft of euro facilities - mostly formats, but a function too.



You will find full details at the SAS Institute web site at www.sas.com/software/distribution/readme/europack_beta.612/europackv6.html. There's much too much information to repeat it all here. In summary, SAS Institute is making the Euro Package available for V6.12 users - all features will be included in V7 automatically.

The Euro Pack includes informats and formats for reading and writing values prefixed with the euro symbol, formats for converting between the euro and 25 European currencies, and a function for converting between the same currencies.

Finally, for your information, the official UK government web site for the euro is at www.euro.gov.uk. Amongst many other things, this site contains information regarding support from the major software manufacturers.

Peter Crawford & Andrew Ratcliffe

Jack-Knife Your Analyses

Q: Although many everyday statistical problems are reasonably easily solved using a standard method of inference for which an appropriate SAS procedure is readily available, from time to time other estimation problems crop up for which there isn't a straightforward statistical procedure which will give the required results. Examples include calculating confidence intervals for some types of index numbers in ecology and economics, and for estimates of some parameters in complex mathematical models. Do you have any tips for these circumstances?

A: Sometimes this is because there isn't a well-defined analytical procedure in the statistical literature, or, sometimes, a procedure may exist but may not be directly available, and may be computationally difficult to specify. In such circumstances, it can be worth investigating the possibility of using "jack-knife" or "bootstrap" methods, which are general techniques for deriving point and interval estimates statistics.

The SAS Institute web site provides access to macros called %JACK, %BOOT, and %BOOTCI, which make the use of these techniques relatively straightforward.

Essentially, these techniques work by generating a large number of sub-samples from an existing data set, and using the individual estimates derived from each sub-sample to form point and/or interval estimates of the statistic of interest. Their applicability is quite broad, although they certainly do not provide a guaranteed solution for all types of statistic - for example they can be unreliable for order statistics. The text at the web site contains advice and some references which provide guidance on when the techniques may be applicable.

To use the macros, the SAS user must write a macro which takes an input data set, and performs whatever calculations are necessary to derive the required statistics from that data set. The SAS Institute-supplied macros then call the user-written macro repeatedly, using the output from each call to build up the required point and/or interval estimates of the statistics of interest. This is usually a quick and easy process to code, although actually running the re-sampling macros can, of course, take a considerable time, especially if the user-supplied macro is performing complex calculations.

Dr. Les Huson

IBIS And VIEWS Tie The Knot?

The UK's two independent user groups are discussing a merger under the *VIEWS* banner. In 1999, the *VIEWS* conference will feature a business stream in addition to the traditional technical stream. The proposal is that members of the *IBIS* committee will form a business sub-committee under the *VIEWS* umbrella and they will organise the business stream. Plus, they will plan for a number of business-focused sub-groups.

VIEWS chairman Phil Mason said "VIEWS previously concentrated on the needs of the technical SAS user. With a merger of *VIEWS* and *IBIS* we will be able to provide a new business stream for the user group. This will enable us to more fully support the needs of all SAS users."

Keith Chandler, chairman of UK *IBIS* said "UK *IBIS* and *VIEWS* are currently in discussion about a merger of the two SAS user groups and are optimistic that a mutually acceptable arrangement can be worked out."

No Class

Q: I sometimes use SAS/STAT® procedures that don't support the CLASS statement, such as REG or LIFEREG (with output data sets), but I have data that I would like to be treated as if it were a CLASS variable. I usually create many dummy (indicator) variables taking values 0 or 1 and include them all in my MODEL statement but it's a tedious task creating meaningfully named dummy variables. Do you have any tips for creating meaningful dummy variables in a generic way?

A: This macro (shown in the box-out) will allow you to specify the first few characters of your new dummy variables (the prefix) and the macro appends the value of your CLASS variable to create meaningful names:

The macro can be invoked with the data set shown alongside, named HEIGHTS, to create dummy variables GRP1 to GRP4 and GRP as follows:

```
%makedumm(indata=heights,var=grp,outdata=heights2);
```

It creates the new data set, called HEIGHTS2, shown below.

SUBJ	GRP	HGHT	GRP2	GRP4	GRP1	GRP3
1	2	169	1	0	0	0
2	4	160	0	1	0	0
3	1	162	0	0	1	0
4	2	155	1	0	0	0
5	3	171	0	0	0	1
6	1	157	0	0	1	0
.	.	.	.	.	.	.
.	.	.	.	.	.	.

Note that the macro can be invoked repeatedly to create multiple groupings of dummy variables, using an output data set from one invocation as an input data set to the next invocation.

The prefix option should be used if the resulting dummy variables would be invalid SAS variable names i.e. more than 8 characters in version 6. The macro supports numeric CLASS-type variables but could be adapted to use character variables by changing the PROC SQL code. If you would prefer the dummy variables to appear in the Program Data Vector (PDV) in sequential order (rather than input data order) then the array definition can be moved prior to the SET statement in the final data step.

Nelson Kinnarsley

Counting Words in a String

Q: Is there a simple way to count the number of elements in a text field as I use this frequently? For example, the value for the following string would be 5: "ONE TWO THREE FOUR FIVE".

A: Try this single statement:

```
NUM = (TEXT NE ' ') + /* 1 */
      LENGTH(LEFT(COMPBL(TEXT))) - /* 2 */
      LENGTH(COMPRESS(TEXT)); /* 3 */
```

Part 1 ensures the number of words is 0 if the text is empty. Part 2 counts the length after removing multiple spaces. Part 3 counts the length without spaces. The result is the number of times there's a space between words plus one. This equals the number of words.

An extension could be to allow periods, commas, colons, semi-colons, and quotes. This is simply achieved by using

```
TRANSLATE(TEXT, ' ', '.,:;'"')
```

in place of the raw TEXT variable above.

The SPS SAS Team

Did You Know?

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

SAS 6.12 & Windows 98 Don't Mix

Some host widgets are missing when using SAS release 6.12 on Microsoft Windows 98. These include things such as radio boxes and check boxes, and are missing when running AF applications or building applications on Microsoft Windows 98.

To circumvent this problem, include the undocumented \$noct13d option in your CONFIG.SAS file or in the SAS command you use to invoke the SAS System. For example:

```
c:\sas\sas.exe -$noct13d
```

For more information see SAS NOTE-V6-AF-F124.

Phil Mason

Wake Up!!

If you ever want your SAS session to 'wake up' at a specific time or pause for a period then try the following within a data _null_ step and before the

No Class: Simulating CLASS Variables

```
%MACRO makedumm(indata=,var=,prefix=,where=,outdata=);

  /* indata = input data set (temporary or permanent);
  /* var = Variable (only 1) to convert to dummy
  /* (indicator) variable;
  /* prefix = (optional) Prefix string to create dummy
  /* variable. If concatenation &VAR with its
  /* values >8 chars then macro fails unless
  /* PREFIX is specified;
  /* where = allows WHERE statement e.g. WHERE=treat in
  /* (1,2);
  /* outdata = output data set, which must be specified,
  /* where original plus dummy variables stored.
  /* Will be sorted BY _all_ i.e. order of
  /* variables in PDV of input data set;

  %IF %LENGTH(&prefix) EQ 0 %THEN %LET prefix=&var;

  /* Create an indicator variable for the transpose;
  DATA &outdata;
    SET &indata
      %IF %LENGTH(&where) GT 0 %THEN (WHERE=(&where));
    _indic_=1;
  RUN;

  /* Determine new variable names for ARRAY statement later;
  PROC SQL NOPRINT;
    SELECT "&prefix"||LEFT(PUT(dvar,8.))
      INTO :vnames separated by ' '
      FROM (SELECT distinct &var as dvar FROM &outdata);
  QUIT;

  /* BY statement required in Transpose and quicker to sort
  /* entire data set and DROP _INDIC_ later;
  PROC SORT DATA=&outdata;
    BY _all_;
  RUN;

  PROC TRANSPOSE DATA=&outdata PREFIX=&prefix
    OUT=&outdata(DROP=_indic_ _NAME_);
    VAR _indic_;
    ID &var;
    BY _all_;
  RUN;

  /* Set transposed missing values to zero;
  DATA &outdata(DROP=_i);
    SET &outdata;
    ARRAY _x[*] &vnames;
    DO _i=LBOUND(_x) TO HBOUND(_x);
      IF _x[_i] EQ . THEN _x[_i]=0;
    END;
  RUN;

%MEND makedumm;
```

code that you want to delay. The result, if successful, will be a pop-up window saying that The SAS System will wake up at a specific time.

The general syntax is: WAKEUP(x), where x is a specified period or numeric variable.

If you specify an invalid argument in the wakeup() function, SAS will ignore the step and process your statements as normal.

An example of the wakeup() function follows. It will wake up at 3am on 30 October 1998:

```
data _null_;
  slept = wakeup( '30OCT98:03:00:00'dt);
run;
```

```
data more;
  ...more sas statements...
run;
```

This next example wakes up at 3AM after the next occurring midnight:

```
slept=wakeup('03:00:00't);
```

And this example will sleep for 60 seconds after the next occurring midnight:

```
slept=wakeup(60);
```

If you want to cancel the WAKEUP function then you can use Ctrl-Break as normal.

Finally, if you want to pause for a specific period, the SLEEP function will be very useful as follows. It delays the SAS program until a number of seconds has elapsed. The following example delays SAS for 1 hour (60*60):

```
data _null_;
  slept=sleep(60*60);
run;
```

The SPS SAS Team

Speaker's Notes

Yawn, early morning wakeup from a three year old turning four, reads email, letter from Phil Mason titled Invitation, reads 'come to London... we'll pay... present a seminar on AF'... rereads... three times... replies "Yes"... goes to work ... can I get leave in Nov/Dec... 'Yes'... get called various names by colleagues... wonders why leave was so easy to get... goes home... Susann has arranged side trip to Italy... Ash wants to go to Hong Kong... back boy... realises have 8 weeks to write seminars... Views start promoting event... book tickets... compromise on Singapore stopover rather than Hong Kong... have to fly Alitalia Heathrow to Rome... suffer mild anxiety attack lasting next 10 weeks... start writing seminars... BBU tell me book may be ready for Seminar and they are pushing for that... decide to give away software on diskette at seminar... asks Phil about logistics... "no prob... someone at SAS will be happy to copy them"... last visit to Obstretician (not me)... you're doing what?... come back the day before you leave then so I can check you again (5 months pregnant)... writing seminars in evening until midnight... tired... Ash wants to go via Rarotonga... calamity - contract gets terminated... wonders about ease of leave again... seminars get easier to write now extra 9 hours a day available... written and sent to SAS by end Nov... get tickets... yes it really does say Alitalia... pack... fly to Christchurch... business class upgrades courtesy of frequent flyer to Singapore... Ash learns about attendant call button... survives flight, exhausted attendant not seen after 7 hours... two nights in sweatshop... go to zoo, Ash wants a pet snake... 'til he is petting one at a show, turns around, gets bumped by a bag, decides snake bit him, howls miserably for next half hour... back to airport... flying with Singapore Girl to Heathrow... very narrow inter seat space... 14 hours in a tin box with pretty pictures on the outside where we can't admire them... finally arrive... zoom thru customs... go to Oxford... stay in brand new apartments just finished this month... sleep (except 4 year old who has chosen to determine that sleep is no longer necessary)... explore Oxford thru the mist and cold... dark at 16:30... why?... wake up... shop in Oxford... eat... talk to Phil, who is driving me to the seminar next day...



Speakers - Rob Owen and Don Stanley

"Ah yes, I'm stuck in Belgium, can you get a cab?"... talk to Bruce Bovill at SAS... sleep, cab awaits next morning... drive to Marlow... driver has no idea where Wittington House is... gets on Henley Road eventually and drives until I see the familiar logo... out of cab... suffer instant freezing syndrome in fingers... wow, great campus... get to seminar room... test apps... find one doesn't work... quick fix... make memo to try and determine why time() function returns a different number of digits in England to New Zealand... Bruce shows me carving of Hitler in wall carved during war when this was a British Intelligence building... very good seminar audience for first seminar... seemed to enjoy the different apps I had and the hints I presented... great setup in room, two extra large screens halfway down the room meant everyone enjoyed the seminar... lunch, catch up with my friend Trevor... present second seminar... great audience for both, really appreciative and knowledgeable and interested... 84 people turned up... biggest subgroup they have had... present on tips... work areas and sub-classing via a Documentation utility... a data set handling utility... and organisational charts... photos taken with Rob Owen who is also presenting on V7... get lots of questions from people... cool to meet some SAS-L faces... great to meet Bruce who travels 50 miles the other side of London then the London-Marlow bit twice daily to get to work... virtually unheard of in NZ but evidently common in England... seminar done... people seem happy... back to Oxford... spend next day in London... Dinosaur museum for Ash... Harrods for Susann... McDonalds for Don... last day in Birmingham doing family

research... next day to Rome... we laugh at wings near back of funny looking plane mock up with a long skinny fuselage... go to gate... stop laughing... manage to board plane without sedation... land at Rome... pilot has shares in tyre company (must have, its the only way we can explain the landing technique)... 6 days in Rome, great time with Susann's brother (an architect in Rome) and his family... to airport... bags checked to Singapore, yah... back to Heathrow on cigar again... negotiate terminal 2 to terminal 3 transfer... phew... 3 hours at Heathrow... Harrods and Garfunkles (great burgers) benefit... on Singapore Air again for 12 hours 23 minutes... Ash sleeps 4 hours... arrival Singapore looking forward to Hotel and sleep... why has everyone else got luggage and left... man with badges approaches... have you lost your luggage... well no, actually someone else has... go to lost and found... fill out form, given \$360 for new clothes for the night and next day... to airport hotel... check in and race to city... arrive just before closing... buy clothes at Marks and Spencers and Mothercare... eat yummy Kway Yeow and other noodles... back to hotel... Ash goes to sleep at 0600 for 1 hour... back to airport... yah upgrades... sleep for a while on flight... visit pilot with Ash for an hour and see little eyes explore every single button and control... watch little fingers closely... back to sleep... Susann wakes up... Ash is gone... figures must be on plane... found with stewardess eating breakfast... he didn't want to sleep, got bored and went for a walk... landed Auckland at 23:59... wet and stormy... got to hotel and slept till 05:00... breakfast... walks... back to airport... fly to Wellington... home at 13:00... light at 16:30...still light at 20:00 :-)... bags arrive at 19:00 with notes all over saying RUSH.

Overall a great trip. I felt privileged to receive the invite from Views. I was rapt at the reception to the seminars. A big thanks to Phil and Bruce who liased with me and made sure things went smoothly. Things did, and we all had a great time. Thanks again.

Don Stanley

[Ed: The next issue of *VIEWS* News will have an article by Don entitled "Using Hotspots and Cursor Tracking"]

In The Beginning

Many people are aware of using a colon after the equals operator to restrict comparisons to the beginning of a SAS variable. For example:

```
if test= 'SYMP' then ...;
```

The statement above will be true when TEST takes values "SYMPTOM", "SYMPTOM 1", etc. But did you also know that it can be used with other SAS operators like IN? For example:

```
if test in: ('VIEW','NEW','I','FREE') then ...;
```

The statement above would be true when TEST takes values of "VIEWS", "NEWSLETTER", "IS", and "FREE".

Nelson Kinnersley

Counting Observations

Ever wanted to determine the number of observations in a data set but your pet method didn't work in the circumstances? One of these might. In each case, the macro variable NUMOBS holds the answer.

Counting the observations into a macro variable works for both SAS data

files and data views:

```
proc sql noprint;
  select count(*) into :numobs from sashelp.retail;
quit;
%put Number of Observations is %left(&numobs);
```

Reading the data set header information and assigning the number of observations to num_obs at compile time removes the need to execute the SET statement but cannot be done with a data view:

```
data _null_;
  if 0=1 then set sashelp.retail nobs=num_obs;
  call symput('NUMOBS', put(num_obs,best.));
stop;
run;
```

You could use the SQL data set view based on the SQL dictionary tables...

```
data _null_;
  set sashelp.vtable
    (where=(libname="SASHELP" and memname="RETAIL"));
  call symput('NUMOBS', put(nobs,best.));
run;
```

But using the SQL dictionary tables directly seems to be much more efficient:

```
proc sql noprint;
  select nobs into :numobs
  from dictionary.tables
  where libname="SASHELP"
  and memname="RETAIL";
quit;
```

Slickest(?) of all, if you are running 6.12, is the new %SYSFUNC macro function which can operate on most DATA step functions:

```
%let dsid=%sysfunc(open(sashelp.retail,i));
%let numobs=%sysfunc(attrn(&dsid, nobs));
%let dsid=%sysfunc(close(&dsid));
```

The Base 3 Consultancy Team

Making Your Own Macro Language Functions

It is easy to use the macro language to create new functions which can be used in macro logic or within a data step. The key concept to note is that free text appearing in a macro will be resolved as-is. This is illustrated in the following example:

```
132 %macro test ;
133 1
134 %mend test ;
135
136 %let a=%test;
137 %put Calling the macro TEST resolves to %test;
    Calling the macro TEST resolves to 1
```

This enables us to create values to be resolved by using function calls, macro arithmetic, macro logic and so on. For example:

```
144 %macro time ;
145   %let time=%sysfunc(time(),time.) ;
146   &time
147 %mend time ;
148
149 %put time=%time ;
    time=12:11:01
```

Phil Mason

Implementing =: In Macro Language

The macro language provides a range of operators for use with macro logic. Most of the operators available in the data step can also be used in macro language but =: cannot. However, the following SAS LOG demonstrates how you can use a macro to accomplish the same function.

```
32 %macro begins(a,b) ;
33   %if %substr(&a,1,%length(&b))=&b %then
34     %put yes ;
35   %else
36     %put no ;
37   %mend begins ;
38   %begins(abcde,ac)
39   %begins(abcde,abc)
40   %begins(abcde,abc)
41   %put yes ;
```

This can then be converted into a "macro function" as follows:

```
74 * Define macro function ;
75 %macro eq(a,b) ;
76   %if %substr(&a,1,%length(&b))=&b %then
77     1 ;
78   %else
79     0 ;
80   %mend eq ;
81
82 %macro test(name) ;
83   %if %eq(&name,P) %then
84     %put &name matched. ;
85   %else
86     %put &name was not matched. ;
87   %mend test ;
88
89 %test(Phil)
    Phil matched.
90 %test(Andy)
    Andy was not matched.
```

Phil Mason

How To Access External Data Through ODBC In Your SAS Programs

ODBC (Open Database Connectivity) is the standard way of accessing data stored in different DBMS in the Microsoft Windows environment.

The SAS System supports ODBC both to access data stored in SAS from other applications and to access external data from your SAS programs through ODBC drivers installed in your Windows system. This article will describe how to access external data from within our SAS programs.

To download and read more about the latest version of SAS ODBC driver (Nov 1998), and see what it's capable of (SAS Version 7 support, etc.), enter the SAS Institute web site and select Demos/Downloads and then ODBC Drivers.

SAS program with access to multiple ODBC Data Sources

```
proc sql;

  /* Connect to ODBC Data Sources to be used. */

  connect to odbc as msaccess (dsn="MS Access");
  connect to odbc as msexcel (dsn="MS Excel");
  connect to odbc as notes (dsn="Lotus Notes");
  connect to odbc as oracle (dsn="Oracle" uid=jje
                             pwd=xxxxxx);

  /* Create a SAS Data Set based on an Excel Sheet. */

  create table sasuser.sales as
  select * from connection to msexcel (
    select *
    from "sales$"); /* Here sales is the name of a sheet
                     within an Excel Workbook selected
                     in the ODBC data Source. The $ is
                     essential to make it work. */

  /* Updating MS Access, create table and add rows. */

  execute (create table demo (id numeric,
                             name text(40),
                             age numeric)) by msaccess;

  execute (insert into demo values(1, 'James Park', 44))
  by msaccess;
  execute (insert into demo values(2, 'Lisa Jones', 33))
  by msaccess;

  /* Deleting an Oracle table. */

  execute (drop table demo) by oracle;

  /* Access Lotus Notes data through temporary SAS View. */

  create view _people as
  select * from connection to notes (
    select *
    from "People");

  disconnect from oracle;
  disconnect from msaccess;
  disconnect from msexcel;
  disconnect from notes;
quit;
```

How do you access external data through ODBC?

The SAS system supports access to ODBC Data Sources through the SQL Pass-Through facility. You can connect to one or more ODBC Data Sources at a time and run queries to all of them.

This is how you connect to an ODBC Data Source,

```
connect to odbc as your_connection_name (dsn="data_source_name"
additional parameters);
```

When you don't need a Data Source anymore you can disconnect from it,

```
disconnect from your_connection_name;
```

your_connection_name should be a valid SAS name and can therefore only contain 8 characters.

To send a query to an ODBC Data Source you should use the following syntax

```
select * from connection to your_connection_name (select * from
odbc_table);
```

To execute commands in the remote ODBC Data Source environment use

```
execute (what_you_should_execute) by your_connection_name;
```

Almost all vendors today support access to their data through ODBC. The box-out (above) shows some examples of different data formats that you can access using SAS and its support for ODBC or the other way around: SAS, ORACLE, Microsoft SQL Server, Microsoft Access, Microsoft Excel, Paradox, dBase, Microsoft FoxPro, Lotus Notes, Text Files.

Niklas Data Consultancy Team

Into An SLIST

Ever wanted to find out all about an SLIST entry within a SAS/AF® catalog?

Enter "build afcatalogname" on the command line, then alongside the appropriate SLIST entry enter * to get the contents of the SLIST written to the Message window. An example is shown below.



```
SLIST(
  _RUN_='Enable' {P}
  _CLEAR_FILEREF_='Disable' {P}
  _EDIT_='Edit' {P}
)[3]
```

OCS SAS Consultancy Team

Changing DATE. or DATE7. Formats to DATE9.

Many SAS data sets are created that contain SAS date variables. However these variables have more often than not, been formatted with a DATE. or DATE7. format. This can become a particular problem if you have date values for 31 December 9999, i.e. 9-9-9999. This date is very often used by RDBMSs to represent null dates or is a default for date column types. The SAS System knows that this is a date in the year 9999, but if a DATE7. format is used to display this date it will display as 31DEC99. How is the user to know what century this represents!

This macro shown in the box-out (right) checks the last created data set, or the data set passed as parameter, and uses PROC DATASETS to modify DATE. or DATE7. formats to DATE9.

This could easily be modified to check all libraries currently available to the SAS session.

Customer Support, SAS Institute UK

Combining Data From Different DBMSs

Scenario: An Oracle table contains company information for all the companies in a user's country. A DB2 table contains sales information for all companies in Europe. The user needs to extract sales data for their country only. This means that based on the companies in ORACLE, the user needs to subset the DB2 data.

There are a number of ways to do this but this method shows a good use for formats.

Use the Oracle table to generate a format. Then apply the format to the DB2 table. Note, this implies that the DB2 table is transferred to the SAS System, and then processed (subsetting) in the SAS System. Despite this, this solution does provide good performance results in comparison with other methods.

```
proc sql;
  create table orafmt as
  select company as start,
         'OK' as label,
         '$comp' as fmtname
  from WAREHSE.ORA
  ;
quit;

proc format cntlin=orafmt;
run;

proc sql;
  create table db2data as
  select * from WAREHSE.DB2
  where put(company,$comp.) = 'OK';
quit;
```

Customer Support, SAS Institute UK

OO Drawing

Drawing diagrams to describe your OO (object-oriented) application needs something more than simple flow-charts. The UML (Unified Modelling Language) is the definitive notation for describing object-oriented applications. This article is a review of a selection of software packages that help to draw UML diagrams. In many cases they also build an underlying model to help you maintain consistency amongst your drawings.

The UML is just a notation - a series of symbols and diagrams. The set of symbols (and associated semantics) that comprises the UML is designed to optimise the information conveyed by any diagram that you should draw. The UML defines seven types of diagrams: use case, class, package, sequence, collaboration, state, activity, and deployment. The scope of the diagrams runs all of the way from high-level analysis down to individual class's methods and attributes (instance variables) and the ways in which they interact.

The OMG (Object Management Group) are the independent standards group for all things object-oriented. They have accepted the UML as the standard modelling language. Thus, diagrams drawn using the UML notation will be more easily understood by your peers than those drawn using any other notation or style.

Whilst this article is about drawing packages, I should stress that old-fashioned pencil and paper can be just as effective. The main purpose of drawing these diagrams is to communicate your thoughts and ideas to others. In many cases, paper and pencil will do the job more than

```
%MACRO cdate9(DATA) ;
  OPTIONS NONOTES ;

%*****
*** Call using %cdate9() that has an optional parameter of ***
*** the SAS Data Set to check. Last created Data Set is ***
*** assumed. ***
%***** ;

%LOCAL lib mem memtype vars _userlib ;
%LET data = %UPCASE(&data) ;

%IF %SYSFUNC(EXIST(&data,DATA)) = 0 AND
%SYSFUNC(EXIST(&data,VIEW)) = 0 %THEN
%DO ;
  %PUT &data does not exist ;
  %GOTO LEND ;
%END ;

%* Get libref for single level data set names by checking
  USER= system option ;
PROC SQL NOPRINT ;
  SELECT setting INTO:_userlib
  FROM dictionary.options
  WHERE optname = "USER" ;
QUIT ;
%IF &_userlib NE %THEN
  %LET _userlib = &_userlib ;
%ELSE
  %LET _userlib = WORK ;

%* Make 2-level named data set if only one level specified ;
%IF &data EQ %THEN
  %LET data = &syslast ;
%ELSE
  %IF %INDEX(&data,.) = 0 %THEN
    %LET data = &_userlib..&data ;
  %LET lib = %UPCASE(%SCAN(&data,1)) ;
  %LET mem = %UPCASE(%SCAN(&data,2)) ;

%* Obtain SAS File Type and list of variables that have a
  DATE./DATE7. format ;
PROC SQL NOPRINT ;
  SELECT memtype,name INTO :memtype, :vars
  SEPERATED BY ' '
  FROM dictionary.columns
  WHERE libname = "&lib" AND
         memname = "&mem" AND
         format IN ("DATE.", "DATE7.") ;
QUIT ;

%* If there are some formatted variables and the SAS file
  type is not VIEW, modify the FORMAT. Otherwise issue
  appropriate messages ;
%IF &vars NE %THEN
  %IF &memtype NE VIEW %THEN
    %DO ;
      PROC DATASETS LIB=&lib NOLIST ;
        MODIFY &mem ;
        FORMAT &vars DATE9. ;
      QUIT ;
      %PUT Variable(s) "&vars" have been
        FORMATTED with DATE9. ;
    %END ;
  %ELSE
    %PUT &data is a VIEW and has DATE.
      or DATE7. formatted variables
      but cannot be modified this way! ;
  %ELSE
    %PUT &data does not have DATE. or DATE7.
      formatted variables ;
  %LEND: OPTIONS NOTES ;
%MEND ;
```

adequately. As you will see, however, some of the packages under review provide much more than paper and pencil ever can.

Modelling packages are superior to plain drawing packages because they build a model behind the scenes that collates all the information from all of your diagrams. If you've already drawn and defined a class on one diagram and then choose to show it on another, the information you entered on the first diagram will automatically be echoed to the second. If you change the information in one diagram, all others are automatically updated. Thus, your diagrams remain consistent with each other.

Visio Professional V5

For Windows users, the name Visio is synonymous with drawing. Diagrams are created by dragging and dropping shapes from a large range of stencils and templates onto the page. Visio Professional version 5 introduced UML shapes to its templates, but it only supports class diagrams. It maintains a model of your classes and has a manually-run semantics checker.

Visio's heritage in drawing is exposed by its inability to print useful textual reports detailing your class definitions. Its diagrams can be output to paper, PowerPoint, or HTML/GIF. Whilst Visio Professional's ability to draw UML diagrams is limited, its general drawing strengths are undeniable. The range of shape templates includes office layouts, data flow diagrams (for non-OO types), networks, and kids' stuff (downloadable free from the web).

Visio Professional is widely available for Windows 95/98/NT for £249+VAT.

No Magic MagicDraw UML V2.1

The cheapest of the modelling packages, MagicDraw UML was developed in Lithuania by an American-managed company named No Magic. Written in Java, it is therefore available for a wide range of platforms.

Reflecting the minimal cost/maximum value approach of No Magic, the product and its documentation (HTML) is only available as a download from the web.

Showing its multi-platform basis, launching and using the product results in multiple independent windows spread neatly around the screen - there's no Microsoft MDI (Multiple Document Inter-face) here! This will require something of a culture adjustment for die-hard Windows users, but I came to appreciate it after a few hours use.

All major aspects of the UML definition are covered but I found the interface to be less intuitive than that of Rose and Visio Enterprise. For example, one can't drag and drop a class from the class tree onto a new diagram; you have to create a new class and then type the name of the existing class over it.

Diagrams can be printed and saved individually as JPEG files. The class definitions (including methods, attributes, and their associated documentation) can be written to an HTML file. The HTML file can then be read and printed from your browser (MagicDraw offers the option of automatically launching the file in your browser). If your word processor supports HTML you can read and manipulate the information in there too.

Support for the product is only available via email and a Usenet newsgroup hosted by No Magic.

A demonstration copy of MagicDraw is available from the No Magic web site - limited to 25 classes and May 1999 but otherwise fully-functional. The full product can be purchased at a cost of \$250 (approximately £150).

Visio Enterprise V5

Launched in November last year, the Enterprise edition of Visio provides facilities for drawing and modelling networks, databases, and software. In addition to full UML support, Visio Enterprise provides 14,000 exact-replica network device shapes, AutoDiscovery™ tools for documenting networks, complete database design and re-engineering, and generation and editing of DDL scripts. All this plus Visio Professional's stencils and templates plus Microsoft Visual Basic for Applications all in one (big) box. It's a powerful package.

Visio Enterprise can read drawings produced by Visio Professional. As with the Professional edition, Visio Enterprise cannot print any useful text reports.

Visio Enterprise is now widely available for Windows 95/98/NT for £699+VAT. As an upgrade from Visio Professional, the cost is £466+VAT.

Rational Rose 98

Rational (quite reasonably) considers itself to be the "home of the UML." The three primary gurus of OO work at Rational and it is they who provided 95% of the UML definition. With that in mind, it is surprising to find that Rose does not support the UML's Activity



A Class Diagram in MagicDraw

diagram. Perhaps this is related to the fact that many OO practitioners view activity diagrams as non-OO.

Activity diagrams aside, Rose is clearly the heavyweight package in this group. It supports team-working by permitting models to be merged, and it integrates with Rational's other development life-cycle products such as Requisite Pro (for requirements capture) and ClearCase (for software configuration).

Support is available 24 hours/day all year round. This includes on-site consultancy where necessary.

Microsoft Visual Modeller (available as part of some of the Microsoft development products) is a cut-down version of Rose. An upgrade is available to Rose.

Contact Rational and ask for the free Inside The UML CD for a demo copy of Rose and an excellent multimedia primer on the UML. Price of the basic edition for Windows is £1,250+VAT. The lowest price for UNIX platforms is £3,800+VAT.

UML Resources

If you'd like to know more about the UML, try the OMG's primer at www.omg.org/news/pr97/umlprimer.html. For something a little more in depth, I found UML Distilled by Martin Fowler (ISBN 0-201-32563-2) to be a good, concise introduction.

The three amigos at Rational seem to be a veritable book factory. For all the low-down on the UML you'll need The UML User Guide (ISBN 0-201-57168-4) and/or The UML Reference Manual (ISBN 0-201-30998-X), both by Booch, Rumbaugh, and Jacobson.

Conclusion

If your needs are limited to occasional class diagrams then Visio Professional will undoubtedly hit the spot and give you a great deal of other benefits besides.

Choosing one product to begin your journey into UML drawing need not tie you into that path ad infinitum. All these products write to their own proprietary file format, but all of them also write to other formats. MagicDraw will write Rose 98 format files. Rose and the Visio products will write to Microsoft Repository data bases (see sidebar). If your needs are more demanding than Visio Professional, then you will be considering one of the modelling packages. I have all of the products installed on my personal workstation, so which do I use? MagicDraw! Everybody's requirements differ, but for general all-round simplicity, ease-of-use, and functionality MagicDraw has everything I need. However, when I need to merge models with my colleagues, I revert to using Rose. MagicDraw is a good introductory product for anybody thinking of investigating UML modelling in more detail. Many people will never outgrow it. Those that do can sit safely in the comfort that they can upgrade to Rose with no worries about file incompatibilities.

Andrew Ratcliffe

News

Wherefore Art Thou V7?

I recently had the opportunity to chat with Richard Neale, the SAS Institute UK Product Manager for V7 (or should I say Nashville?). I asked him the obvious question - "so when can we have it?" His answer was most enlightening.

It seems that SAS Institute is not going to release V7 to all 31,000 of its world-wide customers in one "big-bang." Instead, it will be introduced in a controlled manner. Over this first quarter, V7 is only being made available to customers who have a demonstrable need for it. During this time the help desk, partners, and consultants are receiving training. The next part of the plan is for V7 to be openly available in the second quarter of this year, but customers will have to request it - it will not be automatically shipped. Indeed Richard suggested that V7 may never be automatically shipped.

Products such as CFO Vision(tm), SAS/Warehouse Administrator(tm) and SAS/PH-Clinical(r) software have not yet been re-written to exploit the V7 features available to them. They will be released as V8 (in the year 2000?). These software products have not been regression tested against V7, i.e. SAS Institute has chosen not to test them to be sure they work properly on V7.

Microsoft Repository

On the initiative of Microsoft, several modelling tool vendors are providing support for publishing from and to the Microsoft Repository. Thus, those portions of models that are common between various modelling tools and the UML type information model in the repository can easily be exchanged. At this time, exchange of the class model is supported.



A Sequence Diagram in Rational Rose

Customers who use any of these products will be strongly advised by SAS Institute to keep running their current release of SAS software until V8 is released. This is one reason why V7 may never be automatically shipped.

SAS Institute is trying to strike a balance between releasing the new version of the product to everybody world-wide simultaneously (risking a deluge of help desk queries in the first few days and weeks), and phasing its release over such a long period that SAS software is perceived to be behind its competition. Have they got the balance right?

SNUG In April

The next SNUG (SAS Northern User Group) meeting will be held in Manchester on April 27th. It is a full-day session for technical and business users. It will include user case studies, demonstrations covering SAS/Warehouse Administrator™, SAS/IntrNet™, and Enterprise Miner™, plus an update on the future developments and key initiative areas for SAS Institute.

To register, or for further information, contact Kate Brooks (see *Contacts*).

SAS UK Has A Web Site

SAS Institute UK now has its own web site at: www.sas.com/offices/europe/uk/index.html. It includes contact details for Quality Partners and Registered Partners (including many of those who have written articles for this issue of *VIEWS News*).

SASware Ballot® 99

The SASware Ballot® 99 closed on January 4th. Did you make your contribution to the future direction of SAS software? The results will be announced at SUGI in April and made available on the SAS web site at around the same time. 1998's results can be found on the SAS Institute web site at: www.sas.com/service/techsup/sasware98/results.html.

Powered By Demon Internet

In addition to ASA's renewed relation-ship, we are very pleased that Demon Internet chooses to continue its support. For over a year Demon Internet has hosted the VIEWS web site at www.views-uk.demon.co.uk for us.

The web site is valuable to us as a means of communicating late-breaking news to you and of providing a focus for independent SAS information throughout the UK. Demon Internet is the UK's largest, most experienced Internet Service Provider. If you're considering an Internet account for home or business use, make sure Demon Internet is on your short-list.



In Brief

- While a SAS/AF® application is running, try using the ID and QSTACK commands to show what frame you're viewing and how you got there
- The %SYSFUNC and %QSYSFUNC macro functions provide macros with the ability to execute SAS functions not normally available in the macro language, e.g. PUTC, OPEN, and EXIST
- The American SAS Quality Partner Qualex has a very useful web site at www.qlx.com. It includes lots of useful links to US user groups and a range of SAS/AF®, shareware and freeware objects
- In case you need reminding, many UK phone numbers will be changing yet again this June. You can find details at www.numberchange.org, including what your own new number(s) will be
- SUGI and SEUGI draw ever nearer. Have you made your travel and accommodation plans yet?
- When Byte magazine was taken over, the computer industry appeared to lose one of its most respected columnists - Jerry Pournelle. The good news is, he's still writing. His "Chaos Manor" column still appears on Jerry's web site at www.jerrypournelle.com
- Details of the version 7 upgrade are at www.sas.com/service/doc/v7/whatsnew
- This issue's Diary has a lot of provisional entries in it. For the latest details, see the web site and keep an eye on your snail mail in-box

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 software.

March 1999

2nd The VIEWS "Graphics sub-conference," with LeRoy Bessler

April 1999

11-14th SUGI, Miami Beach, Florida

27th SNUG (SAS Northern Users Group), Manchester

20th The VIEWS "Pharmaceutical sub-conference" (provisional)

May 1999

1st Sixth edition of *VIEWS News*

? The VIEWS "Macro sub-conference," with Art Carpenter (provisional)

June 1999

15-18th SEUGI, Den Haag, The Netherlands

July 1999

8th VIEWS 5 conference, Earls Court, London

August 1999

1st Seventh edition of *VIEWS News*

October 1999

? The VIEWS "SAS Software version 7 upgrade sub-conference." Speakers and precise topic to be confirmed.

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