

Fun with SAS Date/Time Formats and Informats

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INTRODUCTION:

SAS Date format:

For purposes of determining a SAS Date format SAS considers January 1, 1960 at midnight to be equal to zero. Dates after are positive, dates before are negative. The SAS date format stores the date as a number and will automatically convert it to the correct date for calculations, display or other uses.

January 1, 1960 = 0
 January 2, 1960 = 1
 December 19, 1989 = 10945
 January 1, 1950 = -3652

SAS Time format:

Same concept as the SAS Date format - for each second the numeric representation of the SAS Time variable increases by one.

Midnight = 0
 00:00:01 = 1
 01:30:15 = 5415

SAS Datetime format:

Similar to SAS Date and SAS time except now January 1, 1960 @ midnight = 0 and for each second the SAS Datetime increases by 1.

June 4, 2004 @ 20:10 = 1370376600

Tip 1 – To combine two variables - a date and time that are in SAS Date and SAS Time format.

You can convert the date to time for determine a SAS Datetime value by multiplying the date by 24 hours, 60 minutes and 60 seconds.

Use the following code:

```
format vardt date9. vartm time8. vardttm
datetime16.;
vardt = "20JUL96"d ;
vartm = "23:59:59"t;
vardttm = (vardt * 24 * 60 * 60) + vartm ;
```

This will give you the output 20JUL96:23:59:59

Tip 2 – Converting a date and time stored in a character variable, but like a SAS Date and SAS Time. To convert to a SAS Datetime format use the following code:

```
format vardt $20. vartm $10. vardttm datetime16.;
vardt = "20JUL96" ;
vartm = "23:59:59";
```

```
vardttm = (input(vardt, date9.) * 24 * 60 * 60) +
input(vartm, time8.);
```

OR

```
vardttm =
input(compress(vardt)||':'||compress(vartm),
datetime16.);
```

This will give you the output 20JUL96:23:59:59

Tip 3 – Here's another way to convert a SAS Date and SAS Time to a SAS Datetime. Similar to Tip 1 it will do output the same thing without having to remembering to multiply the SAS Date by 86,400 (or 60 * 60 * 24).

```
format vardt date9. vartm time8. vardttm
datetime16.;
vardt = "20JUL96"d ;
vartm = "23:59:59"t;
```

```
vardttm =
input(put(vardt, date7.)||':'||put(vartm, time8.),
datetime16.);
```

This will give you the output 20JUL96:23:59:59

Tip 4 – The power of the ANYDT informat. ANYDT is a new informat with SAS version 9 it can convert a character date, time, or datetime value without needing to know what SAS informat to use. It will automatically read in the variable

and use DATE, DATETIME, DDMYY, JULIAN, MMDDYY, MONYY, TIME or YYQ informats to convert the character variable to SAS Date, SAS Time or SAS Datetime.

To convert to a date use ANYDTEw.
To convert to a time use ANYDTMw.
To convert to a datetime use ANYDTDTMw.

```
format vardt $20. varmt $10. newdt date9 newtm time5.;
```

```
vardt = "20JUL96" ;  
varmt = "23:59:59";  
newdt = input(vardt, anydte.);  
newtm = input(varmt, anydtm.);
```

Tip 5 – Converting from a Microsoft date/time to a SAS date/time. Unlike SAS which uses January 1, 1960 as their base date Microsoft uses January 1, 1900, and unlike SAS which uses midnight as their base for 0 and then increases by 1 for each second Microsoft uses a fraction. If you ever get the numeric date/time you can use the following formulas:

```
sasdate = microsoftdate - 21916;  
sastime = microsofttime * 24 * 60 * 60;
```

You can then use any of the above tips to convert to a SAS Datetime value.

Tip 6 – If you work in the clinical or pharmaceutical world SAS version 9 now has created the CDISC required datetime format ISO8601 which will convert a SAS date, time or datetime variable to ISO8601 format.

```
format isodate isotime $20. isodatetime $30.  
vardt = "20JUL96"d ;  
varmt = "23:59:59"t;  
vardttm = "20JUL96:23:59:59"dt
```

```
isodate = put(vardt, is8601da.);  
isotime = put(varmt, is8601tm.);  
isodatetime = put(vardttm, is8601dt.);
```

Using the above previous tips you can also determine ISO8601 Datetime as follows:

```
isodatetime = put((vardt * 24 * 60 * 60) + varmt,  
is8601dt.);
```

This will generate the output –
1996-07-20T23:59:59

This isn't very exciting to most SAS users, but for us in the Pharmaceutical industry this is big stuff.

Tip 7 – SAS has also come out with another useful format in version 9. As an example you can take the format MMDDYYw. SAS now offers the following:

MMDDYY+ (works for many other date formats)

where + equals

MMDDYYB	(blanks)	09 15 07
MMDDYYC	(colons)	09:15:07
MMDDYYD	(dashes)	09-15-07
MMDDYYN	(nothing)	091507
MMDDYYP	(periods)	09.15.07
MMDDYYs	(slash)	09/15/07

CONCLUSION:

The more you play with dates and times in SAS the more tricks you will find to manipulate the data to the form you want.

In addition to many formats and informats there are also many useful functions that can be used to do similar things. SAS is coming out with more and more functions that do similar things to the above tips. For example the new function DHMS will also generate a SAS Datetime from a SAS Date and SAS Time.

```
vardttm = dhms(vardt, 0, 0, varmt);
```

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