



Getting the Right DATES



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Getting the RIGHT Date can be Tricky

This presentation focuses on working with dates in **SAS** and **Teradata**.

- Comparing Dates
- Extracting Date Components
- Moving Forward and Backward in Time
- Outputting Dates in Desired Formats
- Generalizing Code to Accommodate Dates

SAS Date/Time

How does SAS store dates?

- A SAS Date is a **numeric variable** and represents the **integer** number of days since Jan 1, 1960
- Arithmetic operations work with SAS Date Values

```
Enddate = startdate + 14;
```

- To determine the system date, use

```
Date = today();
```

SAS Date example

```
data dates;  
  SystemDate = today();  
  putlog 'Unformatted System Date is: ' SystemDate ;  
  putlog 'formatted with date9.      : ' SystemDate date9. ;  
  putlog 'formatted with worddate.   : ' SystemDate worddate. ;  
  putlog 'formatted with weekdate.   : ' SystemDate weekdate. ;  
  putlog 'formatted with weekdate9. : ' SystemDate weekdate9. ;  
run;
```

```
Unformatted System Date is: 19283  
formatted with date9.      : 17OCT2012  
formatted with worddate.   :   October 17, 2012  
formatted with weekdate.   :   Wednesday, October 17, 2012  
formatted with weekdate9.  : Wednesday
```

NOT a SAS Date

If dates are stored in SAS as **character**, they are not SAS dates.

```
data chardate;  
  chardate = '1957-03-15';  
  putlog 'Character Variable Value: ' chardate;  
  
  /**convert to a SAS date **/  
  SAS_date = input(chardate , yymmdd10.);  
  
  putlog 'Unformatted value of SAS_Date:' SAS_date;  
  putlog 'Formatted with ddmmyyS10. :' SAS_Date ddmmyyS10.;  
run;
```

```
Character Variable Value: 1957-03-15  
Unformatted value of SAS_Date:-1022  
Formatted with ddmmyyS10. :15/03/1957
```

Teradata Dates

- In Teradata, the default **input format** for dates is **yyyy-mm-dd**
- Internally, Teradata stores the date as a 4 byte signed integer calculated as
$$(\text{Year} - 1900) * 10000 + (\text{month} * 100) + \text{Day}$$
- When you extract dates from Teradata and store the data in SAS, they are stored as SAS date values

Comparing Dates

SAS

Assume me_dt is a SAS date .

```
If me_dt = '31mar2012'd ;  
  
%let enddate = 31mar2012;  
If me_dt = "&enddate"d;
```

Teradata

Assume me_dt is a Teradata date .

```
Where me_dt = '2012-03-31'  
  
%let enddate='2012-03-31';  
Where me_dt = &enddate  
  
%let enddate = 2012-03-31;  
Where me_dt =  
    %str('%')&enddate%str('%')
```

Notes about Teradata

- If you represent the date literal in the wrong format, Teradata will give you a conversion error

`Where me_dt = '03-31-2012'`



- If you use double quotes around a date literal, teradata thinks it is a column and you get an error

`Where me_dt = "2012-03-31"`

- To get system clock date, use `current_date`

Extracting date parts

SAS

*Use SAS Functions or
Formats*

Month

Day - *Day of Month*

Year

Qtr - *Calendar Qtr*

Hour

WeekDay - *1=Sunday, ...*

etc

Teradata

Use Extract

```
Extract( MONTH from me_dt)
```

Use CAST

```
CAST ( datestamp01 as DATE )  
/* isolate date from a  
date-time value */
```

Extract Date Parts in SAS

```
data extract;  
  SystemDate = today();  
  Today_Year = year(SystemDate);  
  Today_Month = month (SystemDate);  
  Today_Day = day (SystemDate);  
  Today_WeekDay = weekday (SystemDate);  
  Today_WeekDay_2 = put (SystemDate , weekdate9.);  
  /* use PUTLOG to write */    run;
```

```
SystemDate=19283 SystemDate=17OCT2012  
Today_Year=2012 Today_Month=10 Today_Day=17  
Today_WeekDay=4  
Today_WeekDay_2=Wednesday
```

Moving in Time

If you need to move forward or backward by months, take advantage of functions to make it easy.

SAS

INTNX

- Moves forward or backward
- use common date intervals

INTCK

- Counts date intervals between two dates

Teradata

ADD_MONTHS

```
ADD_MONTHS (me_dt , 3)
```

INTNX = *move in intervals*

INTNX - handy to dynamically create different variations of dates.
- *increments dates by intervals*

INTNX (*interval*, *from*, *n* < , *alignment* >) ;

- *interval* - interval name eg: 'MONTH', 'DAY', 'YEAR'
- *from* - a SAS date value (for date intervals) or datetime value (for datetime intervals)
- *n* - number of intervals to increment from the interval that contains the *from* value
- *alignment* - alignment of resulting SAS date, within the interval.

Eg: **BEGINNING**, **MIDDLE**, **END**.

Check for Current Month

```
**** Extract all data for current month ****/
```

```
if me_dt =
```

```
    INTNX ( 'MONTH'      /*increment = month*/  
          , 0           /* move ZERO months*/  
          , today()    /* start at today */  
          , E)         /* return END of mth */  
  
    ;
```

Best Practices: Version Control

```
%let datetime = %sysfunc(compress(%sysfunc(today()),
                                yymmddN8.)_%sysfunc(time(),hhmm6.), ': ');
** route Log and Listing to permanent location **;
proc printto
    log = "&dir.\logs\&stage.\&filename._&datetime..log"
    print = "&dir.\output\&stage.\&filename._&datetime..lst";
run;
... < other program logic > ...
** reroute to default locations **;
proc printto; run;
```

The resulting “Versioned” file names would be

HR123_20120507_1329.log

HR123_20120507_1329.lst

Note: The N in yymmddN8 requests NO separators (Dashes, Slashes, etc)

Program Control

```
*** Run monthly report on first of each month;
```

```
%macro dayone;  
  %if %sysfunc(day( %sysfunc(today()) )) = 1  
    %then %do;  
      %include 'monthly_report.sas';  
    %end;  
%mend;
```

```
%dayone
```

```
*** Run daily report every day;  
%include 'daily_report.sas';
```



Fiscal Year

```
**** Create a Macro to compute fiscal year
      start → beginning of FY
****/
%macro fy (date , start=7);
    year(&date) + /* BELOW returns a 0 (F) or a 1 (T) */
    (month(&date) ge &start and &start ne 1)
%mend;

*** example of macro usage ***/
data try_FY;
    Txn_date = '21nov2012'd;
    FiscalYear = %FY( Txn_Date , start = 11 );
    putlog FiscalYear =
        Txn_Date=date9.;
run;
```


Before we finish . . .

Dates are a primary component of most all results we produce

- VALIDATE that your programs ***Get the Right Dates!***

Thank you

to Laura House for her review and suggestions

Any errors in this document are all my fault 😊

Thank You !

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