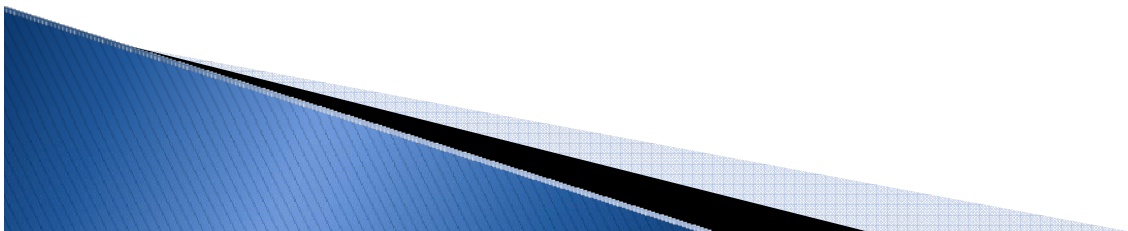


READY SET RETAIN... AND THEN MAYBE RESET

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HOW DOES THE RETAIN STATEMENT WORK?

RETAIN turns off the automatic re-initialization feature that sets a variable to missing before reading each record.



DEFAULT SAS DATA STEP BEHAVIOR

XPREVDT	_N_
.	1
01FEB2009	1
.	2
02FEB2009	2
.	3
04FEB2009	3
.	4

WITH A RETAIN STATEMENT

RETAIN XPREVDT .;

XPREVDT	_N_
.	1
01FEB2009	1
01FEB2009	2
02FEB2009	2
02FEB2009	3
04FEB2009	3
04FEB2009	4

WITH RETAIN XPREVDT IS INITIALIZED ONLY ONCE!

WHY DO PROGRAMMERS USE RETAIN?

CARRY VALUE FROM ONE RECORD TO THE NEXT

- E.G., IF WE HAVE CURRENT DATE AND PREVIOUS DATE ON THE SAME RECORD WE CAN EASILY CALCULATE LAPSE

Current Date DIDATE	Previous Date XPREVDT	LAPSE
01FEB2009	.	.
02FEB2009 –	01FEB2009	= 1
04FEB2009 –	02FEB2009	= 2

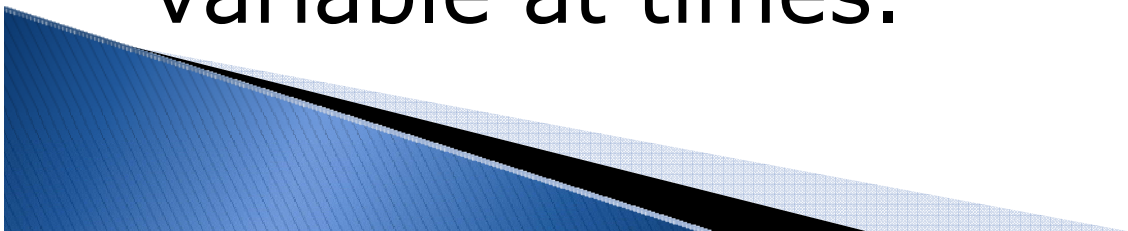
HOW LONG IS A VALUE RETAINED?

- Simple Answer – Until it is RESET!

How are retained variables reset?

Two Examples:

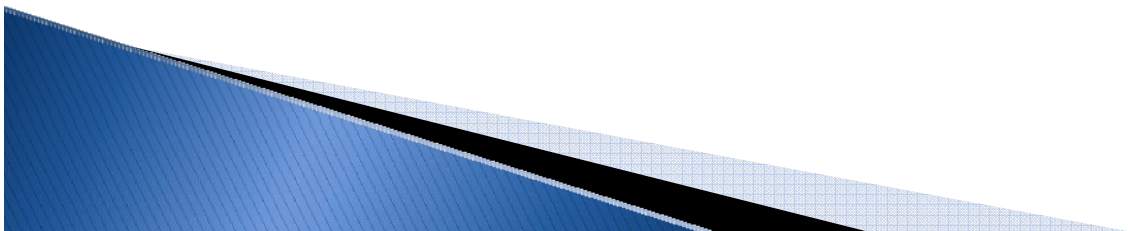
- New data values read
 - With an assignment statement.
-
- It is important to reset RETAINED variable at times.



Programming Task

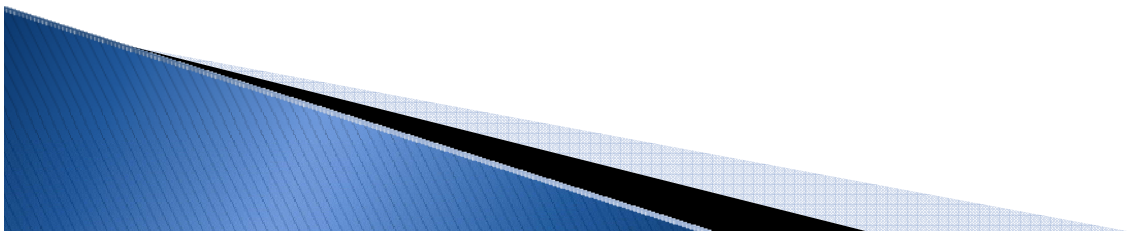
▶ Example Scenario

Patients are expected to summarize their symptoms in a daily diary. The programmer is tasked with identifying if a patient missed any entries.



Pre-Program Logic

- ▶ PURPOSE OF USING RETAIN:
- ▶ By retaining previous date we can determine LAPSE
 - MISSED DAY IS WHERE $LAPSE > 1$




4Main Steps:

- ▶ Create a RETAIN variable 'XPREVDT' to hold changing values of previous date.
- ▶ For the 1st occurrence of each PATIENT reset the RETAIN variable so the previous PATIENT's information does not carry forward.
- ▶ Determine days since previous diary entry (LAPSE).
- ▶ Reset XPREVDT to the current date to be used as previous date for the next observation.

Simple Program

```
DATA DIARY1;  
  SET DIARY;  
  BY PATIENT DIDATE;  
  RETAIN XPREVDT;  
  IF FIRST.PATIENT THEN DO;  
    XPREVDT = DIDATE;  
  END;  
  ELSE DO;  
    IF NMISS(DIDATE,XPREVDT)=0 THEN  
      LAPSE = DIDATE - XPREVDT;  
    XPREVDT = DIDATE;  
  END;  
RUN,
```



WHAT IF THE RESETS ARE MISSING?

MISSING FIRST.PATIENT RESET

REC	patient	didate	LAPSE
1	1001	01FEB2009	.
2	1001	02FEB2009	1
3	1001	04FEB2009	2
4	1001	06FEB2009	2
5	1002	17FEB2009	11

PATIENT 1001'S DIDATE IS STORED IN 1002'S
XPREVDT

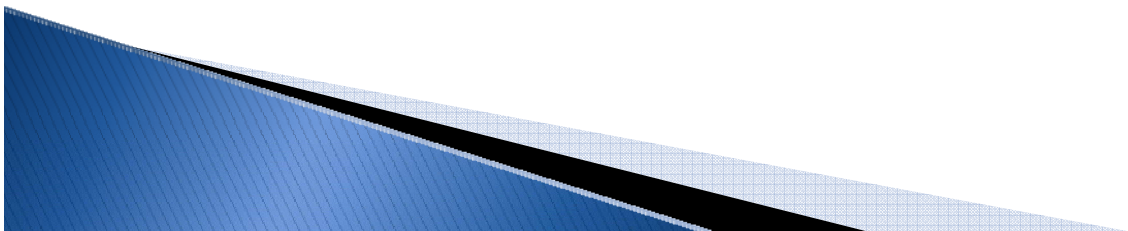
MISSING ELSE: XPREVDT=DIDATE RESET

REC	patient	didate	LAPSE
1	1001	01FEB2009	.
2	1001	02FEB2009	1
3	1001	04FEB2009	3
4	1001	06FEB2009	5
5	1002	17FEB2009	.

ALL DIARY DATES SUBTRACT FIRST DIDATE
INSTEAD OF MOST RECENT DIARY DATE

Conclusion

- ▶ The RETAIN statement allows for many additional capabilities, in particular manipulations across observations.
 - Because RETAIN turns off the automatic re-initialization feature it is necessary to explicitly reset the RETAINED variable at times.



Contact Information

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