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Experis ManpowerGroup

Are you Still Afraid of Using Arrays? Let's Explore their Advantages

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Paper CT07

Agenda

- Array Basics
- Implementation
  - ✓ Array Technique to Apply LOCF
  - ✓ Applying Arrays to Find the Date of the Last Dose Prior to Event
- Comparison of Methods
- Conclusion

Array Basics

Array Statement

```
ARRAY array-name {subscript} <$> <length> <_temporary_>
                    <array-elements> <(initial-value-list)>;
```

ARRAY Statement Key Points:

- Array should be either character or numeric;
- ARRAY statement is a compile time statement;
- An asterisk cannot be used as a subscript for the temporary or multidimensional array;
- The _TEMPORARY_ keyword and list of variables are mutually exclusive;
- Values of a temporary array are automatically retained;

Array Reference Statement

```
array-name {subscript};
```

Array Technique to Apply LOCF

SYS_BP_LOCF data set:

SUBJECT	VISIT1	VISIT2	VISIT3	VISIT4
1	87	87	87	123
2	156	156	156	123
3	112	112	112	112
4		70	70	70

```
data sys_bp_locf;
    set sys_bp;
    array visits{*} visit: ;
    do i=1 to dim(visits)-1;
     if visits{i+1} eq . then visits{i+1}=visits{i};
    end;
run;
```

Finding the Date of the Last Dose Prior to Event

Partial AE data set:

SUBJID	AESEQ	AETERM	AESTDTN
1	1	AETERM1	09NOV2015:08:20:59
1	2	AETERM2	13NOV2015:08:12:59
1	3	AETERM2	19NOV2015:06:00:59
1	4	AETERM3	07DEC2015:14:18:59

Partial EX data set:

EXENDTN	EXSTDTN	EXSEQ	SUBJID
09NOV2015:08:00:00	09NOV2015:08:00:00	1	1
11NOV2015:08:01:00	11NOV2015:08:01:00	2	1
.	.	3	1
16NOV2015:08:02:00	16NOV2015:08:02:00	4	1
18NOV2015:08:10:00	18NOV2015:08:10:00	5	1
01DEC2015:08:11:00	01DEC2015:08:11:00	6	1
02DEC2015:08:03:00	02DEC2015:08:03:00	7	1

Finding the Date of the Last Dose Prior to Event

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SUBJID	AESEQ	AETERM	AESTDTN
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01DEC2015:08:11:00	01DEC2015:08:11:00	6	1
02DEC2015:08:03:00	02DEC2015:08:03:00	7	1

Partial result LAST_DOSE data set:

SUBJID	AESEQ	AETERM	AESTDTN	AEMDTN	EXSEQ
1	1	AETERM1	09NOV2015:08:20:59	09NOV2015:08:00:00	1

Finding the Date of the Last Dose Prior to Event

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1	1	AETERM1	09NOV2015:08:20:59	09NOV2015:08:00:00	1
1	2	AETERM2	13NOV2015:08:12:59	11NOV2015:08:01:00	2

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1	3	AETERM2	19NOV2015:06:00:59	18NOV2015:08:10:00	5

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1	3	AETERM2	19NOV2015:06:00:59	18NOV2015:08:10:00	5
1	4	AETERM3	07DEC2015:14:18:59	02DEC2015:08:03:00	7

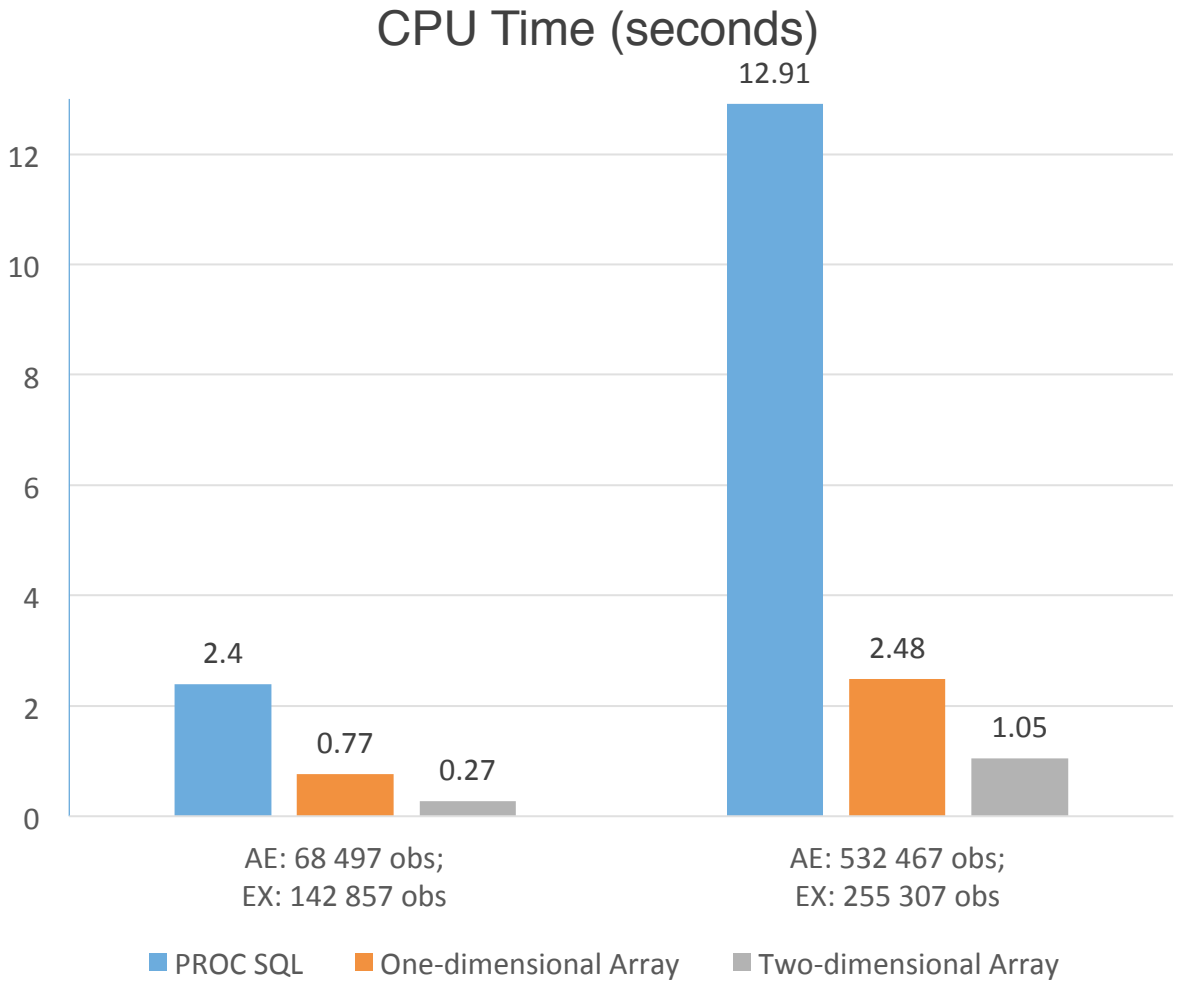
Applying Arrays to Find the Date of the Last Dose Prior to Event: one-dimensional Array Method

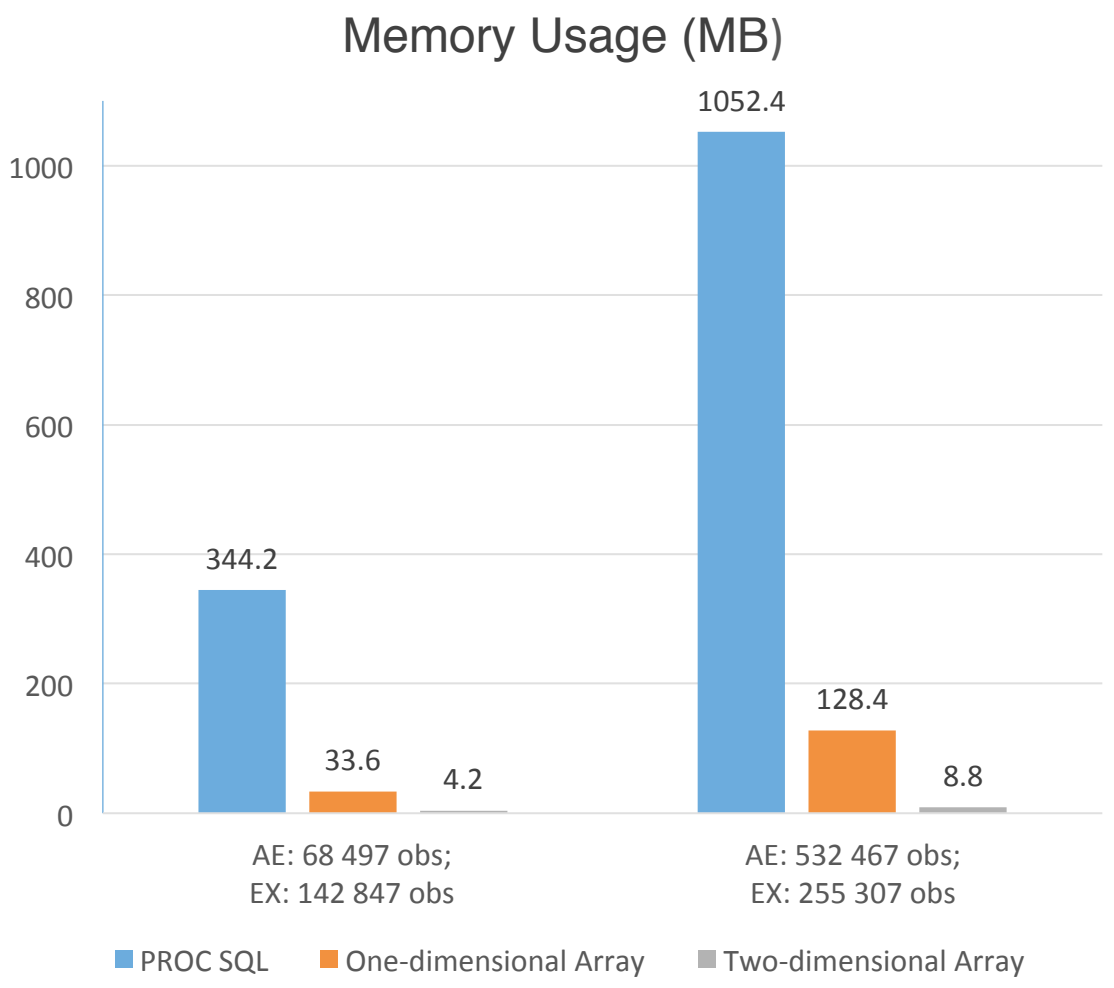

```
proc transpose data=ex out=tex prefix=dt;
   var exendtn;
   by sbjid;
run;
data _null_;
set tex;
   array doses{*} dt: ;
   call symputx('n_doses', dim(doses));
run;
data last_dose;
   merge ae (in=inAE) tex;
   by sbjid;
   if inAE;
   array doses{&n_doses.} dt: ;
   array diffs{&n_doses.};
   do i=1 to dim(doses);
     if aestdtn ne . and doses{i} ne . then diffs{i}=aestdtn-doses{i};
     if diffs{i} >=0 then min_value=min(min_value, diffs{i});
   end;
   if min_value ne . then aemdtn=doses{whichn(min_value, of diffs{*})};
   format aemdtn datetime20.;
   keep sbjid aeseq aeterm aestdtn aemdtn;
run;
```

Applying Arrays to Find the Date of the Last Dose Prior to Event: two-dimensional Array Method


```
data _null_;
   set ex end=last;
   retain min_sbj max_sbj dim_ex;
   dim_ex=max(dim_ex, exseq);
   min_sbj=min(min_sbj, sbjid);
   max_sbj=max(max_sbj, sbjid);
   if last then do;
     call symputx('n_doses', dim_ex);
     call symputx('l_sbj', min_sbj);
     call symputx('h_sbj', max_sbj);
   end;
run;
data last_dose;
   array sbj_dt{&l_sbj. : &h_sbj., &n_doses.} _temporary_;
   if _n_=1 then do until(exDone);
    set ex end=exDone;
      sbj_dt{sbjid,exseq}=exendtn;
   end;
   set ae;
   array diffs{&n_doses.};
    do j=1 to dim(diffs);
     if aestdtn ne . and sbj_dt{sbjid, j} ne . then diffs{j}=sum(aestdtn, -sbj_dt{sbjid, j});
     if diffs{j}>=0 then min_value=min(min_value, diffs{j});
    end;
   if min_value ne . then aemdtn=sbj_dt{sbjid, whichn(min_value, of diffs{*})};
run;
```

Comparison of Methods





Note: The examples were tested using SAS 9.4 on a multiple-user UNIX server.

Conclusion

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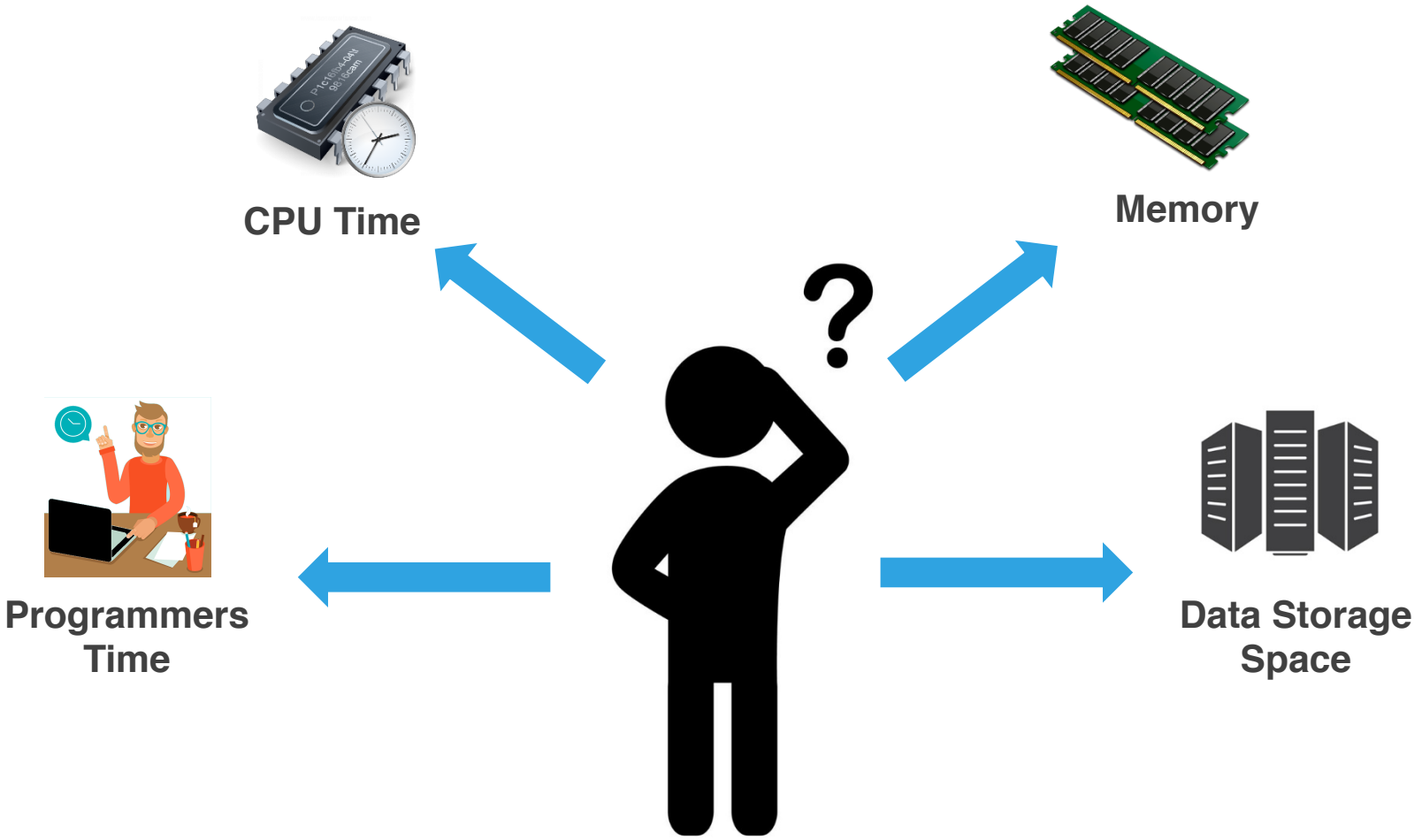

Thank you for your attention!

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