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Renaming Tool Series

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ABSTRACT

Renaming SAS[®] variables may sound easy, but what if you have hundreds of variables that must be renamed? In this instance it will become an annoying and error-prone process if you simply use Rename statements to rename each variable individually. This paper addresses how you can perform the renaming of many variables quickly and error-free.

Our Renaming Tool Series is a group of “renaming” macros, which perform different renaming jobs, i.e. renaming all the variables in a SAS data set, renaming partial variables, adding prefixes, adding suffixes, and/or replacing the prefix or the suffix. It’s a very handy tool for tailoring variable names in batches quickly to fit different needs.

INTRODUCTION

Renaming SAS[®] variables happens a lot in our real life, especially in the Data Analysis area. Sometimes when we are handling the real data, for either security issues or per clients’ requests, variables are needed to be renamed from common names such as “var 1”, “var 2”, ..., “var n”, to new names with prefix or suffix of subject or types. But with hundreds of variables, it becomes very annoying and time consuming to rename them individually. Different macros of renaming variables will be discussed here, which add a prefix, or replace prefixes and suffixes. SAS DICTIONARY tables are read-only SAS data views that contain lists of things that are related to the current SAS session. We can retrieve a number of variables and their names from the DICTIONARY tables. PROC SQL’s DICTIONARY.TABLES and COLUMNS are utilized to rename all the variables in a SAS data set. The same technique can also be used to rename only selected variables. The macro function %SYSFUNC allows access by the macro processor to most data step functions and several SCL functions, which allows you to access dataset observations. The data set functions, OPEN, CLOSE and VARNAME of %SYSFUNC will be used to replace the prefix and suffix.

```
/* Creating a dataset */  
data A;  
input id $4. pre_var1_post pre_var2_post pre_var3_post;  
datalines;  
i001 1 2 3  
i002 3 4 5  
i003 6 7 8  
i004 9 10 12  
;  
run;
```

Tool 1: Add Prefix on All Variables

Extract number of variables from PROC SQL's DICTIONARY.TABLES and the names of the variables from DICTIONARY.COLUMNS, and then attach a prefix to each variable name.

```
/* Adding Prefix on all variables */

%macro rename(lib,dsn,newname);
proc contents data=&lib..&dsn;
title 'before renaming';
run;

proc sql noprint;
  select nvar into :num_vars
  from dictionary.tables
  where libname="&LIB" and memname="&DSN";

  select distinct(name) into :var1-
:var%trim(%left(&num_vars))
  from dictionary.columns
  where libname="&LIB" and memname="&DSN";
quit;
run;

proc datasets library = &LIB;
modify &DSN;
rename
%do i = 1 %to &num_vars.;
&&var&i = &newname._&&var&i.
%end;
;
quit;
run;

proc contents data=&lib..&dsn.;
title 'after renaming';
run;
%mend rename;

data B;
set A;
run;

%rename(WORK,B,Try1);
```

Partial OUTPUT of Tool 1:

before renaming				
Alphabetic List of Variables and Attributes				
#	Variable	Type	Len	
1	id	Char	4	
2	pre_var1_post	Num	8	
3	pre_var2_post	Num	8	
4	pre_var3_post	Num	8	
after renaming				
Alphabetic List of Variables and Attributes				
#	Variable	Type	Len	
1	Try1_id	Char	4	
2	Try1_pre_var1_post	Num	8	
3	Try1_pre_var2_post	Num	8	
4	Try1_pre_var3_post	Num	8	

Tool 2: Add Prefix on Selected Variables

Same approach of renaming all variables but using start and end positions to rename only the selected variables. Variable list need to be sorted before running this macro.

```
/* Adding Prefix on Selected Variables */

%macro addprefix(lib,dsn,start,end,newname);
proc contents data=&lib..&dsn;
title 'before renaming';
run;

proc sql noprint;
select nvar into :num_vars
from dictionary.tables
where libname="&LIB" and memname="&DSN";

select distinct(name) into :var1-
:var%trim(%left(&num_vars))
from dictionary.columns
where libname="&LIB" and memname="&DSN";
quit;
run;

proc datasets library = &LIB;
modify &DSN;
rename
%do i = &start. %to &end.;
```

```

&&var&i = New_&&var&i.
%end;
;
quit;
run;

proc contents data=&lib..&dsn;
title 'Adding Prefix on Selected variables';
run;
%mend addprefix;
data c;
set a;
run;
%addprefix(WORK,C,2,4,Try2);

```

Partial OUTPUT of Tool 2:

Adding Prefix on Selected variables				
Alphabetic List of Variables and Attributes				
#	Variable	Type	Len	
1	id	Char	4	
2	Try2_pre_var1_post	Num	8	
3	Try2_pre_var2_post	Num	8	
4	Try2_pre_var3_post	Num	8	

Tool 3: Replace Prefix on Selected Variables

The %SYSFUNC macro has allowed access to the SAS component language inside of traditional DATA step programming.

We can easily retrieve variable information by using the data set functions, OPEN, CLOSE and VARNAME and replace the existing prefix with the new name.

```

/* Replacing Prefix on Selected Variables */

%macro replaceprefix(lib,dsn,start,end,oldprefix,newprefix);
proc contents data=&lib..&dsn.;
title 'before renaming';
run;

data temp;
set &lib..&dsn.;
run;

%LET ds=%SYSFUNC(OPEN(temp,i));
%let ol=%length(&oldprefix.);
%do i=&start %to &end;

```

```

%let dsvn&i=%SYSFUNC(VARNAME(&ds,&i));
%let l=%length(&&dsvn&i);
%let vn&i=&newprefix.%SUBSTR(&&dsvn&i,&ol+1,%EVAL(&l-&ol));
%end;
data &lib..&dsn.;
set temp;

%do i=&start %to &end;
&&vn&i=&&dsvn&i;
drop &&dsvn&i;
%end;
%let rc=%SYSFUNC(CLOSE(&ds));
proc contents data=&lib..&dsn.;
title 'Replacing Prefix on Selected variables ';
run;
%mend replaceprefix;

data d;
set a;
run;
%replaceprefix(WORK,D,2,4,pre,Try3);

```

Partial OUTPUT of Tool 3:

Replacing Prefix on Selected variables				
Alphabetic List of Variables and Attributes				
#	Variable	Type	Len	
1	id	Char	4	
2	Try3_var1_post	Num	8	
3	Try3_var2_post	Num	8	
4	Try3_var3_post	Num	8	

Tool 4: Replace Suffix on Selected Variables

We can use same approach of Tool 3, Using %SYSFUNC to retrieve the dataset and variable information and replace the existing suffix with new name.

```

/* Replacing Suffix on Selected Variables */
%macro replacesuffix(lib,dsn,start,end,oldsuffix,newsuffix);
proc contents data=&lib..&dsn.;
title 'before renaming';
run;

data temp;

```

```

set &lib..&dsn.;
run;

%LET ds=%SYSFUNC(OPEN(temp,i));
%let ol=%length(&oldsuffix.);
%do i=&start %to &end;
  %let dsvn%i=%SYSFUNC(VARNAME(&ds,&i));
  %let l=%length(&&dsvn%i);
  %let vn%i=%SUBSTR(&&dsvn%i,1,%EVAL(&l-&ol))&newsuffix.;
%end;
data &lib..&dsn.;
set temp;

%do i=&start %to &end;
  &&vn%i=&&dsvn%i;
  drop &&dsvn%i;
%end;
%let rc=%SYSFUNC(CLOSE(&ds));
proc contents data=&lib..&dsn.;
title ' Replacing Suffix on Selected variables ';
run;
%mend replacesuffix;

data e;
set a;
run;

%replacesuffix(WORK,E,2,4,post,Try4);

```

Partial OUTPUT of Tool 4:

Replacing Suffix on Selected variables				
Alphabetic List of Variables and Attributes				
#	Variable	Type	Len	
1	id	Char	4	
2	pre_var1_Try4	Num	8	
3	pre_var2_Try4	Num	8	
4	pre_var3_Try4	Num	8	

CAVEATS

There are some caveats of using PROC SQL's DICTIONARY.TABLES and COLUMNS. The library and dataset name must in Uppercase. Using the upcase function is highly recommended here. Besides that, only the prefix can be concatenated, which we need to find out a new way to concatenate the suffix.

CONCLUSION

As demonstrated above, the Renaming Tool Series perform different renaming jobs with hundreds of variables names in batches. Almost all the situations except adding the suffix can be handled. We currently are using a two step approach to adding the suffix; the code is in the Appendix. We still need to find a simple way to add the suffix and expect to add it to our toolbox soon.

REFERENCES

P. Ravi(2003). “Renaming All Variables in a SAS Data Set Using the Information from PROC SQL’s Dictionary Tables.” Proceedings of the Twenty-Eighth Annual SAS® Users Group International Conference, Seattle, 2003

D. Morgan(2003). “%Fun&With%SYSFUNC” Proceedings of the Twenty-Eighth Annual SAS® Users Group International Conference, Seattle, 2003

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APPENDIX

```
/* Adding Prefix/Suffix – Two Step Approach*/

/*
*First, create two columns – varS, varE in Excel files. VarS is the
original variable name, VarE contains the variables you want to change
to. And read it into a SAS data set.
*Then use the following code to perform the renaming, such as adding
prefix.
*/

%macro rename(lib,dsn, mthDs, varS,varE);
proc contents data=&lib..&dsn;
title 'before renaming';
run;

proc sql noprint;
  select count(*) into :num_vars
  from &mthDs.;

  select &varS.,&varE. into :var1-:var%trim(%left(&num_vars)), :nvar1-
:nvar%trim(%left(&num_vars))
  from &mthDs.;
quit;
run;

proc datasets lib = &lib.;
modify &dsn;
rename
%do i = 1 %to &num_vars.;
  &&var&i = &&nvar&i.
%end;
;
quit;
run;

proc contents data=&lib..&dsn;
title 'after renaming';
run;
%mend rename;
```