

## Do it the smart way, renumber with PowerShell scripts!

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### ABSTRACT

Renumbering large numbers of SAS programs is often a time-consuming and tedious task. Traditional methods, such as manual renaming or using SAS macros, lack the flexibility to adapt to different numbering schemes or platforms. This paper presents a step-by-step guide to renumbering SAS programs efficiently using PowerShell scripts, offering a dynamic and adaptable solution. By leveraging PowerShell, data analysts can streamline the renumbering process, save time, and ensure accurate numbering according to client specifications.

### INTRODUCTION

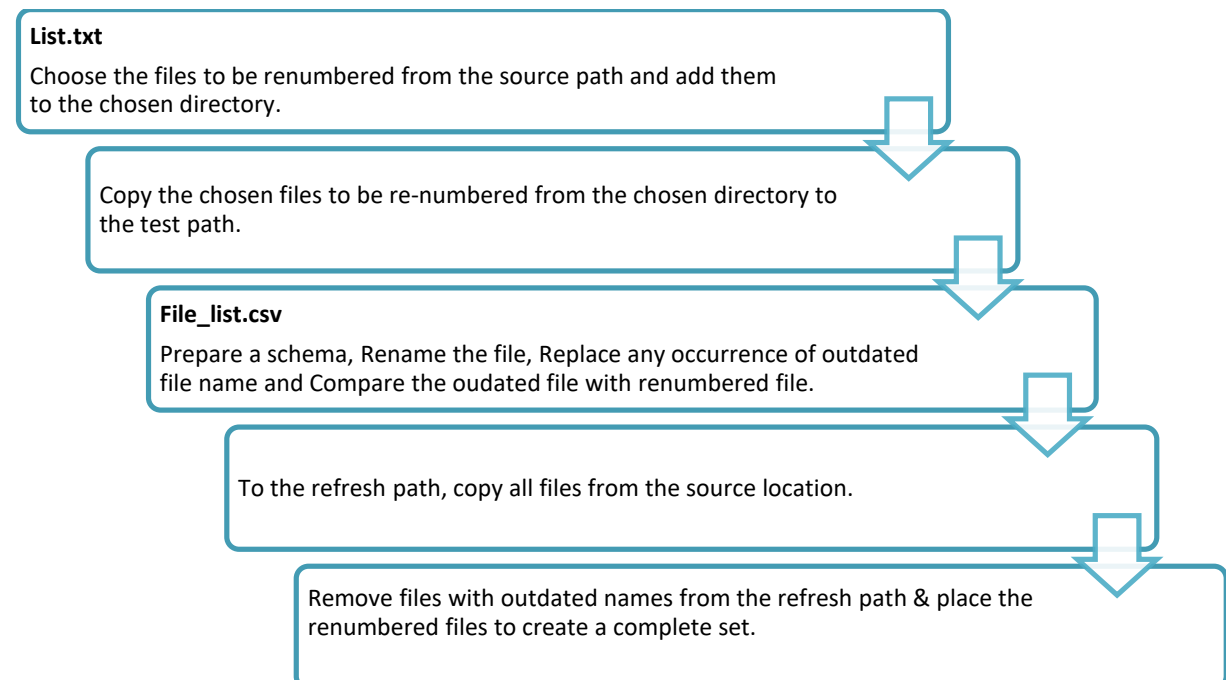
With the increasing complexity of data analysis projects, the need for a more efficient and flexible approach to renumbering SAS programs has become evident. To address these challenges, this paper proposes a novel approach using PowerShell scripts, a powerful and versatile scripting language that offers greater flexibility and ease of use compared to SAS macros. This step-by-step guide outlines the renumbering process using PowerShell scripts, enabling data analysts to save time, improve the accuracy of their work, and easily adapt to changing client requirements.

### RENUMBER PROGRAMS WITH EASE

In PowerShell or Unix scripting, renumbering tables is a rather straightforward process. In SAS, one must use the data step with n number of lines to perform the same task. The built-in rename command in PowerShell can be used to rename files with ease. For instance, you may use the command shown below with a foreach loop to rename each file in a directory:

```
Rename-Item -Path $_.oldname -NewName $_.newname
```

This would recursively rename all files in the directory to have new names as provided. The flowchart below provides a summary of the process.



## **STEP-BY-STEP PROCESS:**

Step 1: Declare Path: Declare paths for variables \$SrcePath, \$SlctPath, \$TestPath, \$DiffPath, and \$RefrPath within the PowerShell script.

\$SrcePath is where the source project files are located.

\$SlctPath is where you want to copy over the files selected for renumbering task.

\$TestPath is where you are going to perform rename, replace, and diff.

\$DiffPath is to place the output of diff to verify the difference between old vs renumbered file.

\$RefrPath is where you will copy over all programs from the source project directory, remove the files with outdated names and replace it with renumbered files.

Step 2: Select files to be re-numbered and place them in a chosen path: Read the list.txt to identify the SAS programs to be renumbered from source location and place them in a chosen folder.

Step 3: Copy all files from select path to test path: Copy all the selected files from the chosen folder to the test path to perform the renumbering tasks.

Step 4: Change directory to test path: Switch to the test path directory within the PowerShell script.

Step 5: Import the file\_list.csv with re-numbering schema: Import the CSV file containing the old and new file names along with program name and number references within the program.

Step 6: For each file, perform the below tasks:

- a) Rename the file name.
- b) Replace any reference of the file name or TLF number within the program.
- c) Perform a Diff to compare the renamed file and its content with the original file present in the chosen path.

Step 7: Iterate through each file in the test path, renaming files, replacing file name or number references, and generating a diff .txt file to verify the changes.

Step 8: Copy all files from source path to refresh path: Once the renumbering process is complete, copy all files from source path to the refresh path.

Step 8: Remove old files that need to be replaced in the refresh path: Delete the selected original files that were renumbered from the refresh path.

Step 9: Copy the re-numbered files to the refresh path: Copy the renumbered files from the test path to the refresh path so you get the complete set of SAS programs.

## **PREPARE FILES TO RUN THE SCRIPT**

To run this script, you need to prepare two files:

1. a text file containing outdated file names, and
2. a csv file containing mapping.

The list.txt file will help you select the files for renumbering, and the file\_list.csv file will provide all needed mappings. The csv file to contain outdated file name vs new file name, the outdated file text reference vs new file text reference, outdated table number vs new table number reference. Check the csv file to make sure there are no spaces or other special characters. This csv file is then used to update all programs recursively.

Here is how your file will appear –

Display 1 Preparing the text file.

```
list - Notepad
File Edit Format View Help
q_l23_01_03_rnd.sas
q_l_c_23_2_4_1_5_dm.sas
q_l_c_23_2_4_3_11_cpa.sas
q_l_c_23_2_4_3_12_cpb.sas
q_l23_02_15_im.sas
q_l_c_23_2_15_im.sas
q_l23_02_16_hlp.sas
q_l_c_23_2_7_2_2_sae.sas
q_l_c_23_2_7_1_2_saen.sas
q_l23_02_07_06_aedc.sas
q_l23_02_07_07_aed.sas
q_l_c_23_2_7_19_1_aedb.sas
```

Display 2 Preparing the csv file.

	A	B	C	D	E	F
1	oldname	newname	oldnmrpl	newnmrpl	oldnorpl	newnorpl
2	q_l23_01_03_rnd.sas	q_l23_1_3_rnd.sas	l23_01_03_rnd	l23_1_3_rnd	23\2\4\1\5	23.2.4.1
3	q_l_c_23_2_4_1_5_dm.sas	q_l23_2_4_1_dm.sas	l_c_23_2_4_1_5_dm	l23_2_4_1_dm	23\2\4\1\5	23.2.4.1
4	q_l_c_23_2_4_3_11_cpa.sas	q_l23_2_4_3_11_cpa.sas	l_c_23_2_4_3_11_cpa	l23_2_4_3_11_cpa	23\2\4\1\5	23.2.4.1
5	q_l_c_23_2_4_3_12_cpb.sas	q_l23_2_4_3_12_cpb.sas	l_c_23_2_4_3_12_cpb	l23_2_4_3_12_cpb	23\2\4\1\5	23.2.4.1
6	q_l23_02_15_im.sas	q_l23_2_6_4_im.sas	l23_02_15_im	l23_2_6_4_im	23\2\15	23.2.6.4
7	q_l_c_23_2_15_im.sas	q_l23_2_6_4_1_im.sas	l_c_23_2_15_im	l23_2_6_4_1_im	23\2\15	23.2.6.4.1
8	q_l23_02_16_hlp.sas	q_l23_2_6_7_hlp.sas	l23_02_16_hlp	l23_2_6_7_hlp	23\2\16	23.2.6.7
9	q_l_c_23_2_7_2_2_sae.sas	q_l23_2_7_1_1a_sae.sas	l_c_23_2_7_2_2_sae	l23_2_7_1_1a_sae	23\2\7\2\2	23.2.7.1.1a
10	q_l_c_23_2_7_1_2_saen.sas	q_l23_2_7_1_2a_saen.sas	l_c_23_2_7_1_2_saen	l23_2_7_1_2a_saen	23\2\7\1\2	23.2.7.1.2a
11	q_l23_02_07_06_aedc.sas	q_l23_2_7_9_aedc.sas	l23_02_07_06_aedc	l23_2_7_9_aedc	23\2\7\6	23.2.7.9
12	q_l23_02_07_07_aed.sas	q_l23_2_7_10_aed.sas	l23_02_07_07_aed	l23_2_7_10_aed	23\2\7\7	23.2.7.10
13	q_l_c_23_2_7_19_1_aedb.sas	q_l23_2_7_10_1_aedb.sas	l_c_23_2_7_19_1_aedb	l23_2_7_10_1_aedb	23\2\7\19\1	23.2.7.10.1

## RUN SCRIPT TO RENUMBER FILES

Follow the below steps to run the script:

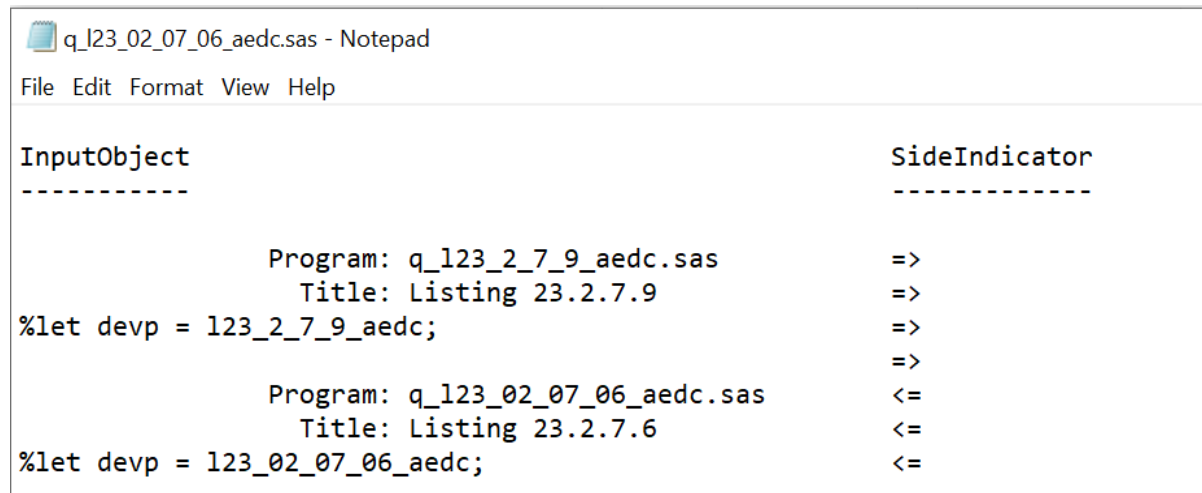
1. Save the Powershell script provided at the end of this paper as "renumber.ps1 " on your computer.
2. Edit and declare 5 physical paths within the script.
3. Ensure that you have your .txt file and .csv file ready under \$TestPath to execute the script.
4. Open a PowerShell console and run the script by typing \\home\user\renumber.ps1 at the prompt.

The script will automatically rename programs and replace contents within each program based on the schema present in file\_list.csv.

## OUTCOME

Navigate to the \$DiffPath and verify if the files are renamed or its contents are replaced as expected. By examining the size of the diff files, we can approximate the differences between the pervious and the updated version of the file.

Display 3 Difference between outdated file vs renumbered file.



```
q_123_02_07_06_aedc.sas - Notepad
File Edit Format View Help

InputObject                                SideIndicator
-----                                -
                                Program: q_123_2_7_9_aedc.sas      =>
                                Title: Listing 23.2.7.9          =>
%let devp = 123_2_7_9_aedc;                =>
                                Program: q_123_02_07_06_aedc.sas      <=
                                Title: Listing 23.2.7.6          <=
%let devp = 123_02_07_06_aedc;            <=
```

## CONCLUSION

The step-by-step guide to renumbering SAS programs using PowerShell scripts offers a more efficient and flexible solution compared to traditional methods. By following this guide, data analysts can streamline the renumbering process, save time, and maintain the accuracy of their programs, while easily adapting to changing client requirements.

## ACKNOWLEDGMENTS

I would like to express deepest appreciation to my family, especially my sister, brother, and spouse.

## CONTACT INFORMATION

Your comments and questions are valued and encouraged. Contact the author at:

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# Appendix: Script

## renumber.ps1

```
#Declare Path
$SrcePath = '\\abc\002\dev\programs\tables'
$SlctPath = '\\test\user\select_programs'
$TestPath = '\\test\user\demo_area'
$DiffPath = '\\test\user\demo_area\diff'
$RefrPath = '\\test\user\demo_area\refresh'

#Select files to be re-numbered:
$file_list = Get-Content "$TestPath\list.txt"
foreach ($file in $file_list) {
    $selectfile = $SrcePath + "\"$file"
    Copy-Item $selectfile $SlctPath }

#Copy files from select path to destination:
cp $SlctPath\*.sas $TestPath

#Change directory to destination:
cd $TestPath

#Import the file for re-numbering:
Import-Csv "$TestPath\file_list.csv" |

#For each perform the below task 1) Rename 2) Replace 3) Diff:
foreach {Rename-Item -Path $_.oldname -NewName $_.newname
    (Get-Content -Path $_.newname -Raw) -replace $_.oldnmrpl, $_.newnmrpl -replace $_.
oldnorpl, $_.newnorpl | Set-Content -Path $_.newname
    (compare-object (get-content $SlctPath\($_.oldname)) (Get-Content -Path $_.newna
me) | Out-File $DiffPath\($_.oldname).txt)}

#Copy all files from source path to refresh path:
cp $SrcePath\*.sas $RefrPath
cd $RefrPath

#Remove old files that needs to be replaced in the source:
Import-Csv "$TestPath\file_list.csv" | foreach { Remove-Item -Path $_.oldname}

#Copy the re-numbered files to the refresh path that holds full set:
cp $TestPath\*.sas $RefrPath
```