# ASK THE EXPERT

Why is SAS<sup>®</sup>9 Content Assessment Key in Migrating to SAS<sup>®</sup> Viya<sup>®</sup>?

Christiana Lycan Steven Sober





## Christiana Lycan Principal Product Manager, SAS

Christiana has extensive experience in the software industry, partnering with customers to transform business challenges into software solutions. Her current focus is guiding SAS customers through their migration experiences.

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## Steven Sober Advisory Solutions Architect, SAS

Steven is an Advisory Solutions Architect with 42+ years SAS programing experience. During his tenure at SAS, Steven has traveled globally working with customers in their adoption of SAS<sup>®</sup> Viya, SAS<sup>®</sup> 9 Content Assessment, SAS<sup>®</sup> Workload Manager, SAS<sup>®</sup> Enterprise Session Monitor, SAS<sup>®</sup> Grid Manager, SAS<sup>®</sup> In-Database technologies, and SAS<sup>®</sup> Scalable Performance Data Server. Before joining SAS in 1989 Steven worked for the U.S. Geological Survey, Water Resources Division, assisting hydrologists to leverage the SAS platform to derive intelligence on ground and surface water in Southern Colorado.





#### SAS 9 Inventory

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Counts and collects data about what exists on the SAS 9 system.

#### SAS 9 Gather SAS Code

Collects and organizes SAS code from artifacts for Code Check. *Requires SAS 9 Profile* 

SAS 9 Code Check for Internationalization Finds internationalization (I18N) issues in SAS programs.

#### SAS 9 Summarize SAS Log Steps

Summarizes SAS 9 log steps to analyze SAS Code for optimization when used in SAS Viya.

#### SAS 9 Profile

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Provides details about selected SAS artifacts.

#### SAS 9 Code Check

Validates that code will migrate to SAS Viya.

SAS 9 Publish Prepares results for reporting.

#### SAS 9 System Evaluation

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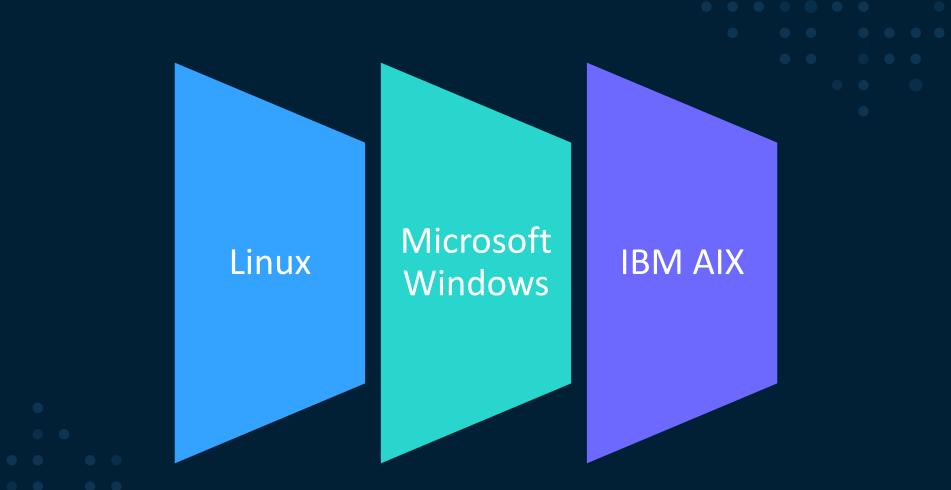
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#### SAS 9 System Evaluation

# SAS 9.4



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Share SAS 9 Content Assessment results with SAS when you need help with results or want to influence future migration development priority.

The <u>SAS 9 Content Assessment download</u> is available from SAS Downloads and Hotfixes.





## **SAS 9 Content Assessment – Inventory Report**

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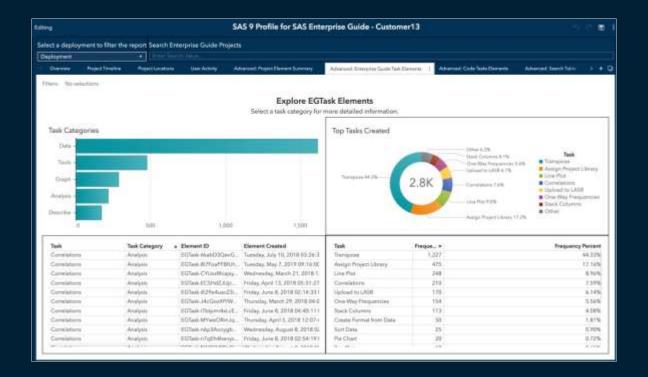
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# **SAS 9 Content Assessment – Profile Report**

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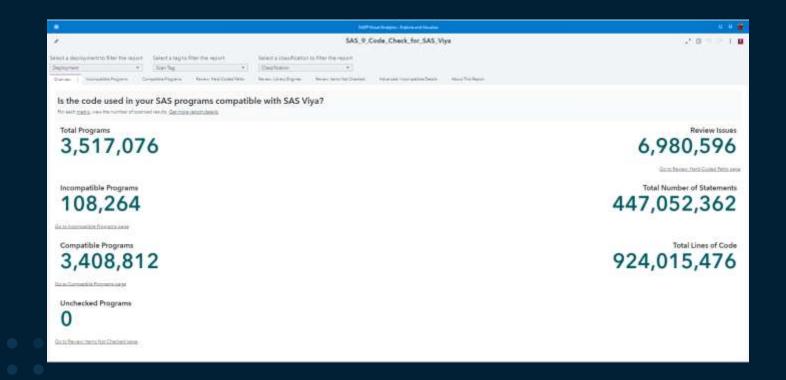
## **SAS 9 Content Assessment – Profile Report**



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# **SAS 9 Content Assessment – Code Check Report**





# **SAS 9 Content Assessment – Code Check Report**

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# SAS 9 Content Assessment – i8n Code Check Report

Is the code used in your SAS files compatible with UTF-8 encoding in SAS Viya

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# **SAS 9 Content Assessment – summarizeSASLogSteps**

Parses SAS 9 Batch Server, Store Process Server, Workspace ServerLogs

and logs end-users save to disk with a file extension of ".log"

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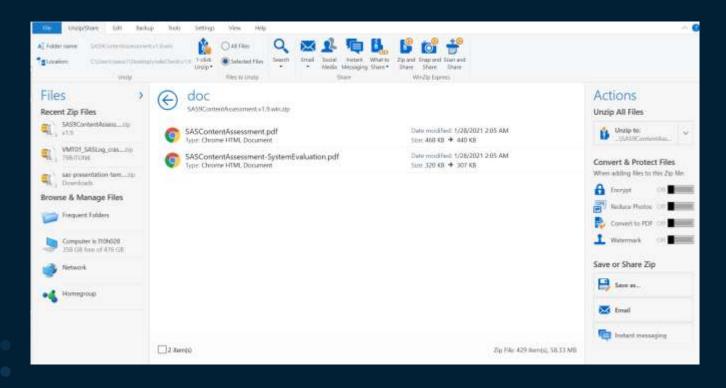
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# SAS 9 Content Assessment – Reports

## SAS Viya 3.5+

- If you do not have a SAS Viya environment
  - SAS Secure SharePoint site
    - Copy encrypted data marts
    - All PII data is masked
  - SAS Viya 4 environment for SAS account team to review reports

## Documentation located in the ..../assessment/doc folder





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- Task 0
- We need to understand the topology of the SAS environment(s) you want to run SAS 9 Content Assessment on
  - Do not install/run the applications on the Metadata Server machine
  - Install/run the applications on a machine that can access the SAS Metadata server and Mid-Tier as well as the SAS deployment
- If multiple planned deployments, we want to start with one deployment
  - What file systems are to be scanned
  - Can the machine the applications are run on see those file systems
    - If no, can you mount those file systems to the machine the applications are run on
- Validate the userid used to run the applications has read access to all files/paths that are scanned
- The SAS 9 Content Assessment documentation is in the doc directory of the download file you unzip
  - Take time to read this document before running any of the applications

Documentation located in the doc folder

- Task 0 Linux and AIX
  - Because the apps can take hours to run, consider running the apps with nohup

nohup ./inventoryContent & nohup ./publishAssessedContent --create-uploads --encrypt-aes --datamart-type inventory & nohup ./profileContent & nohup ./publishAssessedContent --create-uploads --encrypt-aes --datamart-type profile & nohup ./gatherSASCode --all & nohup ./codeCheck --scan-tag SASCode --sources-file /..../assessment/pathslist.txt & nohup ./publishAssessedContent --create-uploads --encrypt-aes --datamart-type codecheck &

• To monitor the progress, use the tail command

• tail -f nohup.out



- Task 0 Linux & AIX
  - To have read access to the files you scan you may need to use sudo when running the scripts
    - sudo ./inventoryContent
    - sudo ./profileContent
    - sudo ./codeCheck --scan-tag uniqueName --sources-files /path/to/pathslist.txt
  - If you do use sudo after each scan i.e. inventoryContnet, profilecContent & codeCheck
    - chown –R userid .../assessment
      - userid is the userid running the apps
    - chmod -R 775 .../assessment



- Task 0
  - Ensure there is disk space for the output files generated by the applications
  - The amount needed is dependent on the number of artifacts defined to the SAS Metadata Server and the number of ".sas" file scanned
    - 10GB+ for small
    - 100GB+ for medium
    - 500GB+ for large



- Task O
- EG projects saved on the desktop, or in GitHub, or ...
  - The applications that process EG projects need to be located on a file system accessible by the applications i.e., inventory, profile, & gatherSASCode.
  - Create a location that end-users can copy a sampling of their EG project to which is also accessible by the server the applications are ran on.
  - Validate the userid used to run the applications has read access to all .egp file/paths that are scanned



Documentation located in the doc folder

• Task O

 EM projects processed are EM projects that were created and save to a file system the profileContent and gatherSASCode applications have access to.





# **Configuration Files**

Modify pathslist.txt







### Modify metaparms.sas

```
/* Copyright (c) 2018-2021 SAS Institute Inc, Cary, NC, USA. All Rights Reserved. */
   4
 5
   1*
     Specify SAS Metadata Server connection details and encryption password.
 6
     It is recommended to use an encrypted password such as SAS002 for all
     password values.
 9
  * /
10
   %let METADATACUSTOMER = CustomName;
   %let METADATALABEL = Server1;
11
  %let METADATAHOSTNAME = <metadata server host>;
12
  %let METADATAPORT = 8561;
13
  %let METADATAUSER = sasadm@saspw;
14
  %let METADATAUSERPASSWORD = <sas002 encrypted password>;
15
16
17
  /*
18
     If SAS Proprietary encryption is going to be used in encrypting the
     published data mart, the specified value must result in a valid SAS name.
20
  */
21 %let SASENCRYPTIONPASSWORD = cpassword for encrypting published data mart>;
```

Modify setenv.yaml

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	And a second sec	1	# Copyright (c) 2018-2022 SAU institute inc. Cary, MC, UDA. All Highrs Hensered.
	this is a well like with the following minible weight executed		
	property caller		I This is a TAML file with the following systam requirements:
	and a single time interest interaction on applications	1.0	I
	with any properties when and and and an reaction array the internet particular approximation of the set of the set a function accounting the set.	1	f propertyl walou
	Aperity for Annual Institut. 25 (200) / path/AJ Domini	10	# NOTE: A single space between property; and value is required.
	This science which is have separate 1-1 of Materia. A ANN was been provided internet and and product manual Ph. Algorithm.	111	property:
	The Tollowing services while to have the program are constant, they represent and all but return and and	1.2	- value 2
	This option supersonal has der HHERTE option and specifies für Lief in the train second of strained assorts first one be and by a fill deside. If supersonality to the BRC option strainer of a compact, the constant was, excepting fills plats option Herters to second all statutes of the Sature apertual as an product, Herters, Herters, Herters, Herters, H	日日	<ul> <li>value 3</li> <li>WOTE: This is a TAML sequence willing in block form. There is a space after property:</li> </ul>
	This information to compare the AM NEW system only and execution the location of the Weith Silverti, Theory is as information	1.11	# and there emit be a space after each - (dash) character preceding the value.
	concerns, a finance variable provide new very les wollach perio. It's periodic providing, the part is equivalent of the second structure of the second	12	I NOTE: Any propurties using 40AS GOME are resolved using the currect operating syntem syntax as needed during the SAS 9 Content Assessment process.
-	This set is a contrastrular time questili and used not send to be set for the other applications. This is a contrast was an experimental and use at the set beam or the Table "	21	I specify the MASHOWE location.
	Promption wateries and an Addresses	21	SAS_HOME: C:\Frogram Files\SADDose
	#Instance = print/Advantig/Local main = suprya-print/advantig/Local	25	# This should remaive to Java version 1.7 or higher.
	VILLINGER CONTIDUCE	1.00	SAS JAVA HOME: SSAS HOME/DASPrivateJavaRontimeEnvironment/9.4/)re/bin





Modify setenv.yaml



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Modify setenv.yaml

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Documentation located in the doc folder

- Task 1 Inventory SAS Metadata Server is scanned
- Modify metaparms.sas
- Run the inventory application
  - ./inventoryContent
- Once inventory completes, run the publish application
  - ./publishAssessedContent --create-uploads --encrypt-aes --datamart-type inventory
    - Three tar/zip files are written to the uploads directory
    - Do not rename these files
- Once publish completes, upload the files in the uploads directory to the secure SharePoint site that SAS provided a link to via an email
- SAS will set up a meeting to review the inventory reports

### $\bullet \bullet \bullet \bullet \bullet \bullet \bullet \bullet$



Documentation located in the doc folder

- Task 2 Profile (SAS Metadata Server and middle tier are scanned) gatherSASCode (SAS Metadata Server might be scanned)
- Run the profile application
  - ./profileContent
- Once profile completes, run the gatherSASCode application
  - ./gatherSASCode --all
- Once gatherSASCode completes, run the publish application
  - ./publishAssessedContent --create-uploads --encrypt-aes --datamart-type profile
    - Three tar/zip files will be written to the uploads directory
    - Do not rename these files
- Once publish completes, upload the files in the uploads directory to the secure SharePoint site that SAS provided a link to via an email
- SAS will setup a meeting to review the profile reports

### $\bullet \bullet \bullet \bullet \bullet \bullet \bullet$



- Task 2 Profile (SAS Metadata Server and middle tier are scanned)
- If your SAS installation is earlier than SAS 9.4M3 or the Relationship Loader (sasrelationship-loader) has not been run recently you may get a failure for that step
  - Ignore the failure

- Task 3 Code Check Only the files system(s) are scanned
- Ensure SAS\_HOME parameter in the setenv.yaml file is set:
  - # Specify the SASHOME location
  - SAS\_HOME: D:\opt\sasinside\SASHome
- Run the code check application
  - ./codeCheck --scan-tag SASCode --sources-file /path/to/pathslist.txt

- Task 3
- Once the two code check scans completes, run the publish application
  - ./publishAssessedContent --create-uploads --encrypt-aes --datamart-type codecheck
  - ./publishAssessedContent --create-uploads --encrypt-aes --datamart-type i18n
    - Six tar/zip files will be written to the uploads directory
    - Do not rename these
- Once publish completes, upload the files in the uploads directory to the secure SharePoint site that SAS provided a link to via an email
- SAS will setup a meeting to review the code check reports



- Task 4
- summarizeSASLogSteps parses SAS 9 logs
  - Batch Server, Workspace Server and with v2021.2.6 Store Process Server logs
  - Logs end-users save to disk and have the extension of ".log"
    - ./summarizeSASLogSteps.exe --scan-tag SAS9Logs --sources-file "..../s9ca/v2021.2.5/assessment/pathslogs.txt"
    - ./publishAssessedContent --create-uploads --encrypt-aes --datamart-type summarizelogs
      - Three tar/zip files will be written to the uploads directory
      - Do not rename these
- Once publish completes, upload the files in the uploads directory to the secure SharePoint site that SAS provided a link to via an email
- SAS will setup a meeting to review the code check reports



### Uploads directory contains the files you share with SAS

OneDrive	e - SAS > SAS 9 Content Assessmet Applications > v2021.2.5 > uploads					
^	Name	Status	Date modified	Тур	be	Size
	CustomerName_summarizelogs_I10h028.zip	$\odot$	3/17/2022 10:58 AM	Wir	nZip File	2,307 KB
	🛃 CustomerName_summarizelogs_I10h028_assessment-key.sas	$\odot$	3/17/2022 10:58 AM	SAS	S System Program	1 KB
, 	CustomerName_summarizelogs_I10h028_reports.zip	$\odot$	3/17/2022 10:58 AM	Wir	nZip File	18 KB
	SoberAndSober_codecheck_SAS-AAP.zip	$\odot$	3/18/2022 2:53 PM	Wir	nZip File	6,478 KB
	SoberAndSober_codecheck_SAS-AAP_assessment-key.sas	$\odot$	3/18/2022 2:53 PM	SAS	S System Program	1 KB
	SoberAndSober_codecheck_SAS-AAP_reports.zip	$\odot$	3/18/2022 2:53 PM	Wir	nZip File	152 KB
	戦 SoberAndSober_i18n_SAS-AAP.zip	$\odot$	3/18/2022 2:54 PM	Wir	nZip File	27,065 KB
	🛃 SoberAndSober_i18n_SAS-AAP_assessment-key.sas	$\odot$	3/18/2022 2:54 PM	SAS	S System Program	1 KB
	SoberAndSober_i18n_SAS-AAP_reports.zip	$\odot$	3/18/2022 2:54 PM	Wir	nZip File	19 KB
	戦 SoberAndSober_inventory_SAS-AAP.zip	$\odot$	3/18/2022 2:31 PM	Wir	nZip File	2,005 KB
or	🛃 SoberAndSober_inventory_SAS-AAP_assessment-key.sas	$\odot$	3/18/2022 2:31 PM	SAS	S System Program	1 KB
	SoberAndSober_inventory_SAS-AAP_reports.zip	$\odot$	3/18/2022 2:31 PM	Wir	nZip File	21 KB
	戦 SoberAndSober_profile_SAS-AAP.zip	$\odot$	3/18/2022 2:34 PM	Wir	nZip File	9,545 KB
	SoberAndSober_profile_SAS-AAP_assessment-key.sas	$\odot$	3/18/2022 2:34 PM	SAS	S System Program	1 KB
n	SoberAndSober_profile_SAS-AAP_reports.zip	$\odot$	3/18/2022 2:34 PM	Wir	nZip File	346 KB

### Documentation located in the ...assessment/doc folder

modifySASCode – bulk modification of hard coded paths

C:\Users\sasss1\OneDrive - SAS\SAS 9 Content Assessmet Applications\v2021.2.5\assessment-modifySASCode.exe --help modifysASCode - this application will update paths via a specified CSV file for all SAS code associated with a specified TAS 9 Code Check execution. 2021.2.5 mudifySASCode [command.options...] COMMAND DETTONS: -generate-ma specifies the mame of the file that will be generated with a mapping of old paths to new paths based on the SAS 9 code Check run associated with the specified scan tag. This option is netwally exclusive with --map-file -map-file Specifies the mapping file of old paths to new paths based on the SAS 9 Code Check run associated with the specified scan tag. This option is mutually exclusive with --generate-map -help Shows help --- output-location Specifies the directory to write the updated SAS program files to. -scan-tag Specifies the scan tag to use that corresponds to the SAS 9 Code Check results to process. Displays the application's version ADDITIONAL DOCUMENTATION: CI\USerS\sascsIUDneDrive - SAS\SAS 9 Content Assessmet Applications\v7001.7.5\assessment\doc\SASContentAssessment.udf

### modifySASCode – bulk modification of hard coded paths

### ./modifySASCode.exe --scan-tag SAS9Code --generate-map mapping.txt

C:\Users\sasss1\OneDrive - SAS\SAS 9 Content Assessmet Applications\v2021.2.5\assessment>modifySASCode.exe --scan-tag SAS9Code --generate-map mapping.txt Beginning the SAS 9 Modify SAS Code application: [ 22Mar22:11:46:36 ]

Validating the environment. Validating the environment: SUCCESS

Initializing SAS 9 Modify SAS Code directories. Initializing SAS 9 Modify SAS Code directories: SUCCESS

Processing the results for the specified SAS 9 Code Check execution. Determined 190 unique file(s) with issues. Determined 263 unique path(s) that need to be potentially updated. Generated the mapping file mapping.txt. Processing the results for the specified SAS 9 Code Check execution: SUCCESS

Logging information for this SAS 9 Modify SAS Code execution can be found here: C:\Users\sasss1\OneDrive - SAS\SAS 9 Content Assessmet Applications\v2021.2.5\assessment\logs\modify\Server1\modifySASCodel10h028\_2022-03-22-11.46.36.log

A mapping file for use in a future replacement operation has been generated:

mapping.txt

This mapping file contains columns that represent the "old" and "new" paths and will need to be edited. In the event, the "old" path was not calculated correctly, a reference line of code using that path is provided.

After editing, the updated mapping file can be used with this application to make the corresponding updates to all SAS code identified with hard-coded path issues for the specified SAS 9 Code Check run.

SAS 9 Modify SAS Code is complete. [ 22Mar22:11:46:41 ]





### modifySASCode – bulk modification of hard coded paths

😸 perindu and a set and a

1 OLD PATH, NEW PATH, ORIGINAL LINE

2 C:\downloads\filename.txt,C:\newpath\filename.txt,"filename ""C:\downloads\filename.txt";"

3 C:\downloads,C:\newpath,"%include ""C:\downloads\sascode.sas";"

4 &demodir.dbf\,&demodir.dbf\abc\,%let dbfdir=&demodir.dbf\;

5 &demodir.jmp\,&demodir.jmp\abc\,%let jmpdir=&demodir.jmp\;

 $\bullet \bullet \bullet \bullet \bullet \bullet \bullet$ 



### modifySASCode – bulk modification of hard coded paths

./modifySASCode.exe --scan-tag SAS9Code --output-location "..../v2021.2.5/mappings" --map-file mapping.txt

Validating the environment. Validating the environment: SUCCESS

Initializing SAS 1 Modify SAS Code directories. Initializing SAS 1 Modify SAS Code directories: SUCLESS

Processing the results for the specified SAS 9 Code Check execution. Decremented 190 wrige file(s) with issues. Processing the results for the specified SAS 9 Code Check execution! SECCESS

Processing the specified mapping file. Processed 4 mappings. Processing the specified mapping: SUCCESS

Bunning the SAS 9 Modify SAS Code application. Updated 100 SAS program files. Then to update 100 SAS program files: [4,057 seconds] Remning the SAS 9 Modify SAS Code application: SUCCESS

Logging information for this 545 9 Redify 545 Code execution can be found here: C:/Users/sasssi/Onebrive - 545/545 9 Content Assessment Applications/v2021.7.5/ansessment/logs/modify/Server1/modifySASCode110H028.2022-03-23-11.40.40.log

SAS 9 Hodify SAS Code is complete. [ 22Mar22:51:40:50 ]

S.sas

modifySASCode – bulk modification of hard coded paths New ".sas" files are written to --output-location "..../v2021.2.5/mappings"

tel pro-	ante 🛛 🖬 margamente 🖓 🖬 margamente 🖓 🖬 presente 🖓 🚺 presente 🖓 💭 Margarente 🖓 💭 margarente 🖓 💭 margarente 🖓
1	libname "C:\downloads";
-2	<pre>%* Modified by modifySASCode: 22Mar22:11:40:45;</pre>
3	<pre>%* Original: filename "C:\downloads\filename.txt";;</pre>
-4-	%* Changes Made:;
5	%* C:\downloads was changed to C:\newpath;
6	filename "C:\newpath\filename.txt";
1	<pre>%* Modified by modifySASCode: 22Mar22:11:40:45;</pre>
8	<pre>%* Original: %include "C:\downloads\sascode.sas";;</pre>
.9	%* Changes Made:;
10	%* C:\downloads was changed to C:\newpath;
11	<pre>%include "C:\newpath\sascode.sas";</pre>
1.2	%* Modified by modifySASCode: 22Mar22:11:40:45;
13	<pre>%* Original: file "C:\downloads\filename.txt";;</pre>
14	<pre>%* Changes Made:;</pre>
1.5	* C:\downloads\filename.txt was changed to C:\newpath\filename.txt;
	<pre>file "C:\newpath\filename.txt";</pre>
17	<pre>%* Modified by modifySASCode: 22Mar22:11:40:45;</pre>
1.8	<pre>%* Original: %let path = "C:\downloads";;</pre>
19	%* Changes Made:;
-20	%* C:\downloads was changed to C:\newpath;
21	<pre>%let path = "C:\newpath";</pre>
22	



# Q&A

Please submit your questions using the Q&A icon located in the menu at the bottom of your screen







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