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Automated compliance checks on programs using SAS

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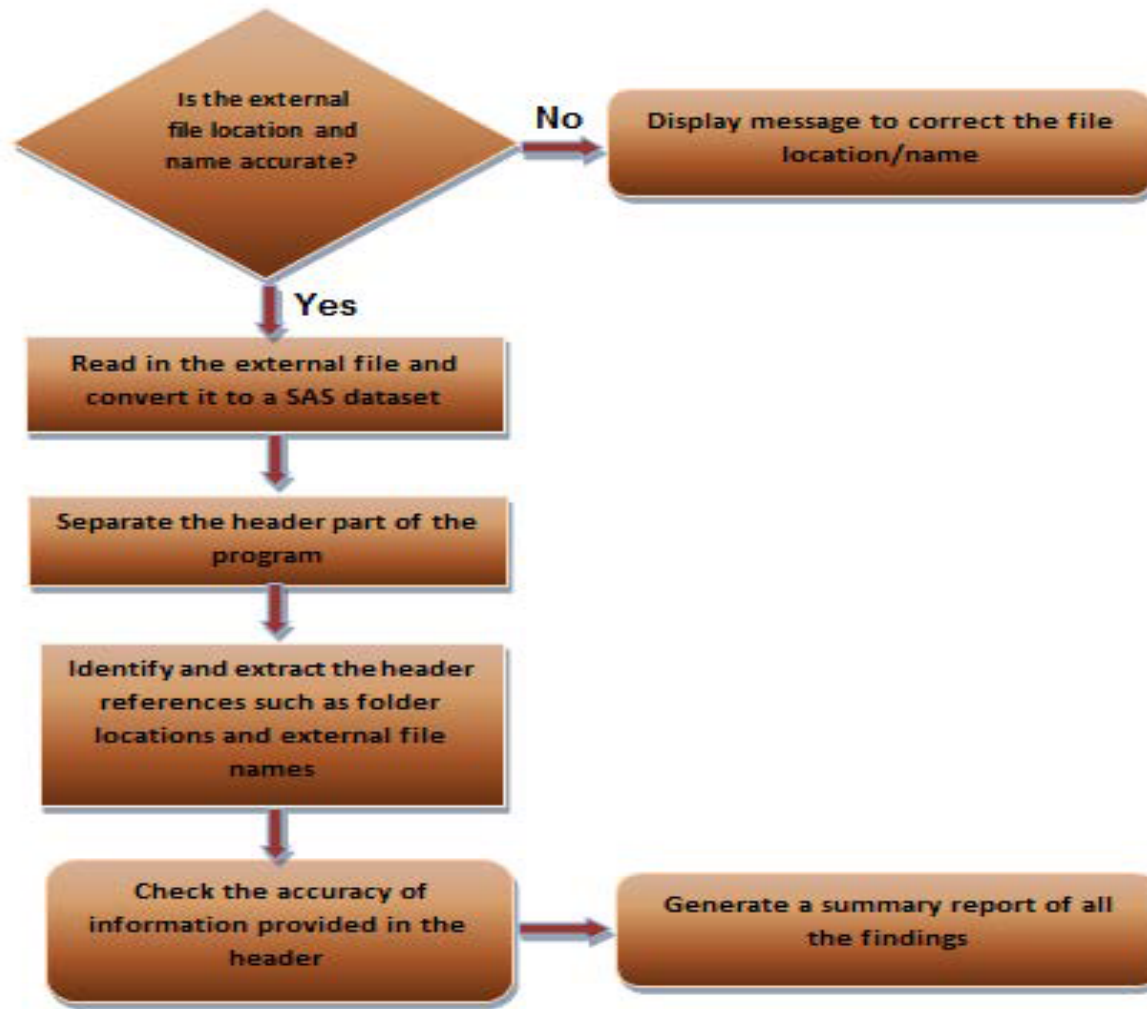
Agenda

- Introduction
- Process flow
- Functionality
- Conclusion

Introduction

- ❑ Headers serve as the key documentation
- ❑ Maintaining header accuracy can be challenging when done manually
- ❑ accurate header leads to Improved overall submission quality
- ❑ Automating header checks reduces audit findings that are related to inaccurate file references

Overall process flow of the “headercheck” macro



Functionality

- ❑ Check the legitimacy of all the external file references in the header using the PIPE device-type along with filename statement.

```
Filename Filename pipe "dir &ckprogram ";
```

- ❑ Read in the external SAS program file and convert it to a SAS dataset.
- ❑ Extract the header part of the program for further checks.
- ❑ SAS string functions are used to segregate the texts in the header that are possibly related to the file path.
- ❑ Once the possible file references are identified then check the accuracy of those file references and display corresponding messages

Process Flow – Step 1

Step 1: Check if the external SAS program file name passed as “ckprogram” parameter exists.

```
/*Initialize the proceed_flg to 0 at the begining of execution */
%let proceed_flg=0;

  Filename Filename    pipe "dir  &ckprogram ";

Data _file_exist (keep=message) ;
  Infile Filename truncover;
  Input filename $200.;
  Put filename=;
  if filename="dir: cannot access" then fileok=0;
  else fileok=1;
  if fileok=0 then Message=" NOTE: Unable to open file. Please check the  File path:  &ckprogram " ;
    if fileok=1 then Message=" NOTE: Success File path:  &ckprogram  is accurate" ;
  call symput ("fileok",fileok);
Run;
```

Process Flow – Step 2

- **Step 2:** Read in all the programs or a single program from the folder and separate
- the header part of the program header using the “Infile” and “Filename” statements.

```
data my_header;  
    infile "&ckprogram" trunccover;  
input org_prgm $200.;  
if index(upcase(org_prgm) ,upcase("&headerend")) then endofheader_flg=1;  
run;
```

Process Flow – Step 3

Step3: Once the header is separated from the main program search each line of the code for possible directory/folder references and keywords such as “.sas, .rtf, .xls, .xlsx, .sas7bdat” etc.

Header compliance report

<Program Line #13> dir: cannot access C:/cdommon/macros/: No such file or directory

<Program Line #14> dir: cannot access C:/cdommon/programs/macros/: No such file or directory

<Program Line #19>Description (Required) : Cannot be missing

<Program Line #22> Cannot find files in the location(C:/cdommon/programs/output/shared/tfl/) sample2.sas"

<Program Line #25>Codename (Required) : Cannot be missing

Process Flow - Sample macro call

Sample macro call to the headercheck macro.

```
%headercheck(ckprogram=%str(x:/programs/macros/backup/sample.sas),  
printhead=Y,  
headerstart=%str(*soh*) ,  
headerend=%str(*eoh*)  
key_sec=%str(DATAINPUT!CODENAME!PROJECTNAME!DESCRIPTION!SPECIFICATIONS!VALIDATIONTYPE!OUTPUT);  
);
```

Enhancements in progress

- ❑ Capability to compare RTF and PDF file versions and produce the summary of any content differences. (Eg: helps with quality control)
- ❑ Automated program template creation which includes program header and any project specific macro calls.

Conclusion

- ❑ An automated SAS header check macro really saves a lot of programmer's time and effort in ensuring the accuracy of the header.
- ❑ Since many organizations do not follow a standard template for the header, it is impossible to have a universal macro that can do a foolproof compliance check.
- ❑ With some effort, it is very much possible to standardize this key element of a program and automate them.
- ❑ This macro can be an inspiration for those individuals or organizations that are trying to implement a better-standardized header documentation system process.

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