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## Log Checks Made Easy

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### **ABSTRACT**

It is Good Programming Practice (GPP) if a programmer checks SAS<sup>®</sup> log for errors, warnings, and all other objectionable SAS NOTE. In order to successfully create tables, listings, and figures, the programmer must ensure that code is correct, and the accuracy of the code, assuming that the program logic is correct, solely depends on SAS log. Using SAS macro language and Base SAS<sup>®</sup>, this paper will introduce a macro that will enable a programmer or statistician to check all SAS logs in a folder and tabulate the log issues by the name of the SAS log file using PROC REPORT.

*Keywords: SAS Log, Macro, report, infile, print*

### **1. MACRO PARAMETER EXPLANATION:**

This section of the paper explains in detail the key parameter macro '%Log\_check' uses in order to check all log files in a folder.

- 1) **Input file:** This parameter gives the folder location where all the log files are situated. The log\_check macro will only consider files that have extension .log in the folder. Please see the example section for how to enter values of this key parameter.
- 2) **Detail flag:** This parameter is type Y/N; default value is N. The detail flag parameter gives options whether a programmer wants a detailed report of the log checks or needs a simple report. If the parameter is Detail=Y, the log check output will have log issues and actual line numbers in the log file where the issue has been seen. If the parameter is Detail=N, it will have two columns; the first column will have a hyperlink of the log file, and the second column will indicate the issues seen in that log file. Please refer to section 4 (Various Displays Created by Macro) of this paper for the types of output created by macro %log\_check.
- 3) **Output filename:** This parameter enables the programmer/statistician to give the desired filename for the output that will be created by macro %log\_check. The output will be in HTML format.

### **2. TYPE OF PROBLEMATIC SAS LOG STATEMENT CHECKED BY MACRO:**

The following is a list of common SAS warning, errors, and notes that are tracked by the macro %log\_check thus enabling a programmer to easily identify which SAS program has issues and requires cleaning.

- 1) Errors
- 2) All types of Warnings.
- 3) Uninitialized variables.
- 4) Format not found
- 5) Merge statement has more than one repeat of by variables
- 6) Drop, Keep, rename list has never been referred to
- 7) Decimal may have been shifted to
- 8) Apparent symbolic reference not found
- 9) Overwritten variables
- 10) Use the length as a very first statement

### **3. EXAMPLE OF HOW TO CALL A MACRO:**

#### **Example 1:**

```
%log_check(input_file=C:\xxxx\xxxx  
           ,detail_flag=Y  
           ,output_filename=test_1);
```

If the user calls log\_check macro as shown in example 1, it will generate the output as shown in section 4 (Figure 1). Please note that the value of the key parameter "detail\_flag" is Y. Please refer to the screen shot to get a better idea of how log\_check macro will display various log issues.

#### Example 2:

```
%log_check(input_file=C:\xxxx\xxxx
           ,detail_flag=N
           ,output_filename=test_2);
```

If the user calls log\_check macro as shown in example 2, it will generate the output as shown in section 4 (Figure 2). The screen shot shown in example 2 in section 4 is what the default output that this macro will generate.

## 4. VARIOUS DISPLAYS CREATED BY MACRO

### Example 1: Log\_Check Macro

Below is a screen shot of the resulting output if the user calls log\_check macro.

Name of the log file	Line number in the log file	Type of log issue
<a href="#">test_paper</a>	308	DROP, KEEP, or RENAME
	236	Decimal may be shifted
	621 623	Error
	223 224 225 226 227 228	Format not found, but has been used
	594	Merge note: Repeat of by variables
	420	SAS keyword misspelled
	281	Use length statement as very first statement
	280	Warnings
<a href="#">test_paper2</a>	308	DROP, KEEP, or RENAME
	236	Decimal may be shifted
	515 527 529	Error
	223 224 225 226 227 228	Format not found, but has been used

Figure 1. Screen shot of the output for macro call as per example 1 in section 3 above

#### Explanation:

- 1) The first column in the output of Figure 1 indicates the name of the SAS log file. Please note that this is a hyperlink. If there is more than one log file experiencing issues, each log file displayed will have its own hyperlink.
- 2) The second column, as per the column heading, indicates the line number in the log file where the log issue is actually seen or located.
- 3) The third column gives the types of log issues associated with the log file. If a log file has errors, the row will be highlighted in red indicating that these logs need immediately review.

**Example 2:** Log\_Check Macro

Below is a screen shot of the resulting output if the user calls log\_check macro.

Number of various types of issues found in the logs by log files

Log file name	Type of log issue
<a href="#">test_paper</a>	DROP, KEEP, or RENAME
	Decimal may be shifted
	<b>Error</b>
	Format not found, but has been used
	Merge note: Repeat of by variables
	SAS keyword misspelled
	Use length statement as very first statement
	Warnings
<a href="#">test_paper2</a>	DROP, KEEP, or RENAME
	Decimal may be shifted
	<b>Error</b>
	Format not found, but has been used
	SAS keyword misspelled
	Use length statement as very first statement
	Warnings

Figure 2. Screen shot of the output for macro call as per example 2 in section 3 above

**Explanation:**

- 1) The screen shot shown in Figure 2 is the default output a programmer or statistician will generate; the reason behind this is because the default value of key parameter `DETAIL` is `N`.
- 2) The difference between Example 1 and Example 2 is the column displaying the line number where the log issue(s) appears is missing if a programmer calls the macro as per example 2.

As shown above in Figure 1 and Figure 2 the output format generated by macro 'log\_check' provides the programmer with the hyperlink of the log file having issues that requiring cleaning. Thus the need for a programmer to go back to the folder and look for that particular log file having issues has been eliminated.

## **6. MACRO CODE**

Please follow the link as given below for the macro code.

<https://sites.google.com/site/sasfilesyogesh/home/sgf-2012-paper-code>

## **7. CONCLUSION**

This paper has explained how a macro can check various log issues such as errors, warnings, and all other objectionable SAS log NOTES. Further, this paper explains ways to check multiple log files by using the SAS macro tool. This paper also demonstrated the ability to create an organized output of the checks used for accessing the log files in which the log issues appear. It also gives an idea to SAS programmers the processes to be carried out in a log

file while writing a SAS code for generating tables, listing, and figures. The goal of this paper is to create a mechanism for checking multiple logs in a folder of a project.

## **8. REFERENCE**

1. SAS/MACRO Software: version 9.1.3, SAS® Institute Inc., Cary NC
2. SAS/BASE Software: Version 9, SAS® Institute Inc., Cary NC
3. SAS® Guide to Report Writing: Examples, Second Edition
4. SAS 9.1 Macro Language Reference
5. SAS Programming in Pharmaceutical industry

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