

## Using a free syntax-colored SAS Log Viewer to bookmark important messages, filter them, and more!

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### ABSTRACT

Checking SAS® logs is an important task to verify the validity of SAS programs. Not only to look for error and warning messages, but also to avoid note messages about divisions by zero, numeric/character conversions, undefined variables, etc. In a production environment, when multiple programs and macros are executed in the same SAS session, the log files quickly become voluminous, which increase the risk of missing an important message. It is now common to replace manual scanning of log files with automated scanning performed by macros. It would also be useful to have an efficient tool to quickly open a SAS log, localize important messages, and filtering/coloring them to increase quality control in the SAS reporting process. The ClinBAY SAS Log Viewer is a free tool for opening SAS log files and provides other functionalities, such as extracting a SAS program from a SAS log.

### INTRODUCTION

SAS is used in many companies on different scopes, all having specific operational specification procedures related to their business activity. Some of the information contained in SAS logs has different levels of importance and criticality of function to the business process. Most of the log messages are purely informative, but some important messages can easily be missed in the bulk of the file.

Often users just search or scan their log files to look for error and warning messages, but these are not the only indicators to suggest that there may be errors in the result. Some note messages can also inform the user about incorrect input, missing data, or truncated records, as well as many others.

Identifying these indicators of potential issues is a first step, and it can be done easily with a macro that creates a summary log from a log file, but visualizing the SAS code that has generated the message is also important to quickly identify its cause and criticality.

This article describes a free tool from ClinBAY called 'SAS Log Viewer' that allows the user to quickly identify the important messages of a SAS log and navigate between them, always with the full log information.

### DESCRIPTION OF THE PROGRAM

The ClinBAY SAS Log Viewer is a free tool to download from the ClinBAY's website (<http://www.clinbay.com/free-sas-log-viewer>), which can be used for personal or professional uses. This software has been developed by ClinBAY for internal use and is based on the Microsoft .NET framework 4. This is the only required component, SAS is not required for using the tool.

It provides following functionalities:

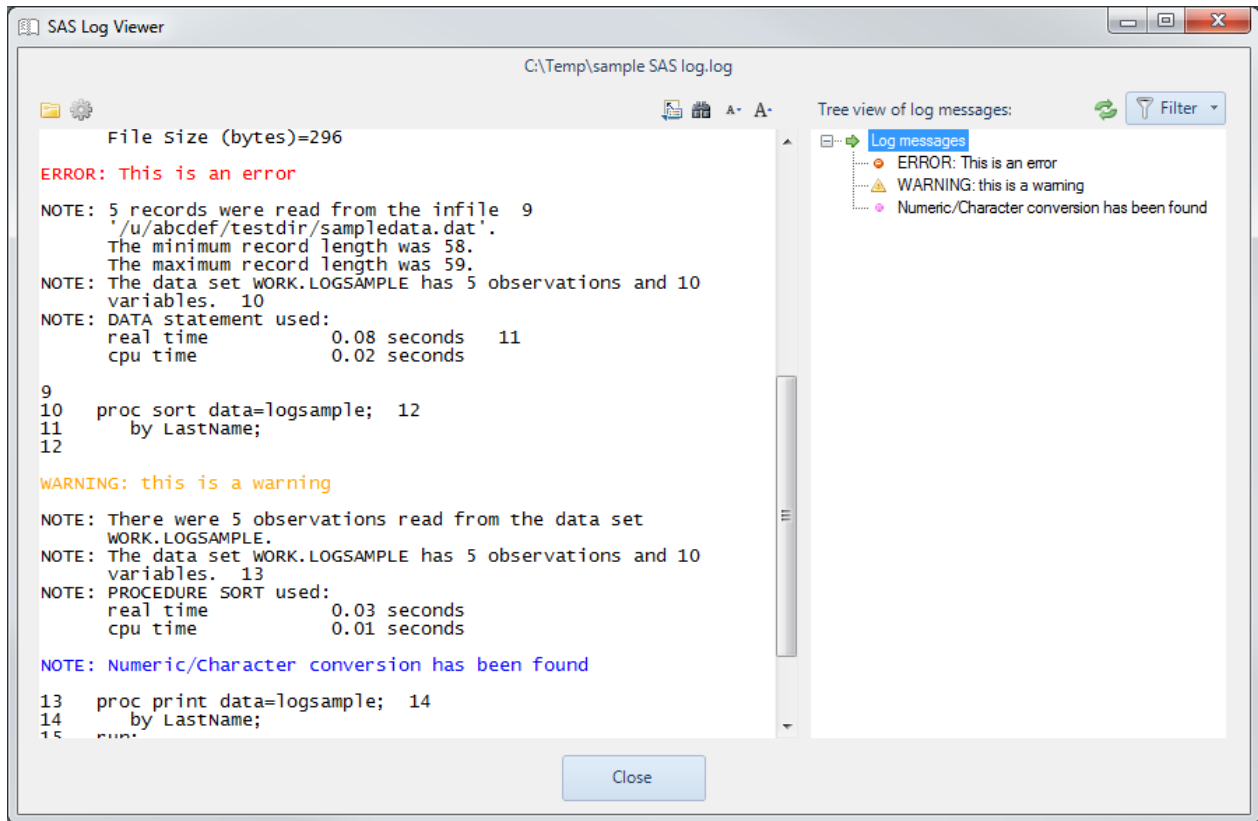
- Opening a SAS log file (Windows or batch mode)
- Displaying the important messages of log file in a tree view
- Coloring these messages in function of their type (warning, error, note)
- Filtering them in function of their type
- Customizing them (to add custom messages to consider as being important)
- One-click text finding and font size increasing or decreasing
- Drag-drop of files from Microsoft Windows environment
- Setting or removing the application as being the default program for opening SAS logs
- Extracting the SAS commands from the log in a stand-alone SAS program (if the option MPRINT has been used)

### OPENING A SAS LOG WITH THE CLINBAY SAS LOG VIEWER

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## OVERVIEW

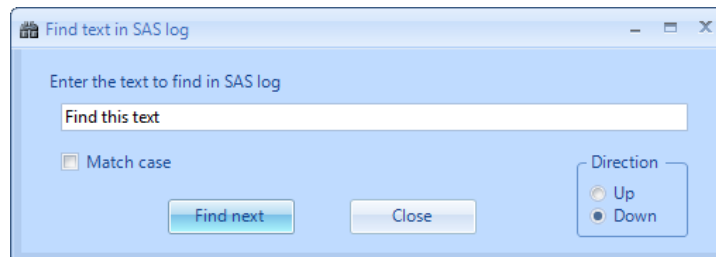
To open a SAS log using the ClinBAY SAS Log Viewer, either drag the file into the program interface, or click on the button  to select a file with .log extension. Then the log appears in the left area of the form, and the important messages in the right part, as can be seen in following figure:



*Screenshot of the SAS Log Viewer*

When clicking on an item in the tree view (right area), the element is automatically selected and highlighted in the left area, this allows the user to quickly navigate between important messages in voluminous logs, and see the SAS code at the origin of the message, without missing anything from the log.

To find text in the log, press CTRL+F or click on the button  to show a dialog box similar to the SAS find functionality:



*The dialog box to find text is similar to the one from SAS*

The font size of the log can also be increased or decreased with just one click on the buttons  and .

## TECHNICAL ASPECTS

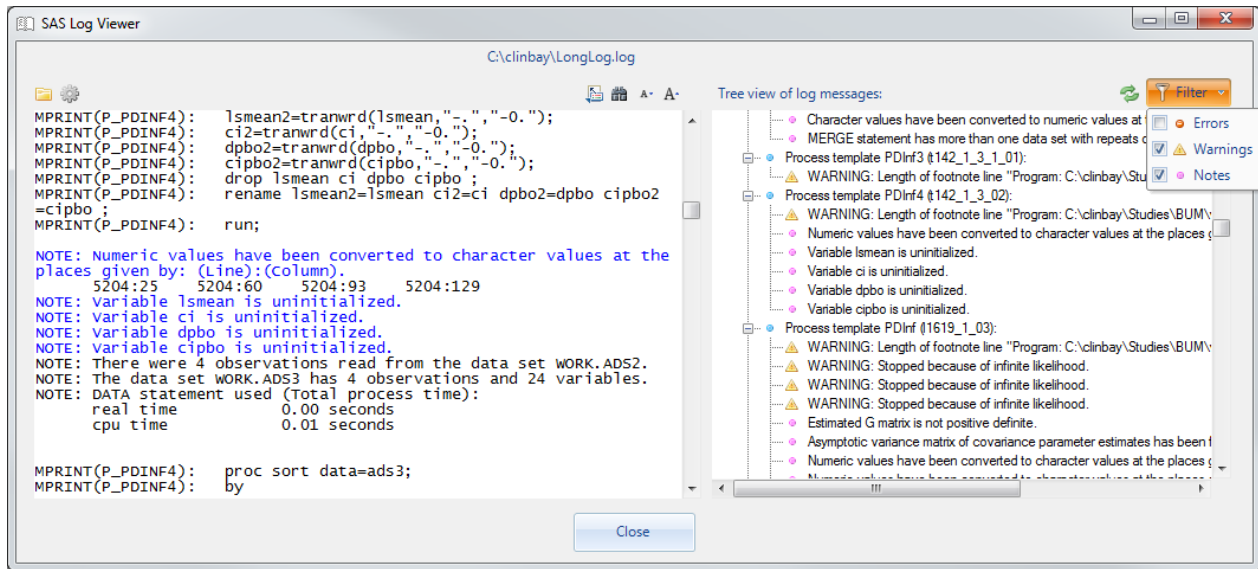
To decrease the log opening time, the log text is first loaded into the text box on the left and displayed. Then the task for populating the tree view and coloring the rows is performed in a new thread using parallel processing, so the user can start browsing the log (and finding text in it) if it is voluminous and takes time to be processed.

When a log line is identified as being an important message, it is colored in red (errors), yellow (warnings) or blue (notes). The log is not editable, to focus on the reviewing activity.

## FILTERING AND CUSTOMIZING THE LIST OF IMPORTANT MESSAGES

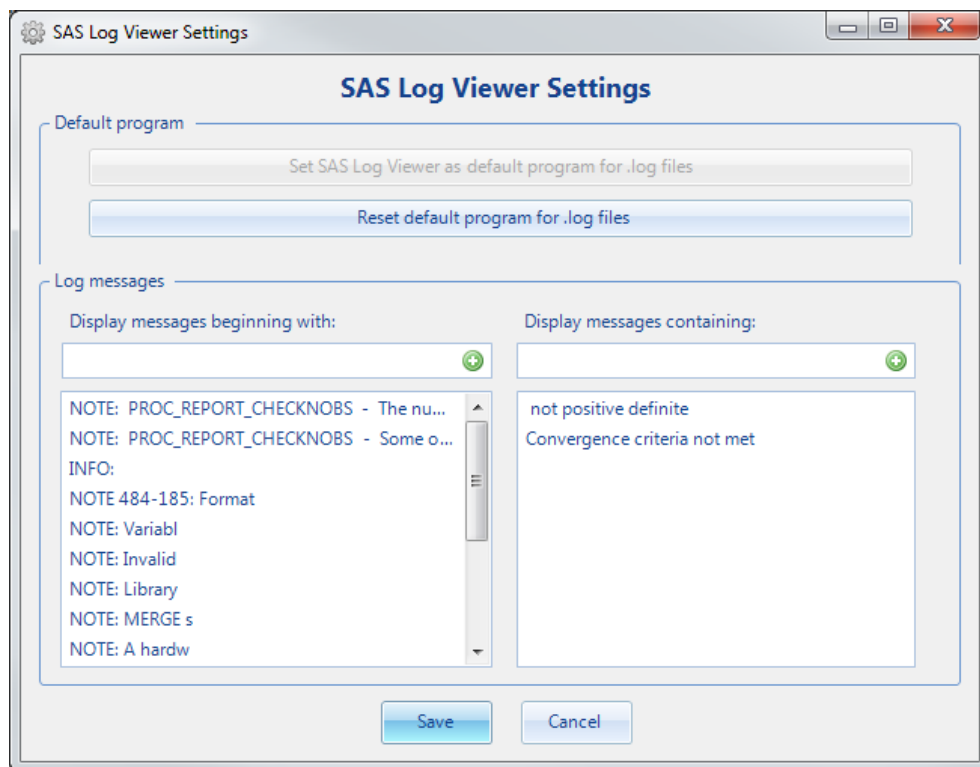
### OVERVIEW

On the upper right part of the window, a button 'Filter' allows the user to hide some messages by their function type (note, warning, or error) in the tree view, to focus on specific message criticality.



*The messages can be show/hidden in the tree view in function of their type*

The messages listed in the tree view are fully customizable, some can be added or removed by changing the application settings with the button , as can be seen below:



*The messages displayed in the tree view can be fully customized in the application settings*

## EXTRACTING A SAS PROGRAM FROM A SAS LOG

### OVERVIEW

An interesting functionality of this tool is the ability to extract all the SAS commands that have been traced in the log as a stand-alone SAS program. It simply requires that the option MPRINT has been used in the SAS session to trace the SAS statements generated during execution.

Generating a single stand-alone program with only the code used in the process, can be useful when using a set of SAS macros or/and meta-data files. When the code needs to be reviewed or re-executed by other people, this can lead to complications, especially if this is not done in the initial environment or in case where some of the files are protected.

The button  allows the user to extract a SAS program from the log. It automatically re-generates the SAS code (not the macro language but only procedures, data steps, comments, etc) that has been produced during the creation of the log.

### TECHNICAL ASPECTS

When the SAS option MPRINT is used in a SAS session, all the SAS statements that are generated by macro execution are displayed in the log, with a prefix "MPRINT(<Name of the macro>):". If the log lines beginning with this prefix are copied in a SAS program (without the prefix), this program can basically be executed to produce the same outputs as in the SAS session that generated the log file.

A few operations are performed to avoid unexpected errors:

- Removing the page breaking header that is inserted in SAS log at each new page (the log processing date can be extracted from this line to be put in an automatically generated header of the program)
- Removing line breaks that can have been inserted in quoted strings of **filename**, **libname**, and **call execute** statements

### GOING FURTHER

The header of the extracted program is automatically generated and includes information that are recorded during processing:

- Program name (from output file name selected by user)
- SAS version and platform of the workstation that produced the log
- Date of SAS execution when the log has been produced
- List of the error messages found in log
- List of the warning messages found in log

### CONCLUSION

It is important that SAS programmers use all options available to them to improve the productivity and quality in their work. Missing some critical messages in SAS logs due to their size or because they are opened with a non-adapted tool such as Notepad can lead to the user not identifying errors in results. Using a tool such as the one presented in this article allows the user to gain time and quality when reviewing SAS logs, at no cost, and with the possibility to customize the results to match specific business requirements.

### FREQUENTLY ASKED QUESTIONS

Q: Is it possible to install the tool without changing the way my default programs are associated with SAS files?

A: Yes, installing the SAS Log Viewer will not change the file associations set on the computer. It can be associated as default program for .log files in the application settings, but it's not done by default.

Q: Is it open-source?

A: Not yet but it is distributed freely as an executable application.

Q: Why is it free?

A: The SAS Log Viewer has been developed by ClinBAY for internal use, as part of the ClinXPORT™ reporting solution. After some enthusiastic comments, we decided to share it with other programmers to showcase some of the work we are doing.

Q: What if I identify a bug or think about a possible improvement?

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A: Do not hesitate to send me an e-mail at [julien@clinbay.com](mailto:julien@clinbay.com), I'll be pleased to update the program and make it better.

### REFERENCES

Julien Vanwinsberghe, Philippe Remusat, Francois Vandenhende. [ClinXPORT a software to streamline the analysis and reporting of clinical trials with SAS®](#). Phuse 2011, October 10-12, 2011, Brighton, UK.

### CONTACT INFORMATION

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