# SESUG 2022 Paper ### SaviApp - An Analysis Toolkit for SAS Environments

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#### ABSTRACT

SaviApp is the culmination of years of SAS code, log, and dataset analysis. This toolkit, provided to the SAS community, for free, helps to analyze a SAS environment.

## INTRODUCTION

The SAS environment at a site comprises a number of parts:

- SAS programs
- SAS<sup>®</sup> Enterprise Guide<sup>™</sup> projects
- SAS Logs
- SAS Datasets
- Additional components such as SAS<sup>®</sup> Data Integration Studio<sup>™</sup> files, SAS<sup>®</sup> Enterprise Miner<sup>™</sup> files, etc.

To assess a SAS environment, all of the above components need to be looked at. Over the years, at SAS client sites, Savian has encountered the need to do analysis on all of the components above. The SaviApp tool is a culmination of all of these efforts with both a modern GUI as well as output to Excel.

SaviApp will have Windows features commonly found in Windows 11 (such as theming). Note: The screenshots in this paper show the Dark theme.

### **TOOLS USED**

SaviApp was designed to be as modern as possible at the time this paper was written. Hence, it is using WinUI to mimic Windows 11 applications. A Windows application was chosen since most clients cannot use a website due to security/volume concerns. The app is designed to run standalone with no dependencies.

SaviApp was developed using the following toolset:

- .NET/C#
- Telerik WinUI controls
- Various 3<sup>rd</sup> party libraries from nuget
- No SAS components are used and there are no SAS dependencies

#### **HOW IT WORKS**

The bulk of the analysis is done using regular expression patterns (regex) against the SAS language or logs. SAS does not lend itself to traditional lexing/parsing due to its lack of keywords. Lexer/parsers such as ANTLR do not work in the context of SAS. SAS has multiple meta-languages that sit on top of the base language such as macros, ODS, DS2, etc. that complicate it further.

A typical SAS program can be thought of as 3 distinct structures:

- Step Boundaries
  - DATA STEP
  - o PROCs
- Standalone Statements
  - o LIBNAME
  - FILENAME
  - OPTIONS

Once the SAS program is broken up into step boundaries, the associated PROCs can be assigned to which SAS product they belong to. Individual PROCs can also be analyzed such as PROC SQL. In SQL's case, pass-through or not can be determined.

#### **MAIN MENU**

#### **OVERVIEW**

The Main Menu will show information regarding the product. This information will be updated via a web service call so that the latest information on the application is shown.

For any issues with the toolkit, a contact form is provided.

#### SCREENSHOTS

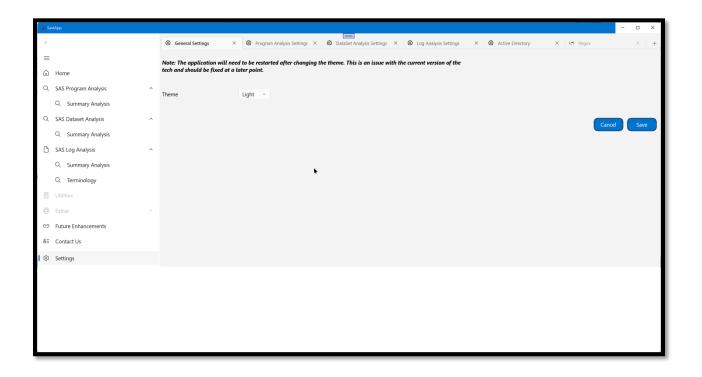
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Utilities		Dataset Statistics		
Extras		Analyzes datasets and lists them with path, obs, obs length, bytes, file information, and dataset metadata		
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Future Er	hancements	Analyzes logs and finds errors, warnings, and notes of importance. Summarizes processing times and statistics.		
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#### SETTINGS

#### **OVERVIEW**

The settings menu are where overall application settings are stored. The values in the UI are bound to a JSON file behind the scenes called appsettings.json. Modifications in the JSON file will be reflected in the UI so a user can make changes however it is most comfortable.

### SCREENSHOTS



### SAS CODE ANALYSIS

#### **OVERVIEW**

The SAS Code Analysis is designed to provide a overview of the SAS programs at a customer site. It can analyze the SAS programs determining the constituent parts. It then breaks it up into various parts shown as tabs. The analysis can also be exported to Excel for further analysis.

#### SECTIONS

Section	Description
Summary	Summary of the analysis
SAS Code Files	The list of the SAS code files found including the SAS programs found with the SAS <sup>®</sup> Enterprise Guide <sup>™</sup> files

EG File Summary	The high-level overview of the SAS <sup>®</sup> Enterprise Guide <sup>™</sup> files found.
FileNames	The FILENAME statements found within the SAS programs
LibNames	The LIBNAME statements found within the SAS programs
Sql	The PROC SQL statements found within the SAS programs
Options	The OPTION statements found within the SAS programs
Metadata	A summary of the PROCs found in the SAS programs and how often they were encountered
Large Files	Large files found that were outside of the defined scope of max file size (see settings)

## SCREENSHOTS

## **Selection Screen**

SaviApp		- • ×
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=	Analyze the SAS code in a specified directory	
G Home	Source Paths (1 per line) X:\repos\SasSamples\small_sample	
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Q Summary Analysis		
Q SAS Dataset Analysis	Work Path         Z\scratch\Test\Work           Options         Analyze SAS EG Files	
SAS Log Analysis	Options  Analyze SAS EG Files Analyze SAS programs	
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# Summary Tab

SAS Code Summary	— — X
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Total SAS Programs	4
Total Standalone SAS Files	
Total EGP Files	12
Total Score	0
Total EGP SAS Files	10
Total HADOOP Files	0
Total Programs With SQL PassThrough	1
Total PROCs	99
Total Data Steps	31
SAS Programs per EGP File	0.83
% EGP SAS Programs	85.71 %
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_Final_1219	70	8	2	2	6	4	27	0	0	1	0	EXPORT;SQL
_Final_1219	40	7	1	1	3	0	0	0	0	1	0	SQL
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354_Chisholm_Member_Aging_Out.egp	2	Nath, Ton	Trail1	2021-04-09	2021-09-08					
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RR_1334_Readmissions.egp	1	Brializye, Michael	m21580	2020-03-18	2020-12-01					
RR_770_QCMMR_Utilization_CHIP_DSHP_Final_1219 - Copy.egp	5 6	Decarasetti, Chaltanya	100545	2019-10-23	2020-05-11					
SmallProject.egp	1	Charchill, Alan K	athent	2016-05-12	2016-05-12					
354_Chisholm_Member_Aging_Out.egp	2	Nash, Ton	tradit (	2021-04-09	2021-09-08					
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# SAS LOG ANALYSIS

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7	X:\repos\SasSamples\Logs\eVisor Logs	IDS CTL REPORT DAILY 2011.07.06 07.13.08.log	2	1	12	2011-07-06	2011-07-06	71		87		-
8	X:\repos\SasSamples\Logs\eVisor Logs	IDS CTL REPORT DAILY 2013.08.09 12.52.47.log	1	5	ō	2013-08-09	2013-08-09	54		62		ŀ
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11	X:\repos\SasSamples\Logs\eVisor Logs	IDS_CTL_REPORT_SEMIANN_2013.08.09_12.51.37.log	1	5	5	2013-08-09	2013-08-09	54		62		
12	X:\repos\SasSamples\Logs\eVisor Logs	IDS_CTL_REPORT_SEMIANN_2013.08.14_04.36.25.log	4	8	3	2013-08-14	2013-08-14	54		68		
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