

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® Enterprise Guide™ projects
- SAS Logs
- SAS Datasets
- Additional components such as SAS® Data Integration Studio™ files, SAS® Enterprise Miner™ 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 3rd 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
 - PROCs
- Standalone Statements
 - 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.

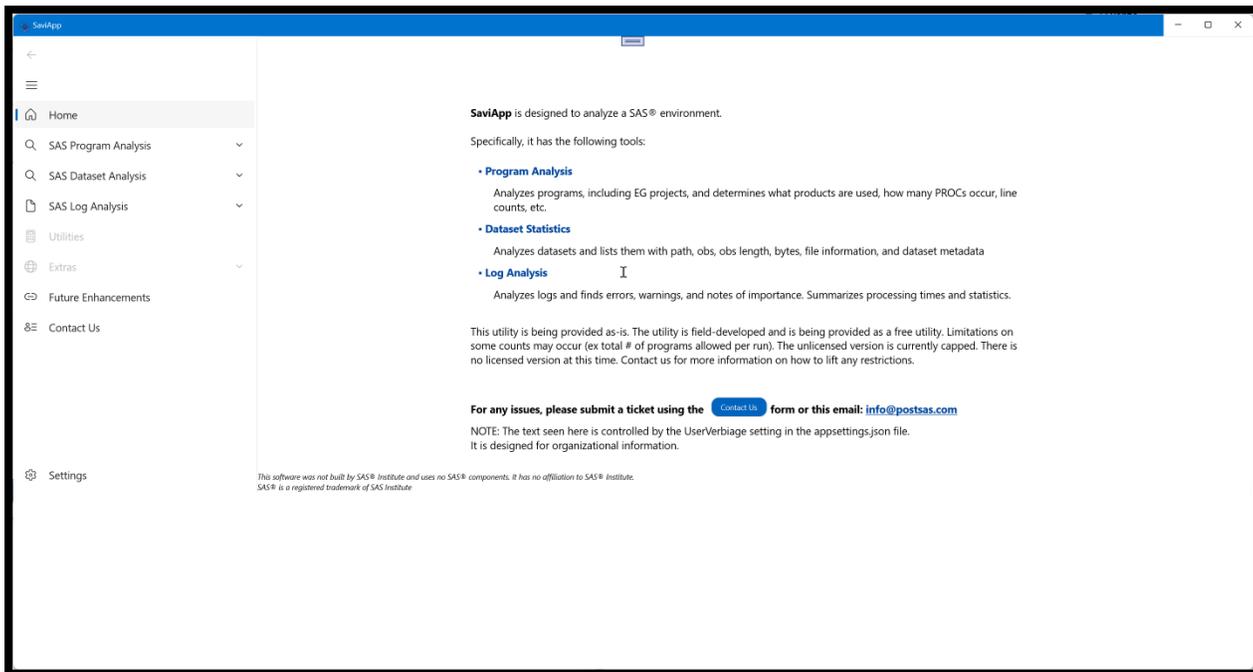
MAIN MENU

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

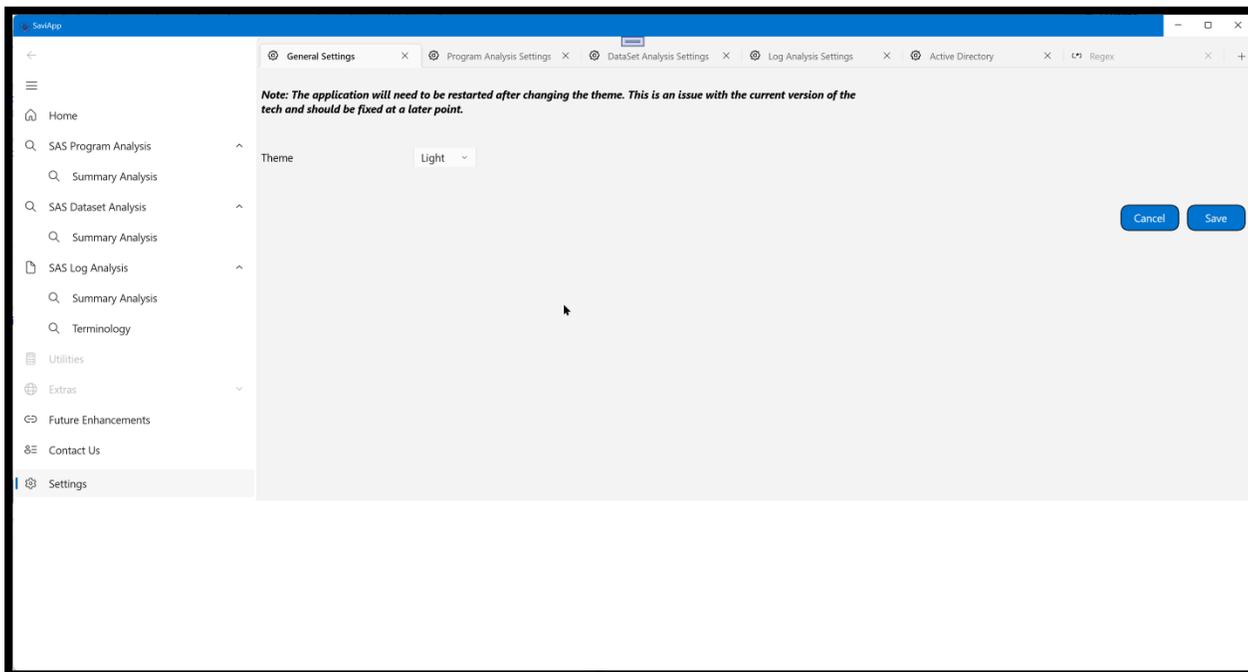


SETTINGS

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.

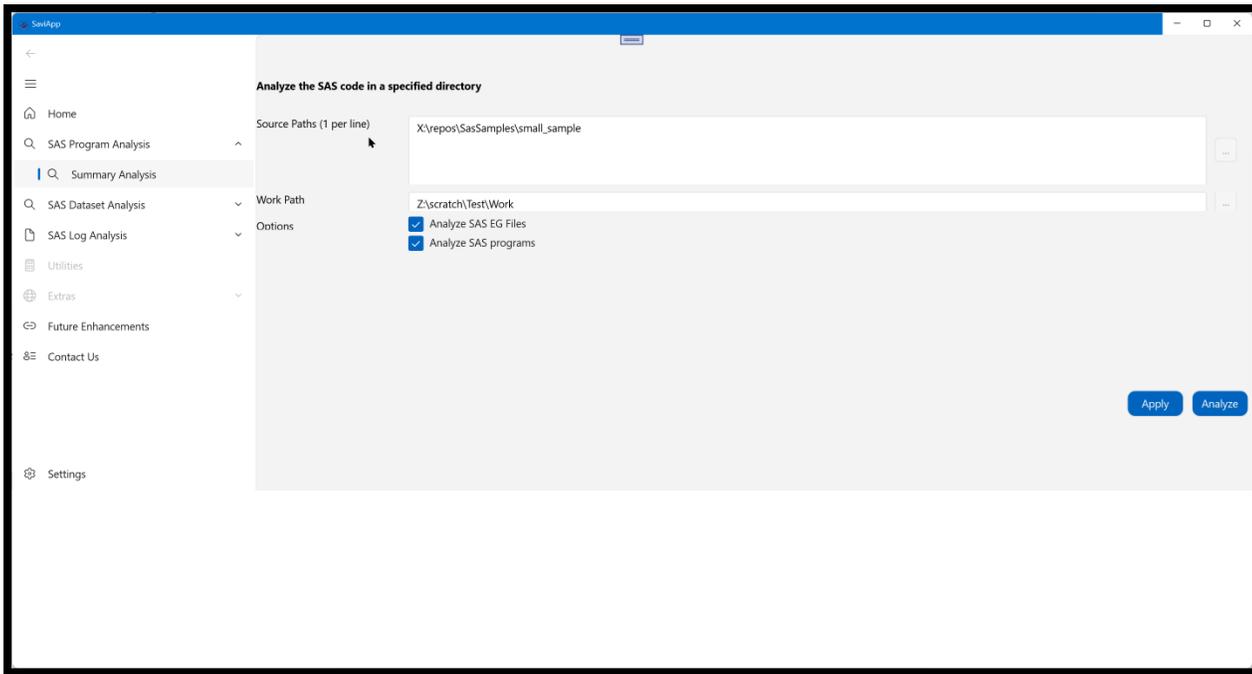
SECTIONS

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® Enterprise Guide™ files

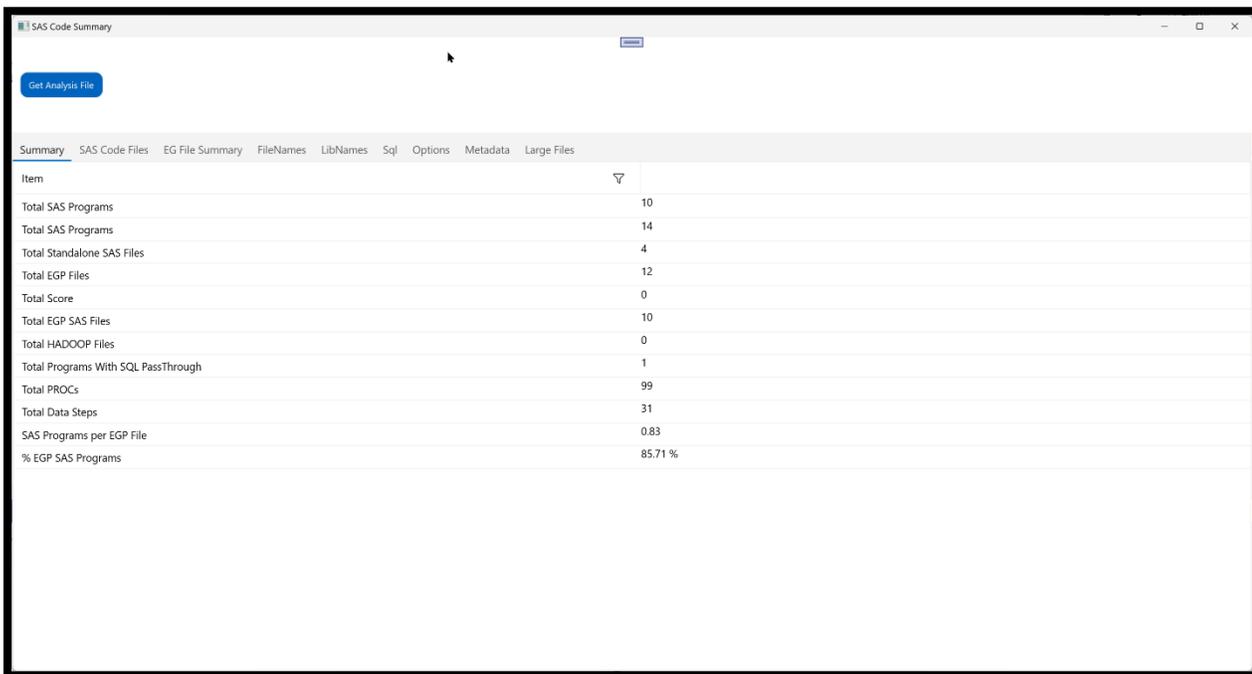
EG File Summary	The high-level overview of the SAS® Enterprise Guide™ files found.
FileNames	The FILENAME statements found within the SAS programs
LibNames	The LIBNAME statements found within the SAS programs
Sql	The PROC SQL statements found within the SAS programs
Options	The OPTION statements found 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



Summary Tab



SAS Files Tab

Score	ProcScore	Total Procs	Distinct Procs	Proc Lines	Total DataSteps	DataStep Lines	Total FileNames	Total LibNames	Total Sql	Total Options	Proc Used
20	3	3	1	14	0	0	0	0	0	0	IMPORT
1825	334	68	16	207	20	102	0	2	0	1	CONTENTS:CORR:FORMAT:FREQ:GLM:INFO
25	3	3	2	7	1	2	1	1	0	0	IMPORT:SORT
90	15	3	3	9	2	7	1	1	1	0	IMPORT:MEANS:SQL
5	0	0	0	0	0	0	0	1	0	0	
10	0	0	0	0	1	5	0	0	0	0	
5	0	0	0	0	0	0	0	0	1	0	
5	0	0	0	0	0	0	0	0	0	0	
_Final_1219	70	8	2	2	6	4	27	0	1	0	EXPORT:SQL
_Final_1219	40	7	1	1	3	0	0	0	1	0	SQL
_Final_1219	50	7	1	1	3	0	0	0	1	0	SQL
_Final_1219	10	0	0	0	0	1	14	1	0	0	
_Final_1219	645	119	17	1	51	2	13	0	17	0	SQL
_Final_1219	40	7	1	1	3	0	0	0	1	0	SQL

EG File Summary Tab

File	Total SAS Programs	EG User	EG User Id	EG Created	EG Modified
354_Chisholm_Member_Aging_Out.egg	2	Heath, Tim	tsheath1	2021-04-09	2021-09-08
db_26_auth360.egg	0	Heath, Edgar	edheath	2021-07-09	2021-07-09
DB_28_membership_enroll.egg	0				
RR_1334_Readmissions.egg	1	Widdows, Michael	m12158	2020-03-18	2020-12-01
RR_770_QCMMR_Utilization_CHIP_DSHF_Final_1219 - Copy.egg	6	Deane-Smith, Challenge	cdsm046	2019-10-23	2020-05-11
SmallProject.egg	1	Chen-HS, Alan K	ahcnc1	2016-05-12	2016-05-12
354_Chisholm_Member_Aging_Out.egg	2	Heath, Tim	tsheath1	2021-04-09	2021-09-08
db_26_auth360.egg	0	Heath, Edgar	edheath	2021-07-09	2021-07-09
DB_28_membership_enroll.egg	0				
RR_1334_Readmissions.egg	1	Widdows, Michael	m12158	2020-03-18	2020-12-01
RR_770_QCMMR_Utilization_CHIP_DSHF_Final_1219 - Copy.egg	6	Deane-Smith, Challenge	cdsm046	2019-10-23	2020-05-11
SmallProject.egg	1	Chen-HS, Alan K	ahcnc1	2016-05-12	2016-05-12

SAS LOG ANALYSIS

SAS Log Summary

Get Analysis File

Summary Log Files Errors/Warnings

Drag a column header here to group

Id	Path	Name	Data Steps	Procs	Start	Finish	Librefs	Steps
0	X:\repos\SasSamples\Logs\eVisor Logs	ctl_element_definition_13sep_sprint_cmr_2013.08.13_12.16.01.log	34	1	2013-08-13	2013-08-13	54	91
1	X:\repos\SasSamples\Logs\eVisor Logs	ctl_element_definition_13sep_sprint_incentives_elem_update_onetime_2013.08.13_12.15.36.log	0	1	2013-08-13	2013-08-13	54	57
2	X:\repos\SasSamples\Logs\eVisor Logs	ctl_tbl_update_13aug_ICUE_Q3_onetime_2013.07.12_16.19.45.log	0	207	2013-07-12	2013-07-12	63	272
3	X:\repos\SasSamples\Logs\eVisor Logs	evdm_copy_to_grid_2013.08.02_16.03.03.log	0	6	2013-08-02	2013-08-02	64	72
4	X:\repos\SasSamples\Logs\eVisor Logs	ID_RX_RENAME_SMALL_PHARMACY_FACT_2010.08.12_18.37.28.log	0	2	2010-08-12	2010-08-12	39	43
5	X:\repos\SasSamples\Logs\eVisor Logs	IDS_ASSIGN_MONTHLY_2011.12.13_13.12.45.log	11	8	2011-12-13	2011-12-13	60	81
6	X:\repos\SasSamples\Logs\eVisor Logs	IDS_COPY_MEDICAL_SERVICE_FACT_PREADJ_2010.12.13_11.54.45.log	3	0	2010-12-13	2010-12-13	42	47
7	X:\repos\SasSamples\Logs\eVisor Logs	IDS_CTL_REPORT_DAILY_2011.07.06_07.13.08.log	2	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	2013-08-09	2013-08-09	54	62
9	X:\repos\SasSamples\Logs\eVisor Logs	IDS_CTL_REPORT_SEMIANN_2013.07.15_13.09.49.log	0	2	2013-07-15	2013-07-15	63	67
10	X:\repos\SasSamples\Logs\eVisor Logs	IDS_CTL_REPORT_SEMIANN_2013.08.01_00.06.44.log	1	4	2013-08-01	2013-08-01	63	70
11	X:\repos\SasSamples\Logs\eVisor Logs	IDS_CTL_REPORT_SEMIANN_2013.08.09_12.51.37.log	1	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	2013-08-14	2013-08-14	54	68
13	X:\repos\SasSamples\Logs\eVisor Logs	IDS_FEEDBACK_BUILD_NEW_OPEN_CASE_FACT_2013.08.08_13.48.50.log	2	2	2013-08-08	2013-08-08	54	61