



SAS[®] Viya[®] 3.4 Quick Start

Quick Start

About the SAS Viya Programming Documentation

This collection of documents provides task-based programming examples, syntax, and concepts for products in SAS Viya, such as:

- SAS Visual Analytics programming
- SAS Visual Statistics programming
- SAS Visual Data Mining and Machine Learning programming

Note: On most hosts, SAS 9.4M5 and later releases are tightly integrated with SAS Viya. See [SAS 9.4M5 Integration with SAS Viya](#) in *What's New in Base SAS: Details*. (The exceptions are z/OS and 32-bit Windows.)

To search this collection, click . For search tips, click , and select **Help Tips**.

TIP If you are viewing this document in a stand-alone context, [access the collection](#) before you use the preceding information.

Note: Your site must license and install one or more SAS Viya products to access this functionality.

Orientation

This software supports analytical data preparation, variable transformations, exploratory analysis, analytical modeling, integrated model comparison, and scoring. Here are the main components:

Component	Description
SAS 9.4M6	SAS 9.4M6 is integrated with SAS Viya. SAS programs submitted from SAS 9.4M6 clients can call procedures that are unique to SAS Viya, as well as CAS-enabled DATA step code and procedures that have been modified to leverage a CAS server and its tables.
SAS Viya	The third generation of high-performance in-memory analytics.
SAS Studio	The integrated SAS programming environment.
SAS Cloud Analytic Services (CAS)	The analytic engine. CAS uses high-performance, multithreaded analytic code to rapidly process requests against data of any size.
SAS Visual Analytics	Programming tools that provide baseline functionality, including reporting and basic analytics, such as: <ul style="list-style-type: none"> ■ analytical data preparation ■ variable transformations ■ exploratory analysis ■ descriptive statistics
SAS Visual Statistics	An additional set of advanced analytic functionality that builds on SAS Visual Analytics, such as: <ul style="list-style-type: none"> ■ building predictive models ■ integrated model comparison
SAS Visual Data Mining and Machine Learning	An additional set of advanced analytic functionality that builds on SAS Visual Statistics, such as: <ul style="list-style-type: none"> ■ tune machine learning algorithm hyperparameters ■ advanced statistical operations ■ analyzing complex data
SAS Econometrics	A set of functionality that provides techniques to model complex business and economic scenarios and to analyze the dynamic impact that specific events might have over time.
SAS Visual Forecasting	Provides automatic variable, event, and model selection. It then automatically generates your forecasts.
SAS Visual Text Analytics	A text analytics framework combining text mining, contextual extraction, categorization, sentiment analysis and search.
SAS Optimization	A set of procedures for exploring models of distribution networks, production systems, resource allocation problems, and scheduling problems using the tools of operations research.

CAS-based procedures run against data that is in CAS. For example, before you can use CAS to work with a SAS data set, you must load that data set into CAS. The following instructions demonstrate basic mechanics.

TIP If you cannot securely sign in and start a CAS session, contact your administrator or see the troubleshooting topic in [SAS Viya Administration: Identity Management](#).

Demonstration: Load Personal Data

- 1 Sign in to SAS Studio.
 - a Open SAS Studio from a URL that is provided by your SAS administrator. For example, you might enter either of the following URLs:
 - `https://webserver-host-name/SASStudioV` (for SAS Studio 5.1, which is available in full deployments)
 - `https://webserver-host-name/SASStudio` (for SAS Studio 4.4, which is available in all deployments)
 - b If you are prompted for credentials, sign in.
- 2 Start a CAS session.
 - a In the **Snippets** section of the navigation pane, expand **(SAS) Snippets** ⇨ **SAS Viya Cloud Analytic Services**.
 - b Right-click **New CAS Session** and select **Open**. The snippet opens in the code editor.
 - c In the toolbar, click  to run the **New CAS Session** code.
- 3 Load a table.
 - a In the navigation pane, right-click **Load data to caslib** and select **Open**.
 - b In the code editor, edit the SAS data set section so that it looks like this:


```
PROC CASUTIL;
  LOAD DATA=sashelp.cars OUTCASLIB="CASUSER"
  CASOUT="demoTable" PROMOTE;
RUN;
```

TIP CASUSER is your personal caslib. It is available across your sessions. You cannot enable other users to access it.

 - c Select the preceding code. In the toolbar, click  to run only the four lines of selected code.
- 4 Verify that you can access the loaded data.
 - a In the navigation pane, right-click **Generate SAS librefs for caslibs** and select **Open**.
 - b In the toolbar, click  to run the code.
 - c In the **Libraries** section of the navigation pane, expand **(My) Libraries** ⇨ **CASUSER**.
 - d Double-click **demoTable** to open it.

Demonstration: Provide Shared Data

- 1 Sign in to SAS Studio and start a CAS session, if you have not already done so.

TIP For details, see the first two steps in the preceding demonstration.

2 Create a container for shared CAS data.

- a In the **Snippets** section of the navigation pane, expand **(SAS) Snippets** ⇒ **SAS Viya Cloud Analytic Services**.
- b Right-click **New caslib for Path** and select **Open**.
- c In the code editor, edit the snippet so that it looks like this:

```
CASLIB demoCas PATH="/filePath/" DATASOURCE=(SRCTYPE="path") GLOBAL;
```

Note: Enter a path that is relative to and accessible from your CAS server. You can reference an empty directory.

- d Click  to run the code.

Note: If an error indicates that you do not have permission to create global caslibs, see [“Caslib Management Privileges” in SAS Viya Administration: SAS Cloud Analytic Services](#). Initially, only administrators can add global caslibs. An administrator can enable non-administrators to add global caslibs.

3 Give all users Read access to the new caslib.

In a full deployment, complete these steps:

- a Access the **Data** page in SAS Environment Manager.
 - If you are using SAS Studio 5.1, select **Manage Environment** from the applications menu (☰) and then click  in the vertical navigation bar.
 - If you are using SAS Studio 4.4, open SAS Environment Manager at a URL that is provided by your SAS Administrator. For example, you might enter: `https://webserver-host-name/SASEnvironmentManager`. Sign in, and then click  in the vertical navigation bar.
- b On the **Data** page, select the **Data Sources** tab. Right-click the new caslib, and select **Edit authorization**.

TIP **Data** page functionality is also available in other contexts. See [Data Selection Windows and SAS Data Explorer](#) in *SAS Data Explorer: User's Guide*.

- c In the Edit Authorization window, adjust the gauge in the **Access Level** column to increase access for Authenticated Users from **No access** to **Read**.
- d Click **Save**.
- e Go back to SAS Studio.
 - If you are using SAS Studio 5.1, select **Develop SAS Code** from the applications menu (☰).
 - If you are using SAS Studio 4.4, switch back to the browser tab or window in which that application is running.

In a programming-only deployment, complete these steps:

- a In the banner of SAS Studio 4.4, click  and select **CAS Administration**.
- b In the sign-in window, enter your operating system credentials.
- c In CAS Server Monitor, beneath the **SAS Cloud Analytic Services** banner, click .

- d On the **Configuration** page, select **Access Controls**.
 - e In the **Caslibs** list, select the caslib.
 - f In the upper right, click **Edit**.
 - g In the **Edit Access Controls** window, adjust settings as follows:
 - In the **Read Info** row for Authenticated Users, select the **Grant** radio button.
 - Click **Add Row**. In the new row at the end of the page, select **Authenticated Users**, the **Grant** radio button, and the **Select** activity.
 - h Click **OK** to save your changes.
 - i Under **Access Controls**, review the results of your changes.
 - j At the right edge of the banner, click your user name, and select **Sign Out**.
- 4 Load data to the new caslib.
- a In the navigation pane of SAS Studio, right-click the snippet **Load data to caslib** and select **Open**.
 - b In the code editor, edit the SAS data set section so that it looks like this:


```
PROC CASUTIL;
  LOAD DATA=sashelp.cars OUTCASLIB="demoCas"
  CASOUT="demoTable" PROMOTE;
RUN;
```
 - c Select the preceding code. In the toolbar, click  to run only the four lines of selected code.
- 5 Verify that other users can see the data. For example, ask them to complete these steps:
- a Sign in to SAS Studio, start a CAS session, and run the **Generate SAS librefs for caslibs** snippet.
 - b In the **Libraries** section of the navigation pane, expand **(My) Libraries** ⇨ **demoCas**.
 - c Double-click **demoTable** to open it.

Tip: Automatically Connect and Generate Librefs

For convenience, you can configure SAS Studio to perform the following tasks each time that you sign in:

- Start a CAS session.
- Generate SAS librefs for existing caslibs that have names that are no more than eight characters long.

Complete the following steps:

- 1 In the SAS Studio 4.4 banner, click  and select **Edit Autoexec File**.
In SAS Studio 5.1, click **Options** and select **Autoexec file**.
- 2 On the **Autoexec.sas** tab of the (Edit) Autoexec File window, paste the following code:

6

```
cas casauto;  
caslib _all_ assign;
```

- 3 Run the code.
- 4 Save the code.

Documentation: References by Task

Task	Refer to:
Do you need to migrate your data to UTF-8?	Migrating Data to UTF-8 for SAS Viya
Access your data	DATA Step Examples Common Tasks for Accessing Data
Manipulate your data	Data Step Basics
Prepare, Model, Assess	MDSUMMARY Procedure SAS Visual Data Mining and Machine Learning: Procedures SAS Visual Statistics: Procedures
Graph your output data	Introduction to SAS Platform Graphing
Program with the Lua, Python, R, or CASL languages	Getting Started with SAS Viya for Lua Getting Started with CASL Programming Getting Started with SAS Viya for Python Getting Started with SAS Viya for R
Learn more about SAS Viya and SAS 9 interactions.	An Introduction to SAS Viya Programming SAS Guide to Software Updates and Product Changes