

SAS[®] 9 SAS[®] 9.4 XMLV2 LIBNAME Engine Tip Sheet

LIBNAME Examples

Example 1: Import an XML Document

The LIBNAME statement assigns a libref to the XML document to be imported. PROC PRINT interprets the XML document as SAS data set MyXML.Students.

```
libname myxml xmlv2 'C:\XML\Students.xml';  
  
proc print data=myxml.students;  
run;
```

Example 2: Export an XML Document

The first LIBNAME statement assigns a libref to the SAS library that contains the SAS data set to be exported, which is Singers. The second LIBNAME statement assigns a libref to the XML document. The DATA step writes Myfiles.Singers to Singers.xml.

```
libname myfiles base 'C:\Myfiles';  
libname myxml xmlv2 'C:\XML\Singers.xml';  
  
data myxml.singers;  
    set myfiles.singers;  
run;
```

Example 3: Import an XML Document with an XMLMap

The LIBNAME statement assigns a libref to the XML document to be imported and specifies an XMLMap. The XMLMap is needed to map the XML document into a SAS data set, because the structure does not conform to a supported markup type. PROC PRINT interprets the XML document as SAS data set Nhl.Teams.

```
libname nhl xmlv2 'C:\XML\Nhl.xml'  
xmlmap='C:\XML\Nhl.map';  
  
proc print data=nhl.teams;  
run;
```

LIBNAME Examples

(Continued)

Example 4: Export an XML Document with an XMLMap

The first LIBNAME statement assigns a libref to the SAS library that contains the SAS data set to be exported, which is Teams. The second LIBNAME statement assigns a libref to the XML document, specifies that the markup type is determined by an XMLMap, and specifies the XMLMap. The XMLMap is needed to map the SAS data set into a specific XML document structure rather than a rectangular one. The DATA step writes Nhl.Teams to NhlOut.xml.

```
libname nhl 'C:\Myfiles';  
libname out xmlv2 'C:\XML\NhlOut.xml'  
xmltype=xmlmap  
xmlmap='C:\XML\NhlExport.map';  
  
data out.teams;  
    set nhl.teams;  
run;
```

Example 5: Import an XML Document by Automatically Generating an XMLMap

The LIBNAME statement assigns a libref to the XML document to be imported, requests an XMLMap to be generated and to overwrite the file if it exists by including the AUTOMAP=REPLACE option, and specifies the location for the generated XMLMap. PROC PRINT interprets the XML document as SAS data set Nhl.Teams.

```
libname nhl xmlv2 'C:\XML\Nhl.xml'  
automap=replace  
xmlmap='C:\XML\NhlGenerate.map';  
  
proc print data=nhl.teams;  
run;
```

Common XML Errors

- **Corrupted encodings.** If you edit an XML file with an editor that is not encoding aware, the file can become unusable.
- **Case sensitivity.** All XML tags are case sensitive.
- **Single enclosing element.** An XML file must have a single enclosing element. Concatenating XML files is not valid.
- **White space.** White space in XML is compressed unless it is within a CDATA block.
- **XML header.** An XML file should begin with an XML header. If it does not, it might not be readable.

See support.sas.com/rnd/base/xmlengine to download a ZIP archive that contains the files that you need to run the examples in this tip sheet. The web page also provides a link to the full documentation for the XMLV2 LIBNAME engine and to the download for SAS XML Mapper.

For complete information, refer to the SAS 9.4 documentation at support.sas.com/documentation.



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SAS[®] 9.4 XMLV2 LIBNAME Engine Tip Sheet

This tip sheet places frequently used information in one place, on one sheet of paper, so you don't have to search throughout the documentation. This tip sheet presents SAS 9.4 information for the XMLV2 LIBNAME engine.

The XMLV2 LIBNAME engine processes an XML document. The engine can:

- **export** (write to an output location) an XML document from a SAS data set by translating it to XML markup.
- **import** (read from an input location) an external XML document. The input XML document is translated to a SAS data set.

The XMLV2 LIBNAME engine works much like other SAS engines. You execute a LIBNAME statement to assign a libref and specify the XMLV2 engine name. (XML92 is supported as an alias.) You use that libref throughout the SAS session where a libref is valid.

The XMLV2 LIBNAME engine is available in Base SAS on all supported operating environments. XMLV2 functionality is production in all SAS 9.4 operating environments.

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LIBNAME Statement Syntax

LIBNAME *libref* XMLV2 < '*SAS-library* | *XML-document-path*' > <*option(s)*>;

Required Arguments

libref

a valid SAS name to associate with the XML document. A libref cannot exceed eight characters.

XMLV2

the LIBNAME engine name. (**Alias:** XML92)

'*SAS-library*|*XML-document-path*'

the physical location of the XML document.

Options

AUTOMAP=REPLACE|REUSE¹

FORMATACTIVE=NO|YES

INDENT=*integer*

ODSCHARSET=*character-set*

ODSTRANTAB=*table-name*

PREFIXATTRIBUTES=YES|NO²

TAGSET=*tagset-name*

XMLCONCATENATE=NO|YES

XMLDATAFORM=ELEMENT|ATTRIBUTE

XMLDOUBLE=DISPLAY|INTERNAL

XMLENCODING= '*encoding-value*'

XMLFILEREFS=*fileref*

XMLMAP=*fileref* | '*XMLMap*'

XMLMETA=DATA|SCHEMADATA|SCHEMA

XMLPROCESS=CONFORM|PERMIT

XMLSCHEMA=*fileref* | '*external-file*'

XMLTYPE=GENERIC|XMLMAP

¹ Option available starting in the second maintenance release for SAS 9.3.

² Option available starting in SAS 9.4.

XMLV2 Engine

XMLV2 accesses enhancements since SAS 9.1.3, which includes the ability to assign a libref to a SAS library in a directory-based environment, and enhanced XMLMap support. XML92 is supported as an alias.

XMLMap File

An XMLMap file is a separate XML document that is used by the XMLV2 engine to provide enhanced support for XML processing. The recommended method to create an XMLMap is to generate an XMLMap with the SAS XML Mapper application or by including the AUTOMAP= LIBNAME statement option.

XMLMap FAQ

Why Do I Get Errors When Importing an XML Document?

The engine imports only XML documents that conform to the markup types supported in the XMLTYPE= option. Attempting to import free-form XML documents generates errors. To successfully import files that do not conform to the markup types, create an XMLMap that tells SAS how to interpret the XML markup into a SAS data set or data sets, variables (columns), and observations (rows). In the LIBNAME statement, specify XMLV2 and include XMLMAP= to specify the XMLMap.

Using an XMLMap When Exporting. To export an XML document that was imported using an XMLMap, you can add exporting elements, and then use the XMLMap to map the SAS data set back into a specific XML document structure rather than a rectangular one. In the LIBNAME statement, specify XMLV2, include XMLTYPE=XMLMAP, and include XMLMAP= to specify the XMLMap.

Note: You can export only one XML document using an XMLMap.

XMLMap File Example

The following XMLMap file, named Vehicles.map, was generated by the SAS XML Mapper:

```
<?xml version="1.0" encoding="UTF-8"?>
<!-- ##### -->
<!-- 2013-01-24T15:20:37 -->
<!-- SAS XML Libname Engine Map -->
<!-- Generated by XML Mapper, 904000.0.0.20121031190000_v940 -->
<!-- ##### -->
<!-- ### Validation report ### -->
<!-- ##### -->
<!-- XMLMap validation completed successfully. -->
<!-- ##### -->
<SXLEMAP name="AUTO_GEN" version="2.1">
  <NAMESPACES count="0"/>
  <!-- ##### -->
  <TABLE description="VEHICLES" name="VEHICLES">
    <TABLE-PATH syntax="XPath"/>/VEHICLES</TABLE-PATH>
    <COLUMN class="ORDINAL" name="VEHICLES_ORDINAL">
      <INCREMENT-PATH beginend="BEGIN"
syntax="XPath"/>/VEHICLES</INCREMENT-PATH>
      <TYPE>numeric</TYPE>
      <DATATYPE>integer</DATATYPE>
    </COLUMN>
  </TABLE>
  <!-- ##### -->
  <TABLE description="FORD" name="FORD">
    <TABLE-PATH syntax="XPath"/>/VEHICLES/FORD</TABLE-PATH>
    <COLUMN class="ORDINAL" name="VEHICLES_ORDINAL">
      <INCREMENT-PATH beginend="BEGIN"
syntax="XPath"/>/VEHICLES</INCREMENT-PATH>
      <TYPE>numeric</TYPE>
      <DATATYPE>integer</DATATYPE>
    </COLUMN>
    <COLUMN class="ORDINAL" name="FORD_ORDINAL">
      <INCREMENT-PATH beginend="BEGIN"
syntax="XPath"/>/VEHICLES/FORD</INCREMENT-PATH>
      <TYPE>numeric</TYPE>
      <DATATYPE>integer</DATATYPE>
    </COLUMN>
  </TABLE>
  <!-- ##### -->
  <TABLE description="ROW" name="ROW">
    <TABLE-PATH syntax="XPath"/>/VEHICLES/FORD/ROW</TABLE-PATH>
    <COLUMN class="ORDINAL" name="FORD_ORDINAL">
      <INCREMENT-PATH beginend="BEGIN"
syntax="XPath"/>/VEHICLES/FORD</INCREMENT-PATH>
      <TYPE>numeric</TYPE>
      <DATATYPE>integer</DATATYPE>
    </COLUMN>
    <COLUMN class="ORDINAL" name="ROW_ORDINAL">
      <INCREMENT-PATH beginend="BEGIN"
syntax="XPath"/>/VEHICLES/FORD/ROW</INCREMENT-PATH>
      <TYPE>numeric</TYPE>
      <DATATYPE>integer</DATATYPE>
    </COLUMN>
    <COLUMN name="Model">
      <PATH syntax="XPath"/>/VEHICLES/FORD/ROW/Model</PATH>
      <TYPE>character</TYPE>
      <DATATYPE>string</DATATYPE>
      <LENGTH>8</LENGTH>
    </COLUMN>
    <COLUMN name="Year">
      <PATH syntax="XPath"/>/VEHICLES/FORD/ROW/Year</PATH>
      <TYPE>numeric</TYPE>
      <DATATYPE>integer</DATATYPE>
    </COLUMN>
  </TABLE>
</SXLEMAP>
```

SAS[®] XML Mapper

The SAS XML Mapper is a stand-alone Java application that generates XMLMaps. The application analyzes the structure of an XML document or an XML schema to generate basic XMLMap syntax.

The interface contains several windows, a menu bar, and a toolbar that you use to display and enter information. Features include displaying an XML document or an XML schema, generating XMLMap syntax with both an automatic function and a drag-and-drop function, modifying an XMLMap, validating an XMLMap, and generating SAS code to be submitted in a SAS session.

The application has online Help attached. From the menu bar, select **Help**, and then **Help Topics**.

SAS XML Mapper is available with Base SAS 9.4 installation packages on all platforms where Java is available, with the exception of z/OS. SAS XML Mapper is also available at no charge as a stand-alone download. See the XML LIBNAME Engine topic on the Base SAS Focus Area at support.sas.com/rnd/base/xmlengine. Look for **XML Mapper** and a link for **Base SAS Software** downloads.

Tip: See the Base SAS Focus Area page for a SAS XML Mapper video.

To start XML Mapper:

- In a Windows environment, launch on your desktop, typically from Start ► All Programs ► SAS ► SAS XML Mapper 9.4.
- In a UNIX environment, execute from the UNIX command prompt.