The SAS® Ecosystem – A Programmer’s Perspective

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SAS Ecosystem Languages:

DATA step procedural language

Analogue of DATA step language for user-defined functions in PROC FDOM and other select procedures

DS2, an object-oriented language (PROC DS2)

SAS Macro language operating on SAS code

SAS Macro language operating on arbitrary text via PROC STREAM

Perl regular expressions

Lua scripting language via PROC LUA

Glossary language plus some Java, via PROC GROOVY

Java classes (precompiled) can be used in SAS DATA steps

C, C++ functions (precompiled) can be used if registered using PROC PHOTO

GTL–Graph Template Language, for graphics using PROC TEMPLATE and SAS procedures

SASML: a matrix & vector language

MDDS for cubes via SAS/MGB Server product

SQL dialects:

2 Native SAS SQL dialects that work with SAS files and/or RDMS tables:

- PROC SQL
- PROC FEDSQL

Direct pass-through of RDMS-dialect SQL code (as-written, no change) to supported RDMS systems.

Implicit pass-through of SQL: write native SAS SQL, the SAS system divides the work into tasks that can be done on the database vs. by SAS, and then performs the requested printing.

Supported databases and interfaces include:

- Oracle
- DB2
- Greenplum
- Hadoop
- Sybase
- Microsoft SQL Server
- MySQL
- Oracle
- and many others.

Legacy SAS languages:

SCL: SAS Component Language; object-oriented and runs via the SAS/AF product

Interfaces with other languages and external tools:

- R
- Python
- Java
- Lua
- REST API (via PROC HTTP in Base SAS; also SAS V9 product)
- Jupyter Notebook

SAS X command provides an interface to external systems and programming environments.

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