

PROC SQL

What Is SQL?

Structured Query Language (SQL) is a standardized, widely used language that retrieves and updates data in relational tables and databases.

A *relation* is a mathematical concept that is similar to the mathematical concept of a set. Relations are represented physically as two-dimensional tables that are arranged in rows and columns. Relational theory was developed by E. F. Codd, an IBM researcher, and first implemented at IBM in a prototype called System R. This prototype evolved into commercial IBM products based on SQL. The Structured Query Language is now in the public domain and is part of many vendors' products.

What Is the SQL Procedure/Proc SQL?

The SQL procedure is SAS' implementation of Structured Query Language. PROC SQL is part of Base SAS software, and you can use it with any SAS data set (table). Often, PROC SQL can be an alternative to other SAS procedures or the DATA step. You can use SAS language elements such as global statements, data set options, functions, informats, and formats with PROC SQL just as you can with other SAS procedures.

PROC SQL can

- Retrieve data from tables or views
- Combine data from tables or views
- Create tables, views, and indexes
- Update the data values in PROC SQL tables
- Update and retrieve data from database management system (DBMS) tables
- Generate reports
- Generate summary statistics

Terminology

What is Table?

Proc SQL table is same as SAS DATASET /DATAFILE. It consists Rows and Columns.

The rows correspond to observations, and the columns correspond to variables in SAS Datafile. You can create and modify tables by using the SAS DATA step, or by using the PROC SQL statements.

| SQLTERMINOLOGY | SAS TERMINOLOGY | DATA PROCESSING TERMINOLOGY |
|----------------|-----------------------|-----------------------------|
| TABLE | SAS DATSET/ DATA FILE | FILE |
| ROW | OBSERVATION | RECORD |
| COLUMN | VARIABLE | FIELD |

What is Queries?

Queries retrieve data from a table, view, or DBMS. A query returns a *query result*, which consists of rows and columns from a table. With PROC SQL, you use a SELECT statement and its subordinate clauses to form a query.

What is Views?

PROC SQL views do not actually contain data as tables do. Rather, a PROC SQL view contains a stored SELECT statement or query. The query executes when you use the view in a SAS procedure or DATA step. When a view executes, it displays data that is derived from existing tables, from other views, or from SAS/ACCESS views. Other SAS procedures and the DATA step can use a PROC SQL view as they would any SAS data file.

What is Null Values?

According to the ANSI Standard for SQL, a missing value is called a *null value*. It is not the same as a blank or zero value. However, to be compatible with the rest of SAS, PROC SQL treats missing values the same as blanks or zero values, and considers all three to be null values. This important concept comes up in several places in this document.

What is difference between Data step and SQL Procedure?

