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Exploring the Undocumented PROC SQL _METHOD Option

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Abstract

The SQL Procedure contains many powerful and elegant language features for SQL users to take advantage of. This paper explores the _METHOD option as an applications development and tuning tool. Attendees will learn how to use this undocumented and powerful option to better understand and control how a query processes.

Introduction

PROC SQL supports a powerful "undocumented" option called **_METHOD**. Although undocumented features like the _METHOD option should be used with caution, SAS users may find this option to provide far greater value than risk. In fact, the _METHOD option is worth exploring because the benefits associated with gaining a better understanding associated with what happens during specific PROC SQL processes, including complex table joins and subqueries.

PROC SQL Join Algorithms and the _METHOD Option

When it comes to performing PROC SQL joins, users supply the list of tables for joining along with the join conditions, and the PROC SQL optimizer has the task of determining which of the available join algorithms to use for performing the join operation. There are three basic algorithms used in joining:

- ✓ **Nested Loop Join** – When an equality condition is not specified, a read of the complete contents of the right table is processed for each row in the left table.
- ✓ **Merge Join** – When the tables specified are already in the desired sort order, resources will not need to be extended to rearranging the tables.
- ✓ **Hash Join** – When an equality relationship exists, the smaller of the tables is able to fit in memory, no sort operations are required, and each table is read only once.

Application of the _METHOD Option

The _METHOD option can be used as an effective way to analyze a query process as well as a debugging tool. By specifying a **_METHOD** option on the SQL statement, the hierarchy of processing is exposed. Results are displayed on the Log using a variety of codes (see table). The various codes and their corresponding descriptions associated with the _METHOD option appear in the table below.

Code	Description
SQXCRTA	Create table as Select.
SQXSLCT	Select statement or clause.
SQXJSL	Step loop join (Cartesian).
SQXJM	Merge join operation.
SQXJNDX	Index join operation.
SQXJHSH	Hash join operation.
SQXSORT	Sort operation.
SQXSRC	Source rows from table.
SQXFIL	Rows filtration.
SQXSUMG	Summary stats (aggregates) with GROUP BY clause.
SQXSUMN	Summary stats with no GROUP BY clause.

In the following example a _METHOD option is specified to show the processing hierarchy in a two-way equi-join.

SQL Code

```
PROC SQL _METHOD;
  SELECT MOVIES.TITLE, RATING, ACTOR_LEADING
    FROM MOVIES,
         ACTORS
      WHERE MOVIES.TITLE = ACTORS.TITLE;
QUIT;
```

Results

```
NOTE: SQL execution methods chosen are:
      sqxslct
          sqxjhsh
              sqxsrc( MOVIES )
              sqxsrc( ACTORS )
```

References

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Trademark Citations

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