PROGRESS OPENEDGE SQL

Compliance to Core SQL:2011

Overview

The SQL standards provide value to application and tooling developers, as well as end users, by defining the common, agreed-on form and meaning of SQL for interacting with relational databases. The standards make it possible for productivity tools, like Crystal Reports, to exist and thrive against many varying DBMS. The standards also enable application builders to use familiar, powerful data access strategies with confidence.

With the most recent version published in 2011, the SQL standards are defined by comprehensive, detailed definitions published by ANSI and ISO. Earlier versions were published in 1999 and 1992.

The 2011 SQL standard entails many sections and features, and collects the most fundamental, basic features into Core SQL, a set of 165 features and sub-features. The sub-features are grouped into 35 major features, such as "transaction support" and "basic date and time."

The standard describes the rules for claims of conformance and establishes what this means. The minimum claim of conformance to the standard is Core SQL:2011.

OpenEdge SQL, since the release of Progress® OpenEdge® 11.5, is largely compliant with Core SQL:2011.

Earlier versions of OpenEdge SQL were measured against the previous SQL-92 standard. Core SQL:2011 comprises all of Entry SQL-92, plus much of Intermediate SQL-92 and some of Full SQL-92. Because of the many product enhancements since the first release of OpenEdge SQL, Core SQL:2011 is the best standard for measuring conformance.

Progress®
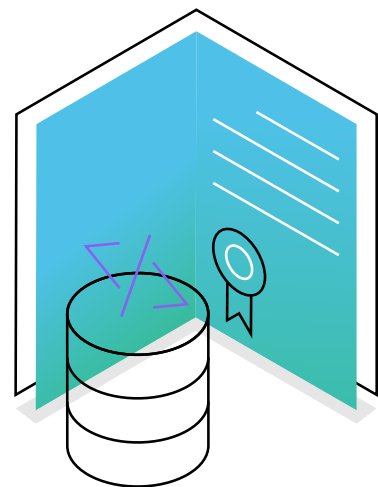
To give some perspective on the value of SQL standards compliance, it may help to consider what a variety of other DBMS product offerings say. Some databases:

- Give a detailed list of their extent of compliance

- Affirm their recognition of the standard but describe very little

- Explicitly affirm their compliance but with few details

But at the same time, no DBMS claims 100% compliance with every sub-feature of Core SQL, and most describe partial compliance with many sub-features and parts of Core SQL, and non-support for some sub-features. The standard's sub-features that most DBMS fully support are certainly the most useful and the most commonly used, such as SELECT DISTINCT or GROUP BY or the DATE datatype.

The detailed descriptions in the tables below tell how OpenEdge SQL conforms to the features and sub-features of Core SQL. The tables are organized by the major features identified by the standard. Most of these major features will be familiar to all SQL users and most Advanced Business Logic (ABL) users. The standard gives feature and sub-features an alphanumeric label. Those labels are used here for clarity and for anyone wanting to cross-reference other descriptions of the SQL standard.

OpenEdge SQL has full or partial support, or equivalent functionality, for 90% of the standards features and sub-features. OpenEdge has full support for 60% of the standards features and sub-features.

The standard defines each feature in terms of its syntax (format) and its semantics (meaning and rules). The descriptions of feature compliance in this document will use the following terms regarding support of the Core SQL:2011 features:

- **Full Support**: Feature is supported with all its syntax and semantics.

- **Partial Support**: Some (not all) of the standard syntax is supported, and all of the semantics are supported. The term "supported with exceptions" is also used for partial support.

- **Equivalent Support**: Non-standard syntax is used to support standard semantics.

- **Similar Support**: Neither the exact syntax nor the exact semantics are supported but similar functionality is provided.

- **Not supported**: Neither the syntax nor the semantics (functionality) of the sub-feature are supported.

Progress®

Feature ID	Feature	Support
E011	Numeric data types	Full support for these sub-features: • E011-01 Integer types • E011-03 Decimal types • E011-02 Float types • E011-04 Arithmetic operators Partial support, with the exceptions noted for these sub-features: • E011-05 Numeric Compare: Row value constructor, with row degree > 1, is not supported • E011-06 Implicit casting: Numeric and datetime types cannot be assigned to each other
E021	Character string types	Full support for these sub-features: • E021-01, E021-02 Character, Character Varying types • E021-03 Character literals • E021-07 Character concatenation • E021-08 UPPER and LOWER case functions • E021-10 Implicit casting Have equivalent functionality for these sub-features: • E021-04, E021-06, E021-09, E021-111 CHARACTER_LENGTH, SUBSTRING, POSITION, TRIM • Equivalent, industry common functions are provided Partial support, with the exceptions noted for these sub-features: • E021-12 Character Compare: Row value constructor, with row degree > 1, is not supported. Not supported: • E021-05 OCTET_LENGTH (length in bytes)
E031	Identifiers	Supported with exceptions: • Set of keywords larger than standard • Delimited identifiers are case insensitive • Delimited, on-delimited lower case identifiers are same
E051	Basic query specification	Fully support for these sub-features: • E051-01 SELECT DISTINCT • E051-02 GROUP BY clause • E051-04 GROUP BY contains columns not in Select list • E051-05 Select list items can be renamed • E051-06 HAVING clause • E051-07 Qualified * in Select list • E051-08 Correlation names in FROM clause Not supported: • E051-09 Rename columns in Select list

Progress®

E061	Basic predicates and search conditions	Supported with exceptions: • Compare operation with a Row value constructor, row degree > 1. i.e., row value of degree >1 are not supported for Compare. • Compare of scalar values is fully supported, for all predicates and all search conditions. • E061-07 — a table constructor as a subquery is not supported. E.g., "= SOME (VALUES((1,2,3,4))"
E071	Basic query expressions	Fully support for these sub-features: • E071-02 UNION ALL • E071-05—Columns combined via table operators need not have exactly the same data type Supported with an exception: • E071-06 Table operators in subqueries—use MINUS rather than EXCEPT Supported with equivalent functionality: • E071-01 UNION DISTINCT—UNION with ALL implies DISTINCT DISTINCT syntax not supported for UNION These sub-features are not supported: • E071-03 EXCEPT DISTINCT
E081	Basic Privileges	Fully support for these sub-features: • E081-01, E081-02, E081-03, E081-04, E081-05, E081-06, E081-07, E081-08, E081-010—respectively, SELECT, DELETE, INSERT, UPDATE table, UPDATE column, REFERENCES table, REFERENCES column, GRANT OPTION, EXECUTE privileges This sub-feature has equivalent functionality: • USAGE privilege—sequences have SELECT, UPDATE privileges.
E091	Set functions	Fully support for all sub-features: • E091-01, E091-02, E091-03, E091-04, E091-05, E091-06, E091-07—respectively, AVG, COUNT, MAX, MIN, SUM, ALL quantifier, DISTINCT quantifier
E101	Basic data manipulation	All sub-features—INSERT, UPDATE, DELETE—are supported with these exceptions: • Correlation name for target table (UPDATE, DELETE)
E111	Single row SELECT statement	OpenEdge SQL provides substitute functionality by means of: • Scalar subqueries in Select list
E121	Basic cursor support	Fully support for these sub-features: • E121-01 DECLARE CURSOR • E121-03 ORDER BY columns not in Select • E121-03 Value expressions in ORDER BY clause • E121-04 OPEN statement • E121-08 CLOSE statement These sub-features are partially supported: • E121-09 FETCH implicit NEXT—the redundant syntax keyword FROM is not supported • E121-17 WITH HOLD cursors—all OpenEdge SQL cursors are HOLD cursors, the keyword HOLD is not supported. These sub-features are not supported: • E121-06 Positioned UPDATE • E121-06 Positioned DELETE The JDBC/ODBC drivers support equivalent functionality, including positioned Update/Delete, via ResultSet methods.

Progress®

E131	Null value support	Fully support nullability but NULL as a value is not supported.
E141	Basic integrity constraints	Fully support for all sub-features except one sub-feature: • E141-10 Names in a foreign key can be specified in any order
E151	Transaction support	Fully Supported
E152	Basic SET TRANSACTION	Fully support for sub-feature • E152-01 ISOLATION LEVEL SERIALIZABLE This sub-feature is not supported: • E152-02 READ ONLY and READ WRITE transactions. In OpenEdge SQL, all transactions are implicitly READ WRITE.
E153	Updatable queries with subqueries	Not Supported
E161	SQL comments using leading double minus	Fully Supported
E171	SQLSTATE support	Fully Supported
E182	Host language binding	Fully supported for "Embedded C." Standards requires one host language binding. Supported by the OpenEdge SQL Embedded SQL component.
F031	Basic schema manipulation	Fully support for these sub-features: • E031-01, E031-02, E031-03, E031-04—respectively, CREATE TABLE, CREATE VIEW, GRANT, ALTER TABLE ADD COLUMN. Partial support for the sub-features, only because RESTRICT option not supported: • E031-13, E031-16, E031-19—respectively, DROP TABLE, DROP VIEW, REVOKE.
F041	Basic joined table	Fully Supported
F051	Basic date and time	These sub-features are fully supported: • F051-04—compare of datatype value • F051-05—CAST between datatypes These sub-features are supported with the noted exceptions: • F051-01 – DATE—literal keyword DATE not supported • F051-02 – TIME—literal keyword TIME not supported; default precision syntax of 0 not supported • F051-03 – TIMESTAMP—literal keyword TIMESTAMP not supported; default precision syntax of 0 not supported These sub-features have equivalent functionality: • CURRENT_DATE—functions CURDATE/SYSDATE are equivalent • LOCALTIME—functions CURTIME/SYSTIME are equivalent • LOCALTIMESTAMP—function SYSTIMESTAMP is equivalent
F081	UNION and EXCEPT in views	Fully supported with this exception: • OpenEdge SQL supports the term MINUS rather than EXCEPT

Progress®

F131	Grouped operations	Fully Supported
F181	Multiple module support	Support with equivalent functionality by embedded SQL
F201	CAST function	Fully supported
F221	Explicit defaults	Not supported
F261	CASE expression	Fully supported
F311	Schema definition statement	Partially supported, with schema creation being implicit. Schema creation is a side-effect of schema name use on CREATE. These sub-features are partially supported, all with implicit schema context: • F311-02—CREATE TABLE • F311-03—CREATE VIEW • F311-04—CREATE VIEW with CHECK OPTION • F311-05—GRANT This sub-feature is not supported: • F31-01—CREATE SCHEMA
F471	Scalar subquery values	Partially supported: Scalar subquery values are not fully support on UPDATE
F481	Expanded NULL predicate	Fully supported
F812	Basic flagging	Not supported
S011	Distinct data types	Not supported
T321	Basic SQL-invoked routines	These sub-features are fully supported: • T321-02—User-defined stored procedures with no overloading • T321-04—CALL statement User-defined functions are not supported. Therefore, these sub-features are not supported: • T321-01—User-defined functions with no overloading • T321-03—Function invocation • T321-05—RETURN statement in a user-defined function
T631	IN predicate with one list element	Fully Supported

For more information on Progress OpenEdge SQL compliance, or how we can help you improve database performance, please contact us.

Contact us

About Progress

Progress (NASDAQ: PRGS) is a global leader in application development, empowering the digital transformation organizations need to create and sustain engaging user experiences in today's evolving marketplace. With offerings spanning web, mobile and data for on-premise and cloud environments, Progress powers startups and industry titans worldwide, promoting success one customer at a time. Learn about Progress at www.progress.com or 1-781-280-4000.

Worldwide Headquarters

Progress, 14 Oak Park, Bedford, MA 01730 USA Tel: +1 781 280-4000 Fax: +1 781 280-4095
On the Web at: www.progress.com
Find us on ⓕ facebook.com/progresssw ⓣ twitter.com/progresssw ⓨ youtube.com/progresssw
For regional international office locations and contact information, please go to www.progress.com/worldwide

Progress®