SQL CodeCount™ Counting Standard

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Revision Sheet

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6/22/2007	1.0	Original Release	CSSE
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1. Definitions

1.1. **SLOC –** Source Lines of Code is a unit used to measure the size of software program. SLOC counts the program source code based on a certain set of rules. SLOC is a key input for estimating project effort and is also used to calculate productivity and other measurements.

1.2. **Physical SLOC –** One physical SLOC is corresponding to one line starting with the first character and ending by a carriage return or an end-of-file marker of the same line, and which excludes the blank and comment line.

1.3. **Logical SLOC –** Lines of code intended to measure "statements", which normally terminate by a semicolon (C/C++, Java, C#) or a carriage return (VB, Assembly), etc. Logical SLOC are not sensitive to format and style conventions, but they are language-dependent.

1.4. **Data declaration line or data line –** A line that contains declaration of data and used by an assembler or compiler to interpret other elements of the program.

The following table lists the SQL keywords that denote data declaration lines:

Character (String)	Numeric	DateTime	Misc
CHAR (length)	SMALLINT	DATE	BOOLEAN
CHARACTER (length)	INT	TIME [(SCALE)][WITH TIME ZONE]	BLOB
VARCHAR (length)	INTEGER	TIMESTAMP [(SCALE)][WITH TIME ZONE]	
CHARACTER VARYING (length)	FLOAT	INTERVAL	
	REAL		
	DOUBLE		

Table 1 Data Declaration Types

1.5. **Compiler Directives –** A statement that tells the compiler how to compile a program, but not what to compile. SQL does not contain any compiler directives.

1.6. **Blank Line –** A physical line of code, which contains any number of white space characters (spaces, tabs, form feed, carriage return, line feed, or their derivatives).

1.7. **Comment Line –** A comment is defined as a string of zero or more characters that follow language-specific comment delimiter.

SQL comment delimiters are "/*", "--", or "{..}". A whole comment line may span one line and does not contain any compilable source code. An embedded comment can co-exist with compilable source code on the same physical line. Banners and empty comments are treated as types of comments.

1.8. **Executable Line of code –** A line that contains software instruction executed during runtime and on which a breakpoint can be set in a debugging tool. An instruction can be stated in a simple or compound form.

- An executable line of code may contain the following statements:
  - Commands which access the storage memory
  - Keywords which perform conditional operations
  - Data declaration (data) lines

2. Checklist for source statement counts

PHYSICAL SLOC COUNTING RULES			
MEASUREMENT UNIT	ORDER OF PRECEDENCE	PHYSICAL SLOC	COMMENTS
Executable Lines	1	One Per line	Defined in 1.8
Non-executable Lines			
Declaration (Data) lines	2	One per line	Defined in 1.4
Compiler Directives	3	One per line	Defined in 1.5
Comments			Defined in 1.7
On their own lines	4	Not Included (NI)	
Embedded	5	NI	
Banners	6	NI	
Empty Comments	7	NI	
Blank Lines	8	NI	Defined in 1.6

LOGICAL SLOC COUNTING RULES				
NO.	STRUCTURE	ORDER OF PRECEDENCE	LOGICAL SLOC RULES	COMMENTS
R01	Data Statements: SELECT UPDATE INSERT DELETE ALTER TABLE ALTER USER DECLARE FETCH CLOSE	1	Count Once	Each statement, including nested queries, is counted once per each occurrence.
R02	Schema Statements: CREATE CREATE TRIGGER CREATE SEQUENCE CREATE INDEX CREATE SYNONYM REPLACE COMMENT TRUNCATE RENAME DROP GRANT REVOKE	2	Count Once	

R03	Transactional Statements: COMMIT ROLLBACK	3	Count Once	
R04	Conditional Statements: WHERE GROUP BY ORDER BY HAVING LIMIT JOIN UNION	4	Count Once	Conditional statements appearing in combination with other keywords are counted once per each occurrence.

3. Examples

EXECUTABLE LINES

DATA Statements
(Query and Modify Tables and Columns)

EDS1 – SELECT

GENERAL EXAMPLE	SPECIFIC EXAMPLE	SLOC COUNT
SELECT [ALL|DISTINCT] select-list SELECT * FROM select-list SELECT column FROM select-list WHERE column = <criteria>	SELECT city FROM cities WHERE city IN (SELECT city FROM country WHERE id='1')	1 1 1 1

EDS2 – UPDATE

GENERAL EXAMPLE	SPECIFIC EXAMPLE	SLOC COUNT
UPDATE table SET set-list [WHERE predicate]	UPDATE Customers SET Customer.id ='1' WHERE Customer.id='2'	1 1 1

EDS3 – INSERT

GENERAL EXAMPLE	SPECIFIC EXAMPLE	SLOC COUNT
INSERT INTO table [(column-list)] VALUES (value-list) INSERT INTO table [(column-list)] (query-specification)	INSERT INTO colors (cnum, color) VALUES ('C1', 'green') INSERT INTO location SELECT ct.name, loc.type, 500 FROM ct, loc WHERE ct.name="London" AND loc.type='Europe'	1 0 1 1 0 1 0

EDS4 – DELETE

GENERAL EXAMPLE	SPECIFIC EXAMPLE	SLOC COUNT
DELETE FROM table [WHERE predicate] DELETE FROM table WHERE column NOT IN (SELECT column FROM table)	DELETE * FROM Customers WHERE Id='1' DELETE * FROM Customers NOT IN (SELECT Customers FROM Regulars)	1 1 1 1

EDS5 – ALTER

GENERAL EXAMPLE	SPECIFIC EXAMPLE	SLOC COUNT
ALTER TABLE <TABLE NAME>	ALTER TABLE Customer ADD PRIMARY KEY (SID);	1 0

SCHEMA Statements (Maintain Schema – Catalog)

ESS1 – CREATE

GENERAL EXAMPLE	SPECIFIC EXAMPLE	SLOC COUNT
CREATE TABLE table-name ({column-descr|constraint} [,{column-descr|constraint}]...)	CREATE TABLE locals (ct VARCHAR(5) NOT NULL PRIMARY KEY, name VARCHAR(16), city VARCHAR(16))	1
CREATE VIEW view-name [(column-list)] AS query [WITH [CASCADED|LOCAL] CHECK OPTION]	CREATE VIEW supplied_parts AS SELECT * FROM parts WHERE pnum IN (SELECT pnum FROM supplier)	1 1 2 0

ESS2 – DROP

GENERAL EXAMPLE	SPECIFIC EXAMPLE	SLOC COUNT
DROP TABLE table-name {CASCADE|RESTRICT}	DROP TABLE locals	1
DROP VIEW view-name {CASCADE|RESTRICT}	DROP VIEW supplied_parts	1

ESS3 – GRANT

GENERAL EXAMPLE	SPECIFIC EXAMPLE	SLOC COUNT
GRANT privilege-list ON [TABLE] object-list TO user-list	GRANT SELECT,INSERT,UPDATE(parts) ON p TO mike	1 1 0

ESS4 – REVOKE

GENERAL EXAMPLE	SPECIFIC EXAMPLE	SLOC COUNT
REVOKE	REVOKE privilege-list ON [TABLE] object-list FROM user-list	REVOKE SELECT,INSERT,UPDATE(parts) ON p FROM mike

TRANSACTIONAL Statements (Maintain Schema – Catalog)

ETS1 – COMMIT

GENERAL EXAMPLE	SPECIFIC EXAMPLE	SLOC COUNT
COMMIT [WORK]	COMMIT	1

ETS2 – ROLLBACK

GENERAL EXAMPLE	SPECIFIC EXAMPLE	SLOC COUNT
ROLLBACK [WORK]	ROLLBACK	1

CONDITIONAL Statements

ECS1 – WHERE

GENERAL EXAMPLE	SPECIFIC EXAMPLE	SLOC COUNT
SELECT [FROM table_references] [WHERE where_condition]	SELECT * FROM Table WHERE Table.id='1'	1 1

ECS2 – GROUP BY

GENERAL EXAMPLE	SPECIFIC EXAMPLE	SLOC COUNT
SELECT [FROM table_references] [WHERE where_condition] [GROUP BY {col_name | expr | position} [ASC | DESC	SELECT * FROM Customers GROUP BY ID	1 0 1

ECS3 – ORDER BY

GENERAL EXAMPLE	SPECIFIC EXAMPLE	SLOC COUNT
SELECT * FROM select_list ORDER BY column [ASC|DESC]	SELECT * FROM Customers ORDER BY Id ASC	1 0 1

ECS4 – LIMIT

GENERAL EXAMPLE	SPECIFIC EXAMPLE	SLOC COUNT
SELECT [FROM table_references] [WHERE where_condition] [LIMIT {[offset,] row_count | row_count OFFSET offset}]	SELECT * FROM Customers LIMIT 1	1 0 1

ECS5 – JOIN

GENERAL EXAMPLE	SPECIFIC EXAMPLE	SLOC COUNT
table-1 { LEFT | RIGHT | FULL OUTER JOIN table-2 ON predicate	SELECT count(*) as totalcount, trsuser.id, trsuser.fname, trsuser.mortgage FROM customers, loanInfo,trsuser LEFT OUTER JOIN leadSupplierCampaign ON leadSupplierCampaign.CampaignID = customers.Referral	1 0 0 1 0 0 0

ECS6 – UNION

GENERAL EXAMPLE	SPECIFIC EXAMPLE	SLOC COUNT
table_query UNION [ALL] table_query [ORDER BY column [ASC | DESC] [, ...]]	SELECT customers.name FROM customers WHERE customers.name LIKE 'T%' UNION SELECT public.name FROM public WHERE public.name LIKE 'T%'	1 0 1 1 1 0 1

DECLARATION OR DATA LINES

DDL1 – variable declaration

GENERAL EXAMPLE	SPECIFIC EXAMPLE	SLOC COUNT
< name> < type>	userid int(10), addnewuser enum('1','0'), permission enum('1','0'), assignleadsupplier enum('1','0'), addnewtsr enum('1','0'), assigntsrls enum('1','0'), leadsquery enum('1','0'), postedleadsall enum('1','0'), postedleadsassigned enum('1','0'), leadpurchasers enum('1','0'), accountexecutives enum('1','0'), lsall enum('1','0'), lsassigned enum('1','0')	1 1 1 1 1 1 1 1 1 1 1 1 1