SQL = Structured Query Language, ISO/IEC 9075 + ANSI X3.135

RDBMS = Relational Database Management System, stores objects in tables

Keyword	SYNTAX	Description
INSERT INTO	table VALUES val table col VALUES table2 (col) SELECT	Create record in table Copies data from one table and inserts into another *data types in source and target must match *col cannot use wildcard *
SELECT	[=] *|col FROM	Read record = DISTINCT, TOP, AS, Functions
UPDATE	table SET	Update record
DELETE	FROM	Delete record, omit WHERE to delete all records
FROM	table [WHERE]	Specify which table *Requires table.col to reference if selecting multiple
DISTINCT	col	Return unique values only

AS	SELECT col + name
	FROM table + name
		Renames column or table with an alias
		*Requires [] or “” if alias contains spaces

WHERE	[NOT] cond col OPER val OPER val OPER col [OPER]	Filters record by a condition Operators: Comparison, Logical, IS [NOT] NULL Logical AND, OR Logical NOT
ORDER BY	col [ASC|DESC]	Sort result-set in ascending or descending order
SET	col = val WHERE	Sets values, omit WHERE to set all records

TOP
LIMIT
FETCH FIRST
ROWNUM
	n [PERCENT] col FROM
	WHERE … + n
	ORDER BY + n ROWS ONLY
	WHERE + OPER n
		Specify number of records to return
		*MySQL only
		*Oracle 12+ only
		*Oracle <12 only

MIN()	(*|col) FROM	Returns smallest value of column
MAX()	(*|col) FROM	Returns largest value of column
COUNT()	(*|col) FROM	Returns number of rows *unsupported in MS Access, so use: SELECT COUNT(*) AS VarName FROM (SELECT DISTINCT Name FROM Database)
AVG()	(*|col)	Returns average value of numeric column *ignores NULL values
SUM()	(*|col)	Returns total sum of numeric column *ignores NULL values
LIKE	‘wild’	Searches for specified pattern in column
IN	(val) (SELECT)	Specify multiple values (shorthand for multiple ORs)
BETWEEN	val AND val	Selects values within a given range

JOIN	FROM table1 OPER + table2…
	ON table.col=table.col
	
	FROM table1 T1, table2 T2…
	WHERE cond
		Combine rows from tables based on related columns
		Operators:
		INNER = returns records with matching values in tables
		LEFT (OUTER) = all from left table + matched from right
		RIGHT (OUTER) = matched from left table + all from right
		FULL (OUTER) = all matched records on either side
		self-joins table with itself

UNION		Combine results of SELECT statements *must have same number and order of columns, plus similar data types *append ALL to allow duplicates
GROUP BY	col	Groups rows with same values into summary rows *often used with aggregate functions
HAVING	cond	Used in place of WHERE with aggregate functions
EXISTS	(SELECT)	Tests existence of record in subquery
ANY	WHERE col OPER + (SELECT)	Tests if any subquery value meets the condition *OPER must be standard comparison operators

ALL	SELECT + FROM
	WHERE col OPER + (SELECT)
		Tests if all subquery values meet the condition

INTO	SELECT col + newtable [IN… externaldb] FROM oldtable	Copies data from one table into new table *to copy only the schema, add WHERE clause 1 = 0
CASE	WHEN condN THEN resN… ELSE res END	Switch statements

ISNULL()
COALESCE()
NVL()
IFNULL()
	(col, alternative)	Lets you return alternative value if expression is NULL
		*unsupported in MS Access
		*Oracle only
		*MySQL only

CREATE PROCEDURE	name AS sql_statement … [@col cond] GO	Creates a stored procedure *@col cond is a parameter
EXEC	proc [@arg]	Executes a stored procedure
CREATE DATABASE	name	Create new database *uses .mdb extension
SHOW DATABASES		List all databases
ALTER DATABASE		Modify database configurations
DROP DATABASE	name	Delete existing database
BACKUP DATABASE	name TO DISK = ‘filepath’	Backs up database *append WITH DIFFERENTIAL to update any changes *uses .bak extension
CREATE TABLE	name (col datatype… [constraint]) name AS (SELECT col FROM)	Create new table Create new table from existing table
ALTER TABLE	name OPER [constraint]	Modify columns in a table Operators: ADD, DROP COLUMN, RENAME COLUMN, ALTER COLUMN
DROP TABLE	name	Delete existing table
TRUNCATE TABLE	name	Delete all data in an existing table
ADD	col datatype	Add new column into table
DROP COLUMN	col	Delete existing column in a table
RENAME COLUMN	oldName to newName	Renames existing column
ALTER COLUMN MODIFY COLUMN MODIFY	col datatype [constraint] (col) CONSTRAINT name… [constraint] (cols)	Change datatype of a column *used for multiple column constraint *MySQL and Oracle <10G *Oracle 10G+ only
CREATE INDEX		Create search key
DROP CONSTRAINT DROP INDEX		Delete search key *MySQL only

CREATE VIEW	[name] AS SELECT	Create virtual table
CREATE OR REPLACE VIEW	[name] AS SELECT	Update virtual table
DROP VIEW	[name]	Delete virtual table

Wildcards	Description
% *	Zero or more characters *MS Access only
_ ?	Single character *MS Access only
[]	Any single character within brackets
^ !	Any character not in the brackets *MS Access only
-	Any single character within specified range in brackets
#	Single numeric character
Operators	Description
+,-, *, /, %	Arithmetic
&, | , ^	Bitwise
+=, -=, *=, /=, %=, &=, |*=, ^-=	Compound
=, <, >, <=, >=, <>	Comparison
ALL, ANY, AND, BETWEEN, EXISTS, IN, LIKE, NOT, OR, SOME	Logical

Constraints	Description	Syntax
NOT NULL	Column cannot have NULL values	
UNIQUE	All values are unique	
PRIMARY KEY	Combines NOT NULL and UNIQUE *can only have one per table, use	
FOREIGN KEY	Prevents link destruction between tables Prevents invalid data from being inserted	
CHECK	Satisfies a condition	
DEFAULT	Set default value if none is specified	
AUTO_INCREMENT	Automatically generates unique number when new record is inserted	

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