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

RDBMS = Relational Database Management System, stores objects in tables

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| 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 |

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| 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 |

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| 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 |  |

-- = single-line comment, /\* \*/ = multi-line comment