



QUERYING DATA FROM A TABLE

SELECT c1, c2 FROM t;

Query data in columns c1, c2 from a table

SELECT * FROM t;

Query all rows and columns from a table

**SELECT c1, c2 FROM t
WHERE condition;**

Query data and filter rows with a condition

**SELECT DISTINCT c1 FROM t
WHERE condition;**

Query distinct rows from a table

**SELECT c1, c2 FROM t
ORDER BY c1 ASC [DESC];**

Sort the result set in ascending or descending order

**SELECT c1, c2 FROM t
ORDER BY c1
LIMIT n OFFSET offset;**

Skip *offset* of rows and return the next *n* rows

**SELECT c1, aggregate(c2)
FROM t
GROUP BY c1;**

Group rows using an aggregate function

**SELECT c1, aggregate(c2)
FROM t
GROUP BY c1
HAVING condition;**

Filter groups using HAVING clause

QUERYING FROM MULTIPLE TABLES

**SELECT c1, c2
FROM t1
INNER JOIN t2 ON condition;**
Inner join t1 and t2

**SELECT c1, c2
FROM t1
LEFT JOIN t2 ON condition;**
Left join t1 and t2

**SELECT c1, c2
FROM t1
RIGHT JOIN t2 ON condition;**
Right join t1 and t2

**SELECT c1, c2
FROM t1
FULL OUTER JOIN t2 ON condition;**
Perform full outer join

**SELECT c1, c2
FROM t1
CROSS JOIN t2;**
Produce a Cartesian product of rows in tables

**SELECT c1, c2
FROM t1, t2;**
Another way to perform cross join

**SELECT c1, c2
FROM t1 A
INNER JOIN t2 B ON condition;**
Join t1 to itself using INNER JOIN clause

USING SQL OPERATORS

**SELECT c1, c2 FROM t1
UNION [ALL]
SELECT c1, c2 FROM t2;**
Combine rows from two queries

**SELECT c1, c2 FROM t1
INTERSECT
SELECT c1, c2 FROM t2;**
Return the intersection of two queries

**SELECT c1, c2 FROM t1
MINUS
SELECT c1, c2 FROM t2;**
Subtract a result set from another result set

**SELECT c1, c2 FROM t1
WHERE c1 [NOT] LIKE pattern;**
Query rows using pattern matching %, _

**SELECT c1, c2 FROM t
WHERE c1 [NOT] IN value_list;**
Query rows in a list

**SELECT c1, c2 FROM t
WHERE c1 BETWEEN low AND high;**
Query rows between two values

**SELECT c1, c2 FROM t
WHERE c1 IS [NOT] NULL;**
Check if values in a table is NULL or not

MANAGING TABLES

```
CREATE TABLE t (
  id INT PRIMARY KEY,
  name VARCHAR NOT NULL,
  price INT DEFAULT 0
);
```

Create a new table with three columns

```
DROP TABLE t;
```

Delete the table from the database

```
ALTER TABLE t ADD column;
```

Add a new column to the table

```
ALTER TABLE t DROP COLUMN c;
```

Drop column c from the table

```
ALTER TABLE t ADD constraint;
```

Add a constraint

```
ALTER TABLE t DROP constraint;
```

Drop a constraint

```
ALTER TABLE t1 RENAME TO t2;
```

Rename a table from t1 to t2

```
ALTER TABLE t1 RENAME c1 TO c2;
```

Rename column c1 to c2

```
TRUNCATE TABLE t;
```

Remove all data in a table

USING SQL CONSTRAINTS

```
CREATE TABLE t(
  c1 INT, c2 INT, c3 VARCHAR,
  PRIMARY KEY (c1,c2)
);
```

Set c1 and c2 as a primary key

```
CREATE TABLE t1(
  c1 INT PRIMARY KEY,
  c2 INT,
  FOREIGN KEY (c2) REFERENCES t2(c2)
);
```

Set c2 column as a foreign key

```
CREATE TABLE t(
  c1 INT, c1 INT,
  UNIQUE(c2,c3)
);
```

Make the values in c1 and c2 unique

```
CREATE TABLE t(
  c1 INT, c2 INT,
  CHECK(c1 > 0 AND c1 >= c2)
);
```

Ensure c1 > 0 and values in c1 >= c2

```
CREATE TABLE t(
  c1 INT PRIMARY KEY,
  c2 VARCHAR NOT NULL
);
```

Set values in c2 column not NULL

MODIFYING DATA

```
INSERT INTO t(column_list)
VALUES(value_list);
```

Insert one row into a table

```
INSERT INTO t(column_list)
VALUES (value_list), ...,
(value_list), ...;
```

Insert multiple rows into a table

```
INSERT INTO t1(column_list)
SELECT column_list
FROM t2;
```

Insert rows from t2 into t1

```
UPDATE t
SET c1 = new_value;
```

Update new value in the column c1 for all rows

```
UPDATE t
SET c1 = new_value,
    c2 = new_value
WHERE condition;
```

Update values in the column c1, c2 that match the condition

```
DELETE FROM t;
```

Delete all data in a table

```
DELETE FROM t
WHERE condition;
```

Delete subset of rows in a table

MANAGING VIEWS

CREATE VIEW `v(c1,c2)`

AS

SELECT `c1, c2`

FROM `t;`

Create a new view that consists of `c1` and `c2`

CREATE VIEW `v(c1,c2)`

AS

SELECT `c1, c2`

FROM `t;`

WITH `[CASCADED | LOCAL] CHECK OPTION;`

Create a new view with check option

CREATE RECURSIVE VIEW `v`

AS

`select-statement -- anchor part`

UNION `[ALL]`

`select-statement; -- recursive part`

Create a recursive view

CREATE TEMPORARY VIEW `v`

AS

SELECT `c1, c2`

FROM `t;`

Create a temporary view

DROP VIEW `view_name;`

Delete a view

MANAGING INDEXES

CREATE INDEX `idx_name`

ON `t(c1,c2);`

Create an index on `c1` and `c2` of the table `t`

CREATE UNIQUE INDEX `idx_name`

ON `t(c3,c4);`

Create a unique index on `c3`, `c4` of the table `t`

DROP INDEX `idx_name;`

Drop an index

SQL AGGREGATE FUNCTIONS

AVG returns the average of a list

COUNT returns the number of elements of a list

SUM returns the total of a list

MAX returns the maximum value in a list

MIN returns the minimum value in a list

MANAGING TRIGGERS

CREATE OR MODIFY TRIGGER `trigger_name`

WHEN EVENT

ON `table_name` **TRIGGER_TYPE**

EXECUTE `stored_procedure;`

Create or modify a trigger

WHEN

- **BEFORE** – invoke before the event occurs
- **AFTER** – invoke after the event occurs

EVENT

- **INSERT** – invoke for INSERT
- **UPDATE** – invoke for UPDATE
- **DELETE** – invoke for DELETE

TRIGGER_TYPE

- **FOR EACH ROW**
- **FOR EACH STATEMENT**

CREATE TRIGGER `before_insert_person`

BEFORE INSERT

ON `person` **FOR EACH ROW**

EXECUTE `stored_procedure;`

Create a trigger invoked before a new row is inserted into the person table

DROP TRIGGER `trigger_name;`

Delete a specific trigger