

# Tutorial SQL

## 1. Perintah SQL

- SQL SELECT

Digunakan untuk memilih data dari database.

```
SELECT kolom1, kolom2 FROM nama_tabel;
```

- SQL SELECT DISTINCT

Mengembalikan nilai yang berbeda saja.

```
SELECT DISTINCT kolom1 FROM nama_tabel;
```

- SQL WHERE

Digunakan untuk memfilter data.

```
SELECT * FROM nama_tabel WHERE kondisi;
```

- SQL ORDER BY

Digunakan untuk mengurutkan hasil query.

```
SELECT * FROM nama_tabel ORDER BY kolom1 ASC|DESC;
```

- SQL AND / OR / NOT

```
SELECT * FROM nama_tabel WHERE kondisi1 AND/OR/NOT kondisi2;
```

- SQL INSERT INTO

Untuk memasukkan data baru.

```
INSERT INTO nama_tabel (kolom1, kolom2) VALUES (nilai1, nilai2);
```

- SQL NULL Values

Mengecek nilai NULL.

```
SELECT * FROM nama_tabel WHERE nama_kolom IS NULL;
```

- SQL UPDATE

Untuk memperbarui data.

```
UPDATE nama_tabel SET kolom1 = nilai1 WHERE kondisi;
```

- SQL DELETE

Menghapus data dari tabel.

```
DELETE FROM nama_tabel WHERE kondisi;
```

- SQL SELECT TOP

Mengambil sejumlah data teratas.

```
SELECT TOP 10 * FROM nama_tabel;
```

- Fungsi Agregat SQL

- COUNT, SUM, AVG, MIN, MAX

```
SELECT COUNT(*), SUM(kolom), AVG(kolom), MIN(kolom), MAX(kolom) FROM nama_tabel;
```

- SQL LIKE dan Wildcards

```
SELECT * FROM nama_tabel WHERE kolom LIKE 'pola%';
```

- SQL IN / BETWEEN / ALIASES

```
SELECT * FROM nama_tabel WHERE kolom IN (nilai1, nilai2);
```

```
SELECT * FROM nama_tabel WHERE kolom BETWEEN nilai1 AND nilai2;
```

```
SELECT kolom AS alias_nama FROM nama_tabel;
```

#### SQL JOIN

- INNER JOIN

```
SELECT * FROM tabel1 INNER JOIN tabel2 ON tabel1.id = tabel2.id;
```

- LEFT JOIN / RIGHT JOIN / FULL JOIN / SELF JOIN

```
SELECT * FROM tabel1 LEFT JOIN tabel2 ON kondisi;
```

```
SELECT * FROM tabel1 RIGHT JOIN tabel2 ON kondisi;
```

```
SELECT * FROM tabel1 FULL OUTER JOIN tabel2 ON kondisi;
```

```
SELECT A.kolom, B.kolom FROM tabel A, tabel B WHERE A.id = B.parent_id;
```

- SQL UNION

```
SELECT kolom FROM tabel1 UNION SELECT kolom FROM tabel2;
```

- SQL GROUP BY / HAVING

```
SELECT kolom, COUNT(*) FROM tabel GROUP BY kolom;
```

```
SELECT kolom, COUNT(*) FROM tabel GROUP BY kolom HAVING COUNT(*) > 1;
```

- SQL EXISTS / ANY / ALL

```
SELECT kolom FROM tabel WHERE EXISTS (SELECT * FROM tabel_lain WHERE kondisi);
```

```
SELECT kolom FROM tabel WHERE kolom = ANY (SELECT kolom FROM tabel_lain);
```

```
SELECT kolom FROM tabel WHERE kolom > ALL (SELECT kolom FROM tabel_lain);
```

- SQL SELECT INTO / INSERT INTO SELECT

```
SELECT * INTO tabel_baru FROM tabel_lama;
```

```
INSERT INTO tabel1 SELECT * FROM tabel2;
```

- SQL CASE / Fungsi NULL

```
SELECT kolom, CASE WHEN kondisi THEN hasil ELSE default END FROM tabel;
```

```
SELECT ISNULL(kolom, 'default') FROM tabel;
```

- Prosedur Tersimpan SQL

```
CREATE PROCEDURE nama_prosedur AS perintah_sql;
```

```
EXEC nama_prosedur;
```

- Komentar dalam SQL

```
-- Ini komentar satu baris
```

```
/* Ini komentar beberapa baris */
```

- Operator SQL

- Aritmatika, Perbandingan, Logika (AND, OR, NOT), LIKE, IN, BETWEEN, dll.

## 2. Basis Data SQL

- SQL CREATE / DROP / BACKUP DATABASE

```
CREATE DATABASE nama_database;
```

```
DROP DATABASE nama_database;
```

```
BACKUP DATABASE nama_database TO DISK = 'lokasi_backup';
```

- SQL CREATE / DROP / ALTER TABLE

```
CREATE TABLE nama_tabel (id INT, nama VARCHAR(100));
```

```
DROP TABLE nama_tabel;
```

```
ALTER TABLE nama_tabel ADD nama_kolom tipe_data;
```

- SQL Constraints (Kendala)

- NOT NULL, UNIQUE, PRIMARY KEY, FOREIGN KEY, CHECK, DEFAULT

```
CREATE TABLE tabel ( id INT NOT NULL,email VARCHAR(100) UNIQUE,PRIMARY KEY (id), FOREIGN KEY (id) REFERENCES tabel_lain(id),CHECK (umur >= 18),DEFAULT GETDATE() );
```

- SQL Index / Auto Increment

```
CREATE INDEX nama_index ON tabel (kolom);
```

```
CREATE TABLE tabel (id INT IDENTITY(1,1), nama VARCHAR(50));
```

- SQL Dates (Tanggal)

```
SELECT * FROM tabel WHERE kolom_tanggal = '2023-01-01';
```

- SQL Views

```
CREATE VIEW nama_view AS SELECT kolom1, kolom2 FROM tabel;
```

- SQL Injection (Masalah Keamanan)

- Hindari penggunaan query SQL dinamis. Gunakan query yang diparameterkan.

-- Rentan:

```
"SELECT * FROM users WHERE username = " + masukanUser + ""
```

-- Aman:

```
SqlCommand cmd = new SqlCommand("SELECT * FROM users WHERE username = @username");  
cmd.Parameters.AddWithValue("@username", masukanUser);
```