

# DATABASE SQL



## Pesantren PeTIK II YBM PLN

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# Pertemuan Ke-9





# Materi

1. Pengantar Database
2. Pemodelan Data
3. Model Relasional Database
4. Normalisasi Database
5. Pengantar SQL
6. Perintah SQL SELECT 1
7. Perintah SQL SELECT 2

## 9. Fungsi Aggregate dan Grouping Data

10. Sub Query & SQL Join Table
11. View dan Analisa Query
12. Store Procedure dan Function
13. Trigger dan Transaction
14. Manajemen User
15. Backup dan Restore



# 9. Fungsi Aggregate dan Grouping Data





# Fungsi Aggregate

***Fungsi yang menerima koleksi nilai dan mengembalikan nilai tunggal data sebagai hasilnya***

- ☐ COUNT (hitung jumlah data)
- ☐ SUM (total nilai suatu kolom)
- ☐ AVG (hitung rata-rata suatu kolom)
- ☐ MAX (mendapatkan nilai maksimum suatu kolom)
- ☐ MIN (mendapatkan nilai minimum suatu kolom)





# SQL Operator Aritmatika

*SQL telah men-support operasi aritmatika*

| Operator | Description |
|----------|-------------|
| +        | Add         |
| -        | Subtract    |
| *        | Multiply    |
| /        | Divide      |
| %        | Modulo      |

Tampilkan hasil perkalian  $5 * 5$  :

❑ `SELECT 5 + 5 AS '5 +5 = '`

Tampilkan total asset masing2 produk

❑ `SELECT kode,nama,stok* harga as asset from produk`





# SQL Operator Perbandingan

*SQL telah men-support operasi aritmatika*

| Operator | Description              |
|----------|--------------------------|
| =        | Equal to                 |
| >        | Greater than             |
| <        | Less than                |
| >=       | Greater than or equal to |
| <=       | Less than or equal to    |
| <>       | Not equal to             |

Tampilkan produk dengan stok kurang dari 20:

❑ `SELECT * FROM produk < 20;`





# Fungsi Aggregate

- ❑ COUNT: digunakan untuk menghitung jumlah data / record suatu tabel

Ada berapa jumlah data customer ? :

- ❑ `SELECT COUNT(*) AS jumlah_pelanggan FROM pelanggan`

Ada berapa jumlah produk dengan harga diatas 1 juta

- ❑ `SELECT COUNT(id) AS jml_produk FROM produk WHERE harga > 1000000`

Ada berapa pelanggan laki-laki yang tempat lahirnya Jakarta

- ❑ `SELECT COUNT(id) AS jml_pelanggan FROM pelanggan WHERE gender='L'  
AND tmp_lahir='Jakarta';`







# Fungsi Aggregate

- ❑ SUM: digunakan untuk menghitung jumlah atau hasil penjumlahan data angka suatu field atau kolom

Berapa total stok seluruh produk

- ❑ `SELECT SUM(stok) AS total_stok FROM produk;`

Berapa total gaji pegawai departemen\_id = 1

- ❑ `SELECT SUM(gaji) AS total FROM pegawai WHERE departemen_id=1;`

Berapa total transaksi yang terjadi hari ini

- ❑ `SELECT SUM(total) AS total FROM transaksi WHERE tgl_transaksi=NOW();`





# Fungsi Aggregate

- ❑ AVG: digunakan untuk menghitung rata-rata suatu kolom

Berapa rata-rata harga produk

- ❑ `SELECT AVG(harga) AS rata2_harga FROM produk`

Berapa rata-rata nilai total transaksi selama bulan sekarang

- ❑ `SELECT AVG(total) AS rata2_total FROM transaksi WHERE month(tgl_transaksi) = month(current_date);`





# Fungsi Aggregate

- ❑ MAX/MIN: digunakan untuk mendapatkan nilai maksimum/minimum suatu kolom

Stok minimum dari produk

- ❑ `SELECT MIN(stok) FROM produk`

Nilai transaksi paling besar hari ini

- ❑ `SELECT MAX(total) AS max_total FROM transaksi WHERE tgl_transaksi = current_date`





# Tabel produk

| id | nama                  | qty | harga  | jenis_produk_id |
|----|-----------------------|-----|--------|-----------------|
| 1  | Teh Kotak Enak Sekali | 40  | 4000   | 1               |
| 2  | Gula Pasir            | 50  | 18500  | 1               |
| 3  | Kertas A4             | 40  | 28000  | 4               |
| 4  | Kompor Gas C800       | 4   | 450000 | 3               |
| 5  | Biskuit Romi          | 80  | 7500   | 1               |
| 6  | Mie Kari Ayam         | 50  | 2750   | 1               |
| 7  | Kopi XYZ              | 1   | 6100   | 1               |
| 9  | Biskuit Kuat          | 10  | 6500   | 1               |

```

1 SELECT COUNT(id) AS jumlah_produk, SUM(harga) as total,
2 MAX(harga) AS harga_termahal, MIN(harga) AS harga_termurah,
3 AVG(qty) as rata2_stok FROM produk

```

| jumlah_produk | total  | harga_termahal | harga_termurah | rata2_stok |
|---------------|--------|----------------|----------------|------------|
| 8             | 523350 | 450000         | 2750           | 34.3750    |





# Klausu GROUP BY

- *Digunakan pada perintah query **SELECT***
- *Mengelompokan data berdasarkan fungsi aggregate:*  
`COUNT()` , `MAX()` , `MIN()` , `SUM()` ,
- *Mengembalikan hanya satu `AVG()` ta hasil untuk setiap group data*

```
SELECT column_name(s)
FROM table_name
WHERE condition
GROUP BY column_name(s)
ORDER BY column_name(s);
```

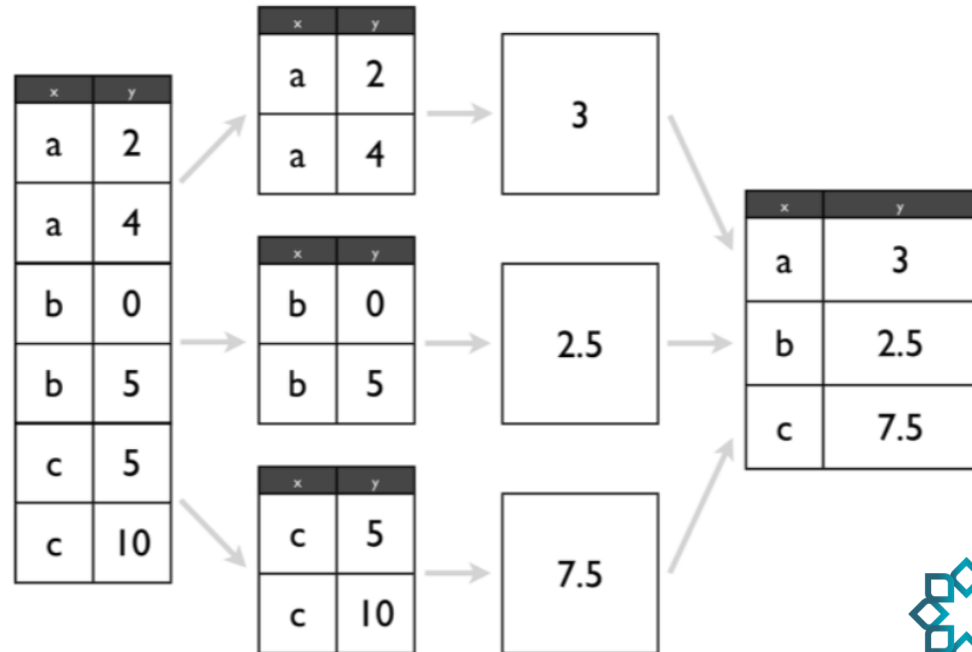




# Klausu GROUP BY

- **Keyword GROUP BY digunakan untuk mengelompokkan Data hasil fungsi aggregate** `COUNT()` , `MAX()` , `MIN()` , `SUM()` , `AVG()`

Rata2  
Group Data :  
a  
b  
c





# Klausu GROUP BY

## Employee

| EmployeeID | Ename | DeptID | Salary |
|------------|-------|--------|--------|
| 1001       | John  | 2      | 4000   |
| 1002       | Anna  | 1      | 3500   |
| 1003       | James | 1      | 2500   |
| 1004       | David | 2      | 5000   |
| 1005       | Mark  | 2      | 3000   |
| 1006       | Steve | 3      | 4500   |
| 1007       | Alice | 3      | 3500   |

**SELECT** DeptID, AVG(Salary)  
**FROM** Employee  
**GROUP BY** DeptID;

**GROUP BY**  
Employee Table  
using DeptID

| DeptID | AVG(Salary) |
|--------|-------------|
| 1      | 3000.00     |
| 2      | 4000.00     |
| 3      | 4250.00     |



# Klausa GROUP BY

```
select id,nama,jk,tmp_lahir from pelanggan;
```

| id | nama          | jk | tmp_lahir  |
|----|---------------|----|------------|
| 1  | Agung Sedayu  | L  | Solo       |
| 2  | Pandan Wangi  | P  | Yogyakarta |
| 3  | Sekar Mirah   | P  | Kediri     |
| 4  | Swandaru Geni | L  | Kediri     |
| 5  | Pradabashu    | L  | Pati       |
| 6  | Gayatri Dwi   | P  | Jakarta    |
| 7  | Dewi Gyat     | P  | Jakarta    |
| 8  | Andre Haru    | L  | Surabaya   |
| 9  | Ahmad Hasan   | L  | Surabaya   |
| 10 | Cassanndra    | P  | Belfast    |

| tmp_lahir  | jumlah |
|------------|--------|
| Belfast    | 1      |
| Jakarta    | 2      |
| Kediri     | 2      |
| Pati       | 1      |
| Solo       | 1      |
| Surabaya   | 2      |
| Yogyakarta | 1      |

| jk | jumlah |
|----|--------|
| L  | 5      |
| P  | 5      |

```
select tmp_lahir,COUNT(id) as jumlah FROM pelanggan
```

```
-> GROUP BY tmp_lahir;
```

```
select jk,COUNT(id) as jumlah FROM pelanggan GROUP BY jk;
```







# Klausu HAVING

- *Selalu digunakan berdampingan dengan klausa GROUP BY*
- *Digunakan untuk menjalankan kriteria kondisi pada query Aggregate Function*

```
SELECT column_name(s)
FROM table_name
WHERE condition
GROUP BY column_name(s)
HAVING condition
ORDER BY column_name(s);
```





# Klausa HAVING

## Employee

| EmployeeID | Ename | DeptID | Salary |
|------------|-------|--------|--------|
| 1001       | John  | 2      | 4000   |
| 1002       | Anna  | 1      | 3500   |
| 1003       | James | 1      | 2500   |
| 1004       | David | 2      | 5000   |
| 1005       | Mark  | 2      | 3000   |
| 1006       | Steve | 3      | 4500   |
| 1007       | Alice | 3      | 3500   |

**SELECT** DeptID, AVG(Salary)  
**FROM** Employee  
**GROUP BY** DeptID;

**GROUP BY**  
Employee Table  
using DeptID

| DeptID | AVG(Salary) |
|--------|-------------|
| 1      | 3000.00     |
| 2      | 4000.00     |
| 3      | 4250.00     |

**SELECT** DeptID, AVG(Salary)  
**FROM** Employee  
**GROUP BY** DeptID  
**HAVING** AVG(Salary) > 3000;

**HAVING**

| DeptID | AVG(Salary) |
|--------|-------------|
| 2      | 4000.00     |
| 3      | 4250.00     |





# Klausa HAVING

```
select tmp_lahir,COUNT(id) as jumlah FROM pelanggan
```

| tmp_lahir  | jumlah |
|------------|--------|
| Belfast    | 1      |
| Jakarta    | 2      |
| Kediri     | 2      |
| Pati       | 1      |
| Solo       | 1      |
| Surabaya   | 2      |
| Yogyakarta | 1      |



| tmp_lahir | jumlah |
|-----------|--------|
| Jakarta   | 2      |
| Kediri    | 2      |
| Surabaya  | 2      |

```
select tmp_lahir,COUNT(id) as jumlah FROM pelanggan
-> GROUP BY tmp_lahir HAVING jumlah=2;
```



**TERIMA KASIH  
ATAS SEGALA PERHATIAN  
SEMOGA BERMANFAAT...**

