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MODUL 7

Koneksi Application Server ke Database Server MySQL Antar VM di AWS

PEMBAHASAN

Dalam sistem terdistribusi berbasis tiga lapisan (three-tier architecture), setiap lapisan memiliki peran yang saling terhubung namun terpisah. Lapisan pertama adalah Database Server, yang bertanggung jawab untuk menyimpan dan mengelola data. Lapisan kedua adalah Application Server, yang menjalankan logika bisnis dan menjadi penghubung antara data di server database dan pengguna. Sementara itu, lapisan ketiga adalah Client, yang berfungsi sebagai antarmuka bagi pengguna untuk mengakses aplikasi melalui browser atau terminal. Pada modul ini, fokus pembahasan diarahkan pada bagaimana Application Server (VM server app) melakukan koneksi ke Database Server (VM server mysql) menggunakan MySQL sebagai sarana komunikasi data antar lapisan.

KESIMPULAN

Saya hari ini belajar bagaimana cara membuat vm application atau APACHE. Kemudian pada latihannya saya disuruh bagaimana memasukkan sebuah data melalui `curl` , kemudian lewat vm client ke vm application. Lalu kemudian data tersebut ditampilkan melalui vm MYSQL.

LAMPIRAN

1. Buat vm baru untuk vm application server

sgr-0b806073b8b97d42d	SSH	TCP	22	Ku...	Q		Hapus
-	HTTP	TCP	80	IPv...	Q 0.0.0.0/0		Hapus
					0.0.0.0/0	X	

2. Install Apache, PHP dan MySQL client dengan menjalankan perintah berikut `sudo apt update`

```
ubuntu@ip-172-31-18-233:~$ sudo apt update
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:4 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Packages [15.0 MB]
Get:6 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe Translation-en [5982 kB]
Get:7 http://security.ubuntu.com/ubuntu noble-security/main amd64 Packages [1309 kB]
Get:8 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Components [3871 kB]
Get:9 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 c-n-f Metadata [301 kB]
Get:10 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 Packages [269 kB]
Get:11 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse Translation-en [118 kB]
Get:12 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 Components [35.0 kB]
Get:13 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 c-n-f Metadata [8328 B]
Get:14 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 Packages [1585 kB]
Get:15 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main Translation-en [299 kB]
Get:16 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 Components [175 kB]
Get:17 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 c-n-f Metadata [15.7 kB]
Get:18 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Packages [1498 kB]
Get:19 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe Translation-en [303 kB]
Get:20 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Components [378 kB]
```

i-0c15fc1f53638cbf5 (vm-application)

PublicIPs: 54.82.101.62 PrivateIPs: 172.31.18.233

sudo apt install apache2 php php-mysql -y

```
ubuntu@ip-172-31-18-233:~$ sudo apt install apache2 php php-mysql -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  apache2-bin apache2-data apache2-utils libapache2-mod-php8.3 libapr1t64 libaprutil1-dbd-sqlite3 libaprutil1-ldap libaprutil1t64
  liblua5.4-0 php-common php8.3 php8.3-cli php8.3-common php8.3-mysql php8.3-opcache php8.3-readline ssl-cert
Suggested packages:
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom www-browser php-pear
The following NEW packages will be installed:
  apache2 apache2-bin apache2-data apache2-utils libapache2-mod-php8.3 libapr1t64 libaprutil1-dbd-sqlite3 libaprutil1-ldap libaprutil1t64
  liblua5.4-0 php php-common php-mysql php8.3 php8.3-cli php8.3-common php8.3-mysql php8.3-opcache php8.3-readline ssl-cert
0 upgraded, 20 newly installed, 0 to remove and 14 not upgraded.
Need to get 7133 kB of archives.
After this operation, 30.9 MB of additional disk space will be used.
Get:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 libapr1t64 amd64 1.7.2-3.1ubuntu0.1 [108 kB]
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libaprutil1t64 amd64 1.6.3-1.1ubuntu7 [91.9 kB]
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libaprutil1-dbd-sqlite3 amd64 1.6.3-1.1ubuntu7 [11.2 kB]
Get:4 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libaprutil1-ldap amd64 1.6.3-1.1ubuntu7 [9116 B]
Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 liblua5.4-0 amd64 5.4.6-3build2 [166 kB]
Get:6 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 apache2-bin amd64 2.4.58-1ubuntu8.8 [1331 kB]
```

i-0c15fc1f53638cbf5 (vm-application)

PublicIPs: 54.82.101.62 PrivateIPs: 172.31.18.233

sudo apt install mysql-client-core-8.0 -y

```
ubuntu@ip-172-31-18-233:~$ sudo apt install mysql-client-core-8.0 -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
  mysql-client-core-8.0
0 upgraded, 1 newly installed, 0 to remove and 14 not upgraded.
Need to get 2740 kB of archives.
After this operation, 61.7 MB of additional disk space will be used.
Get:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 mysql-client-core-8.0 amd64 8.0.43-0ubuntu0.24.04.2 [2740 kB]
Fetched 2740 kB in 0s (46.9 MB/s)
Selecting previously unselected package mysql-client-core-8.0.
(Reading database ... 72603 files and directories currently installed.)
Preparing to unpack .../mysql-client-core-8.0_8.0.43-0ubuntu0.24.04.2_amd64.deb ...
Unpacking mysql-client-core-8.0 (8.0.43-0ubuntu0.24.04.2) ...
Setting up mysql-client-core-8.0 (8.0.43-0ubuntu0.24.04.2) ...
Processing triggers for man-db (2.12.0-4build2) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.
```

i-0c15fc1f53638cbf5 (vm-application)

PublicIPs: 54.82.101.62 PrivateIPs: 172.31.18.233

3. Masuk ke dalam directory /var/www/html kemudian clone repository yang sudah saya sediakan dengan menjalankan perintah berikut.

```
cd /var/www/html
```

```
sudo git clone https://github.com/akbarwjyy/crud-students.git
```

```
ubuntu@ip-172-31-18-233:~$ cd /var/www/html
ubuntu@ip-172-31-18-233:/var/www/html$ sudo git clone https://github.com/akbarwjyy/crud-students.git
Cloning into 'crud-students'...
remote: Enumerating objects: 13, done.
remote: Counting objects: 100% (13/13), done.
remote: Compressing objects: 100% (11/11), done.
remote: Total 13 (delta 3), reused 12 (delta 2), pack-reused 0 (from 0)
Receiving objects: 100% (13/13), 8.15 KiB | 1.63 MiB/s, done.
Resolving deltas: 100% (3/3), done.
ubuntu@ip-172-31-18-233:/var/www/html$
```

i-0c15fc1f53638cbf5 (vm-application)

PublicIPs: 54.82.101.62 PrivateIPs: 172.31.18.233

4. Masuk ke dalam directory crud-students

```
cd crud-students
```

```
ubuntu@ip-172-31-18-233:/var/www/html$ cd crud-students
```

5. Konfigurasi database untuk mengkoneksikan dari vm server application ke vm server database yang berisi database mysql

```
sudo nano config.php
```

```
<?php
$host = "localhost";
$user = "root";
$pass = "";
$db = "mahasiswa";

$conn = new mysqli($host, $user, $pass, $db);
if ($conn->connect_error) {
    die("Koneksi gagal: " . $conn->connect_error);
}
```

```
<?php
$host = "172.31.23.166";
$user = "akbar";
$pass = "password123";
$db = "mahasiswa";

$conn = new mysqli($host, $user, $pass, $db);
if ($conn->connect_error) {
    die("Koneksi gagal: " . $conn->connect_error);
}
```

6. Uji koneksi menggunakan perintah

```
mysql -h 172.31.23.166 -u akbar -p
```

```
ubuntu@ip-172-31-18-233:/var/www/html/crud-students$ mysql -h 172.31.23.166 -u akbar -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 8
Server version: 8.0.43-0ubuntu0.24.04.2 (Ubuntu)

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owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

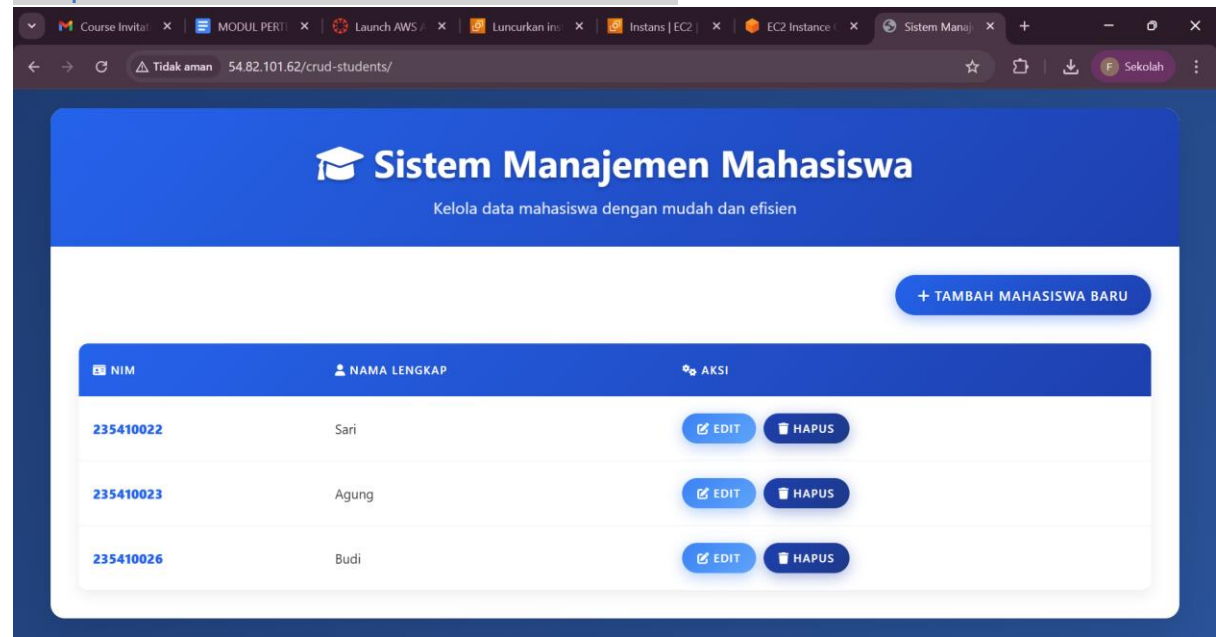
mysql>
```

i-0c15fc1f53638cbf5 (vm-application)

PublicIPs: 54.82.101.62 PrivateIPs: 172.31.18.233

7. Buka di browser

[http:// 54.82.101.62/crud-students/](http://54.82.101.62/crud-students/)



Latihan

Buat request POST menggunakan perintah curl untuk mengirim data mahasiswa dari vm client ke vm server application, jika berhasil cek data nya di vm server mysql.

1. Memasukan data dari vm client ke vm application. 54.82.101.62 → IP public vm application

```
curl -X POST http://54.82.101.62/crud-students/api.php \
-H "Content-Type: application/json" \
-d '{
  "nim": "23050123",
  "nama": "Fidelia Ping"
}'
```

```
ubuntu@ip-172-31-19-9:~$ curl -X POST http://54.82.101.62/crud-students/api.php \
-H "Content-Type: application/json" \
-d '{
  "nim": "23050123",
  "nama": "Fidelia Ping"
}'
{
  "success": true,
  "message": "Data mahasiswa berhasil ditambahkan",
  "data": {
    "nim": "23050123",
    "nama": "Fidelia Ping"
  }
}
```

i-Of427cff747d38ea7 (vm-Client)

PublicIPs: 54.235.38.177 PrivateIPs: 172.31.19.9

2. Mengecek apakah data nya sudah tersimpan melalui vm MYSQL

```
mysql> USE mahasiswa;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A
```

```
Database changed
mysql> SELECT * FROM mahasiswa;
```

nim	nama
23050123	Fidelia Ping
235410022	Sari
235410023	Agung
235410026	Budi

```
4 rows in set (0.00 sec)
```

```
mysql>
```

i-019aa1aac2f3b5678 (vm-MySQL)

PublicIPs: 98.89.41.150 PrivateIPs: 172.31.23.166