

**LAPORAN TUGAS PRAKTIKUM
SISTEM MANAJEMEN BASIS DATA
INSTALASI DAN KONFIGURASI SERVER DATABASE**



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PROGRAM STUDI D3 MANAJEMEN INFORMATIKA

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TUGAS PRAKTIKUM

1. Jelaskan tentang database relational, database unrelational dan berikan contoh produknya masing-masing 3.

- a. Database Relational

Relational database adalah penyajian data yang digunakan untuk membuat kesimpulan atau analisis. Data ini dapat diakses langsung tanpa harus menyusun ulang menjadi tabel baru dalam database. Sederhananya *Database* ini cukup sederhana dan tidak membutuhkan hierarki data yang sangat kompleks untuk membuatnya. Bahkan, data yang ada bisa dengan mudah ditangani oleh SQL *query*.

Contoh Produk : MySQL, MariaDB, PostgreSQL.

- b. Database Unrelational

Database Unrelasional, di sisi lain, adalah jenis database yang tidak menggunakan tabel untuk menyimpan data. Sebaliknya, data disimpan dalam format yang lebih fleksibel seperti dokumen, key-value pairs, atau grafik, memungkinkan penyimpanan data yang tidak terstruktur atau semi-terstruktur. Database unrelasional sering digunakan dalam aplikasi yang memerlukan skalabilitas tinggi dan kecepatan akses data.

Contoh Produk : MongoDB, Cassandra, Redis.

2. Jelaskan kapan harus menggunakan database relational dan kapan harus menggunakan database unrelational.

- a. Database Relational

- **Data Terstruktur :** Gunakan database relasional ketika data yang akan disimpan memiliki struktur yang jelas dan dapat diprediksi. Misalnya, jika memiliki data pelanggan, produk, dan transaksi yang saling terkait, database relasional sangat cocok karena memungkinkan pengelolaan hubungan antar data dengan baik.
- **Konsistensi dan Integritas Data:** Jika aplikasi memerlukan konsistensi data yang tinggi dan integritas referensial, seperti dalam aplikasi perbankan atau sistem akademik, database relasional adalah pilihan yang tepat. Penggunaan kunci utama dan kunci asing membantu menjaga keakuratan data.
- **Analisis Data Kompleks:** Ketika perlu melakukan analisis data yang kompleks dengan query SQL, database relasional menyediakan kemampuan untuk melakukan operasi ini dengan efisien. Contohnya, dalam aplikasi e-commerce, mungkin perlu menghasilkan laporan penjualan berdasarkan berbagai parameter.

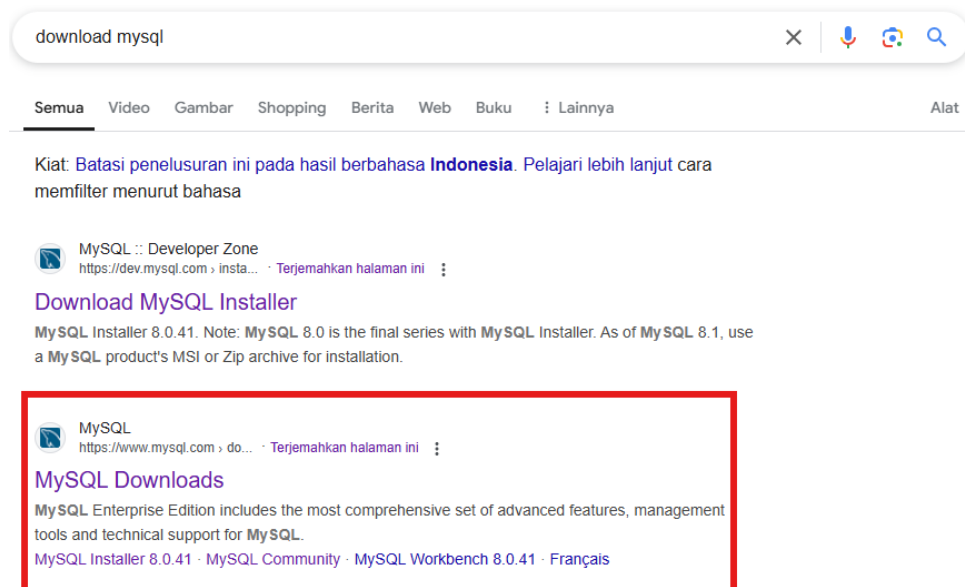
b. Database Unrelational

- Data Fleksibel dan Tidak Terstruktur: Pilih database unrelasional ketika bekerja dengan data yang tidak terstruktur atau semi-terstruktur, seperti dokumen JSON atau XML. Contohnya adalah aplikasi media sosial yang menyimpan berbagai jenis konten dari pengguna.
- Skalabilitas Tinggi: Jika aplikasi memerlukan skalabilitas tinggi untuk menangani volume data yang besar dan pertumbuhan cepat, database unrelasional lebih cocok. Misalnya, platform streaming video yang harus menyimpan ribuan video dengan metadata berbeda akan diuntungkan dari model penyimpanan unrelasional.
- Pengembangan Cepat dan Iterasi: Dalam situasi di mana model data mungkin berubah seiring waktu, seperti dalam pengembangan produk baru atau prototyping, database unrelasional memberikan fleksibilitas untuk menyesuaikan skema tanpa memerlukan migrasi data yang rumit.

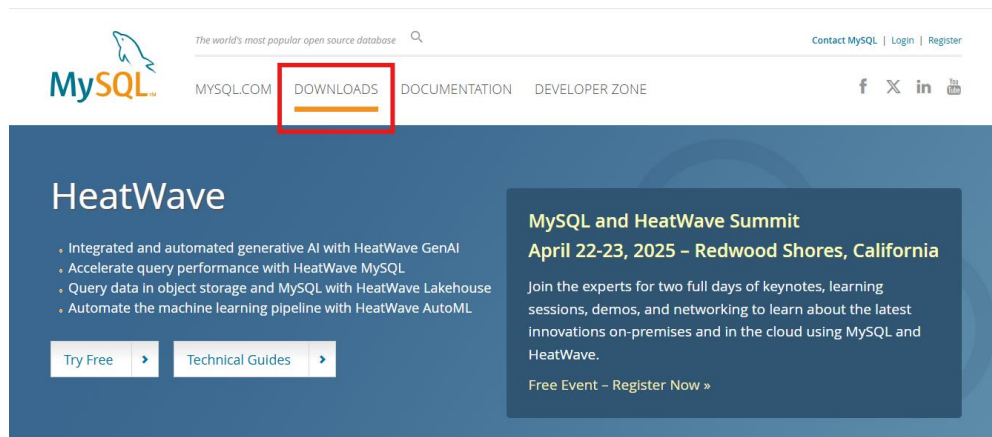
3. Lakukan instalasi database mysql dari awal sampai akhir.

4. Pastikan dalam setiap tahapan instalasi, didokumentasikan dalam bentuk screenshot untuk bahan Menyusun laporan.

1) Buka browser untuk memulai melakukan instalisasi dengan mengetikkan **download MySQL**.



2) Berikut tampilannya, lalu pilih menu **Download**.

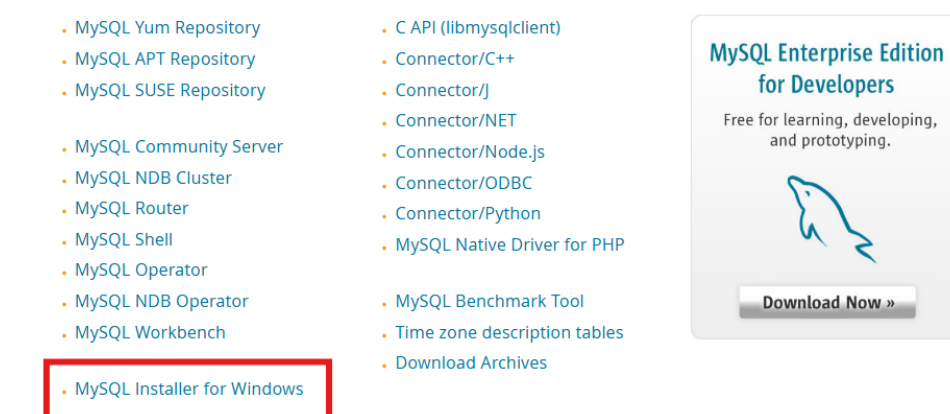


3) Setelah itu scroll kebawah sampai menemukan kalimat **MySQL Community (GPL)** **Downloads** lalu klik.

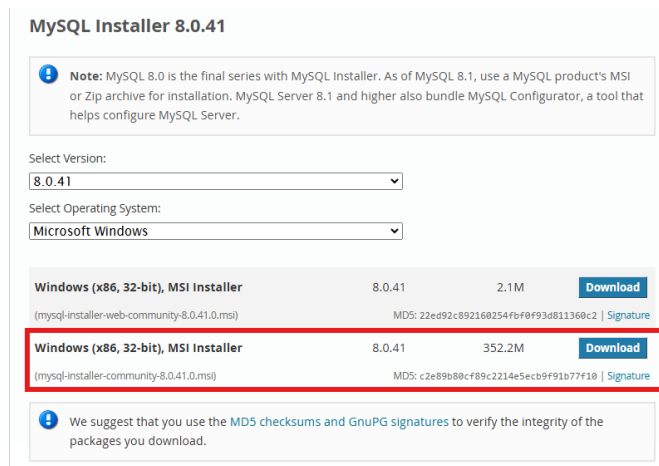


4) Lalu klik **MySQL Installer for Windows**.

MySQL Community Downloads



5) Setelah itu pilih yang bagian 2 lalu klik download.



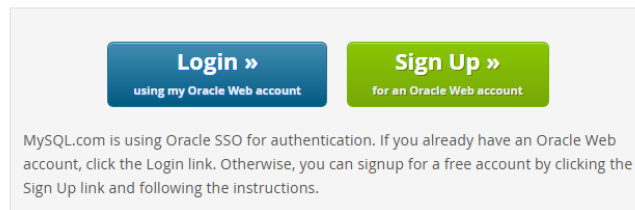
6) Memasuki ini klik **No thanks, just start my download** untuk memulai download.

MySQL Community Downloads

Login Now or Sign Up for a free account.

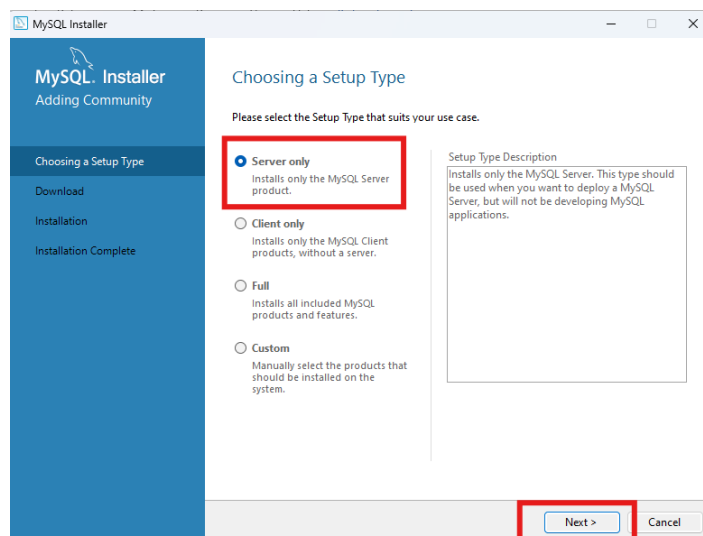
An Oracle Web Account provides you with the following advantages:

- Fast access to MySQL software downloads
- Download technical White Papers and Presentations
- Post messages in the MySQL Discussion Forums
- Report and track bugs in the MySQL bug system

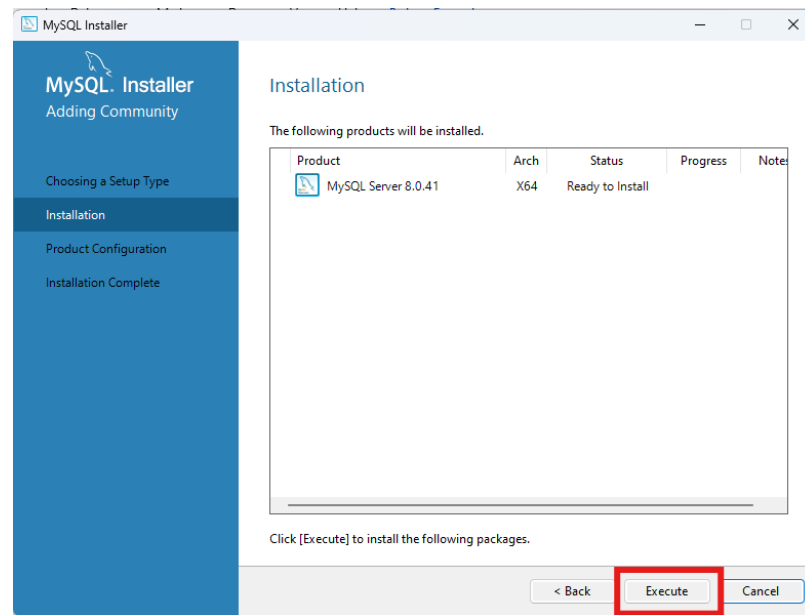


No thanks, just start my download.

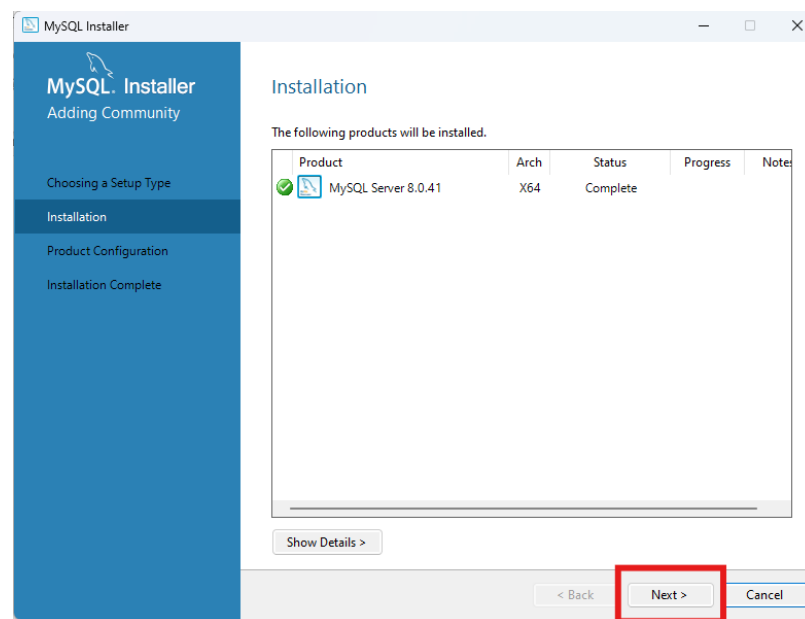
7) Jika instal telah selesai MySQL otomatis membuka lalu pilih saja **server only** dan klik **next**.



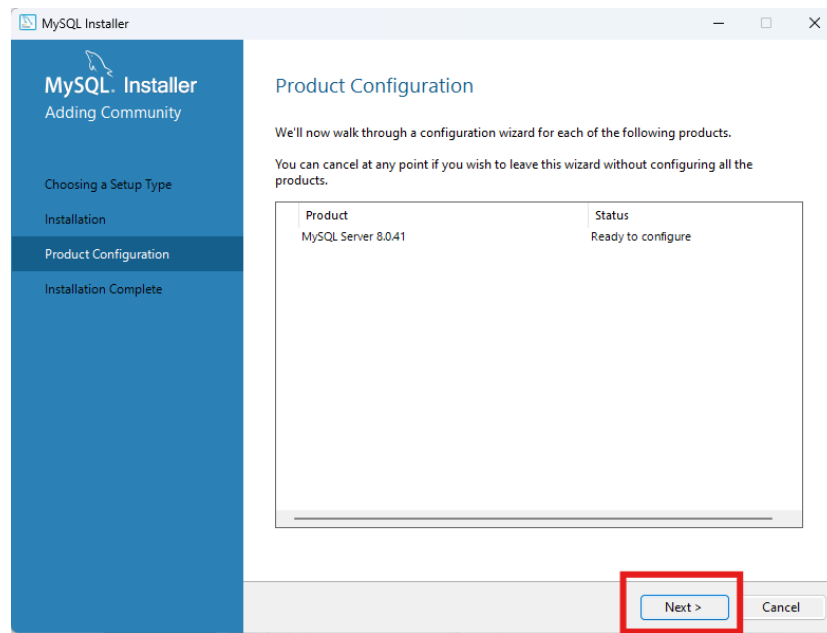
8) Lalu klik saja **Execute** untuk melanjutkan menginstall.



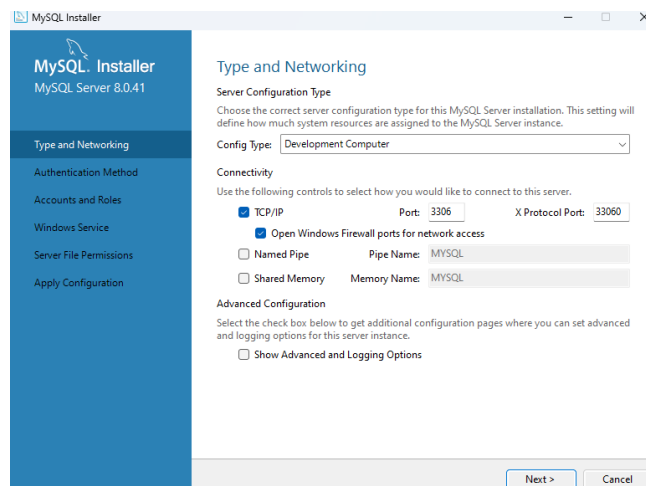
9) Setelah itu klik next.



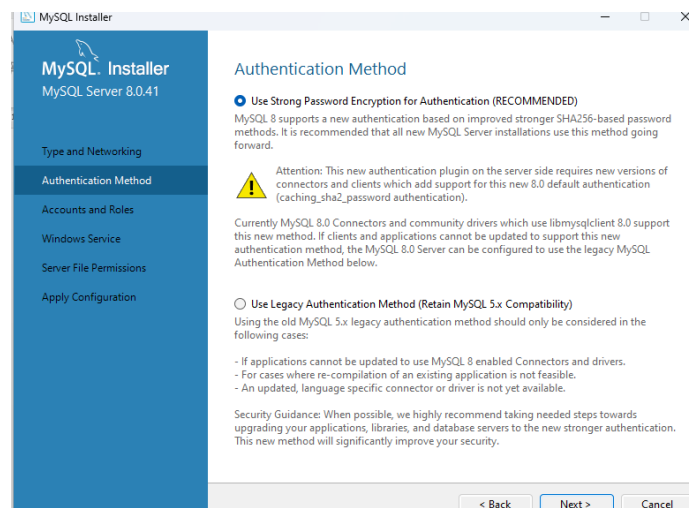
10) Klik next saja.



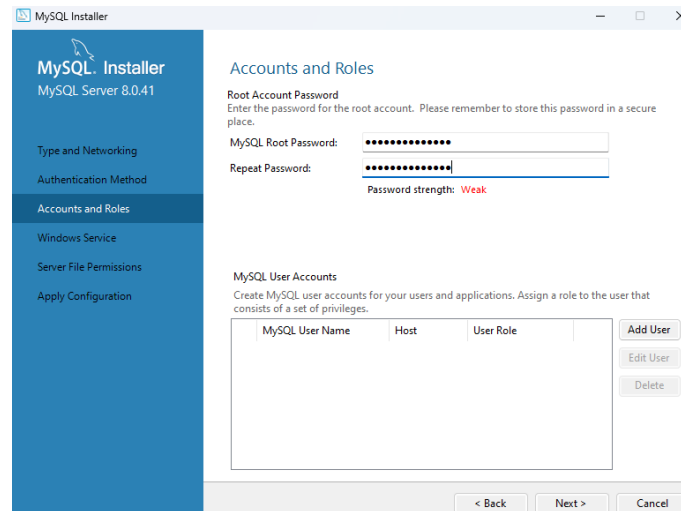
11) Klik next.



12) Klik next



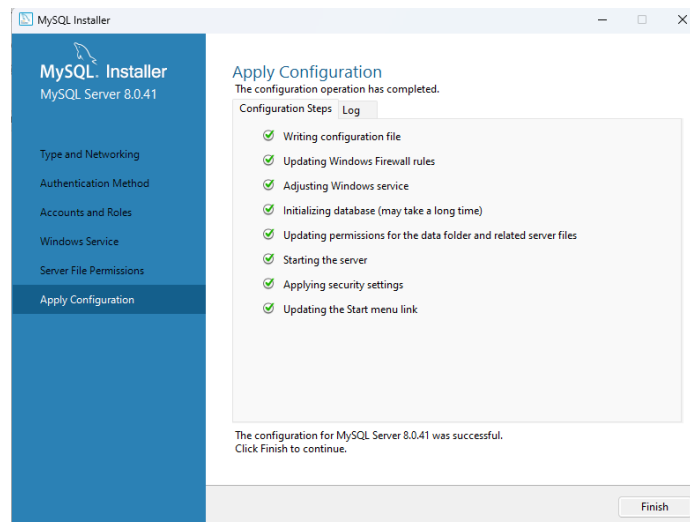
13) Masukkan password lalu klik next



The screenshot shows the 'Accounts and Roles' step of the MySQL Installer. The left sidebar lists the installation steps: Type and Networking, Authentication Method, Accounts and Roles (selected), Windows Service, Server File Permissions, and Apply Configuration. The main area is titled 'Accounts and Roles' and contains a 'Root Account Password' section with two password input fields and a 'Password strength' indicator showing 'Weak'. Below this is a 'MySQL User Accounts' section with a table for adding users and buttons for 'Add User', 'Edit User', and 'Delete'. The table has columns for 'MySQL User Name', 'Host', and 'User Role'. At the bottom are navigation buttons: '< Back', 'Next >', and 'Cancel'.

MySQL User Name	Host	User Role
-----------------	------	-----------

14) Klik next.

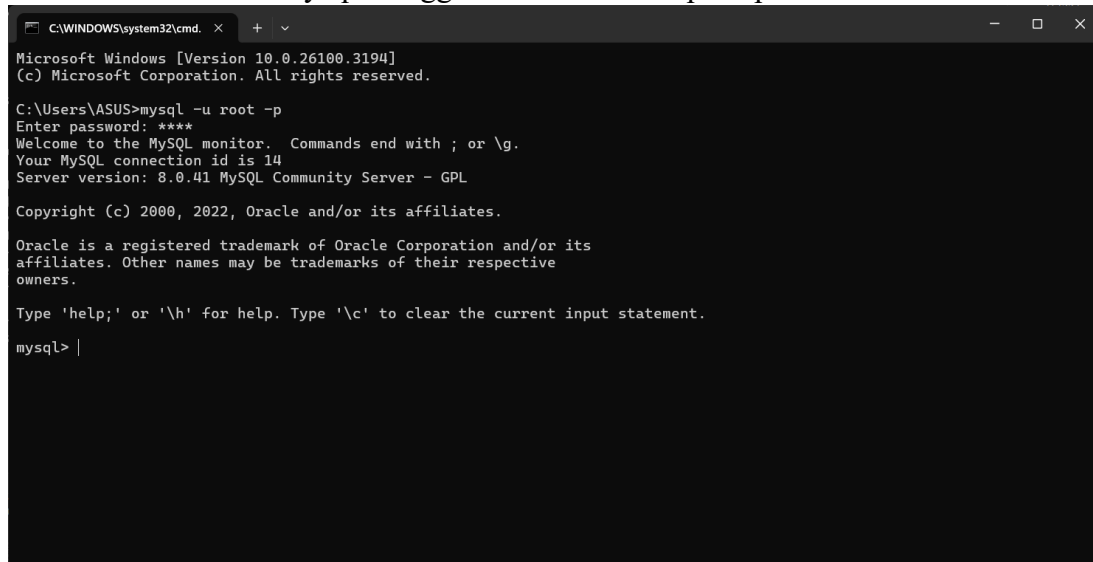


The screenshot shows the 'Apply Configuration' step of the MySQL Installer. The left sidebar is the same as in the previous step, with 'Apply Configuration' now selected. The main area is titled 'Apply Configuration' and shows a list of completed configuration steps with green checkmarks: Writing configuration file, Updating Windows Firewall rules, Adjusting Windows service, Initializing database (may take a long time), Updating permissions for the data folder and related server files, Starting the server, Applying security settings, and Updating the Start menu link. Below the list, a message states: 'The configuration for MySQL Server 8.0.41 was successful. Click Finish to continue.' A 'Finish' button is located at the bottom right.

5. Lakukan perubahan perubahan pada variable berikut (dokumentasikan before dan after nya) a. port dari default 3306 menjadi 3309. b. innodb_buffer_pool_size dr default 16M (menjadi 25% dari RAM)

a. port dari default 3306 menjadi 3309

– Masuk ke mysql menggunakan command prompt



```
C:\WINDOWS\system32\cmd. x + v
Microsoft Windows [Version 10.0.26100.3194]
(c) Microsoft Corporation. All rights reserved.

C:\Users\ASUS>mysql -u root -p
Enter password: ****
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 14
Server version: 8.0.41 MySQL Community Server - GPL

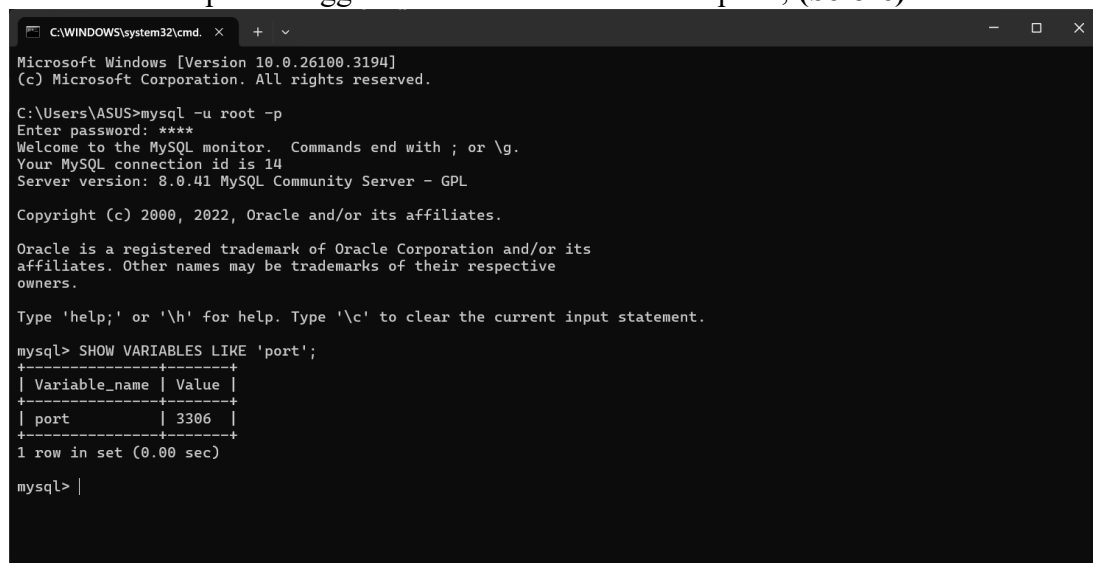
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owners.

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

mysql> |
```

– Cek port menggunakan show variables like 'port'; (before)



```
C:\WINDOWS\system32\cmd. x + v
Microsoft Windows [Version 10.0.26100.3194]
(c) Microsoft Corporation. All rights reserved.

C:\Users\ASUS>mysql -u root -p
Enter password: ****
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 14
Server version: 8.0.41 MySQL Community Server - GPL

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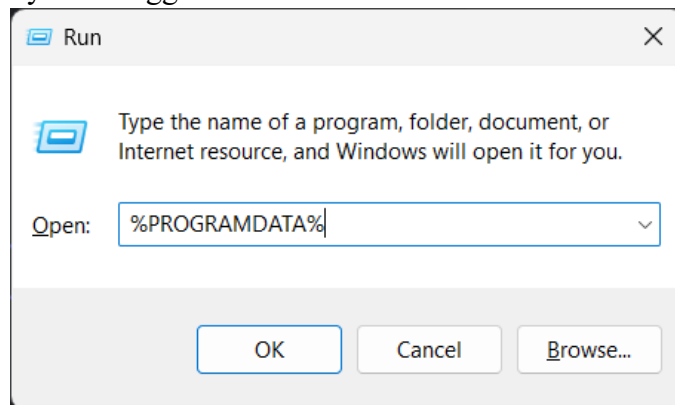
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owners.

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

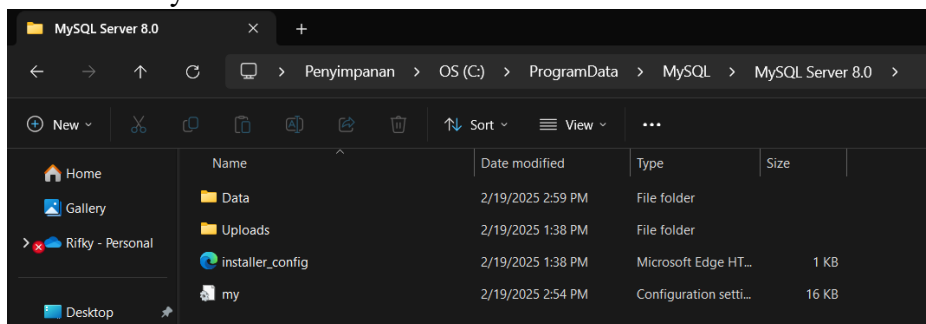
mysql> SHOW VARIABLES LIKE 'port';
+-----+-----+
| Variable_name | Value |
+-----+-----+
| port          | 3306  |
+-----+-----+
1 row in set (0.00 sec)

mysql> |
```

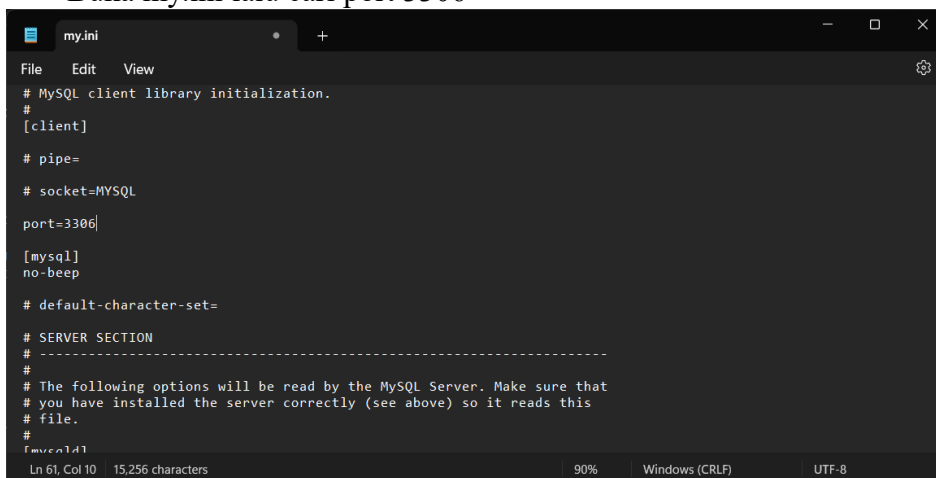
- Cari my.ini menggunakan %PROGRAMDATA%



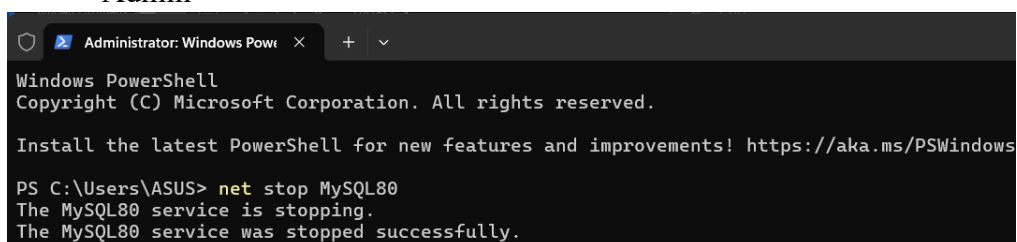
- Letak my.ini



- Buka my.ini lalu cari port 3306



- Sebelum ganti port menjadi 3309, stop mysql terlebih dahulu di Terminal Admin



- Setelah itu ubah port menjadi 3309

```

File Edit View
# to read this section. If you want your own MySQL client program to
# honor these values, you need to specify it as an option during the
# MySQL client library initialization.
#
[client]

# pipe=

# socket=MYSQL

port=3309

[mysql]
no-beep

# default-character-set=

# SERVER SECTION
# -----
#
# The following options will be read by the MySQL Server. Make sure that
Ln 1, Col 1 15,256 characters 100% Windows (CRLF) UTF-8

```

- Setelah port diubah, jalan kan lagi mysql di Terminal Admin

```

Administrator: Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\Users\ASUS> net stop MySQL80
The MySQL80 service is stopping.
The MySQL80 service was stopped successfully.

PS C:\Users\ASUS> net start MySQL80
The MySQL80 service is starting.
The MySQL80 service was started successfully.

```

- Kemudian jalankan lagi untuk cek port yang telah diubah (After)

```

mysql> show variables like 'port';
+-----+-----+
| Variable_name | Value |
+-----+-----+
| port          | 3309  |
+-----+-----+
1 row in set (0.04 sec)

```

- innodb_buffer_pool_size dr default 16M (menjadi 25% dari RAM)

- Cara untuk mengubah innodb sama seperti mengubah port, jadi cari innodb

```

Link Youtube.tv updaterr_readm READ_ME.txt READ_ME.txt 3DMGAME.ini my.ini my.ini
File Edit View
innodb_log_buffer_size=16M

# The size in byte:
# and index data.
# depends on the CPU architecture; the maximum is 4294967295 (232-1) on 32-bit systems
# and 18446744073709551615 (264-1) on 64-bit systems. On 32-bit systems, the CPU
# architecture and operating system may impose a lower practical maximum size than the
# stated maximum. When the size of the buffer pool is greater than 1GB, setting
# innodb_buffer_pool_instances to a value greater than 1 can improve the scalability on
# a busy server.
innodb_buffer_pool_size=128M

# Defines the amount of disk space occupied by redo log files. This variable supersedes the
# innodb_log_files_in_group and innodb_log_file_size variables.
innodb_redo_log_capacity=100M

# Defines the maximum number of threads permitted inside of InnoDB. A value
# of 0 (the default) is interpreted as infinite concurrency (no limit). This
# variable is intended for performance tuning on high concurrency systems.
# InnoDB tries to keep the number of threads inside InnoDB less than or equal to
# the innodb_thread_concurrency limit. Once the limit is reached, additional threads
# are placed into a "First In, First Out" (FIFO) queue for waiting threads. Threads
# waiting for locks are not counted in the number of concurrently executing threads.
Ln 257, Col 28 15,255 characters 90% Windows (CRLF) UTF-8

```

- Lalu ubah sesuai dengan kapasitas RAM laptop yang dipunya

```

File Edit View
innodb_log_buffer_size=16M
# The size in bytes:
# and index data.
# depends on the CPU architecture; the maximum is 4294967295 (232-1) on 32-bit systems
# and 18446744073709551615 (264-1) on 64-bit systems. On 32-bit systems, the CPU
# architecture and operating system may impose a lower practical maximum size than the
# stated maximum. When the size of the buffer pool is greater than 1GB, setting
# innodb_buffer_pool_instances to a value greater than 1 can improve the scalability on
# a busy server.
innodb_buffer_pool_size=4096M

# Defines the amount of disk space occupied by redo log files. This variable supersedes the
# innodb_log_files_in_group and innodb_log_file_size variables.
innodb_redo_log_capacity=100M

# Defines the maximum number of threads permitted inside of InnoDB. A value
# of 0 (the default) is interpreted as infinite concurrency (no limit). This
# variable is intended for performance tuning on high concurrency systems.
# InnoDB tries to keep the number of threads inside InnoDB less than or equal to
# the innodb_thread_concurrency limit. Once the limit is reached, additional threads
# are placed into a "First In, First Out" (FIFO) queue for waiting threads. Threads
# waiting for locks are not counted in the number of concurrently executing threads
Ln 257, Col 29 15,256 characters 90% Windows (CRLF) UTF-8

```

- Cek innodb dengan SHOW VARIABLES LIKE 'innodb_buffer_pool_size'; di command prompt (**Before**)

```

C:\Users\ASUS>mysql -u root -p -P 3309
Enter password: ****
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 8
Server version: 8.0.41 MySQL Community Server - GPL

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Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

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

mysql> show variables like 'innodb_buffer_pool_size';
+-----+-----+
| Variable_name | Value |
+-----+-----+
| innodb_buffer_pool_size | 132120576 |
+-----+-----+
1 row in set (0.01 sec)

mysql>

```

- Cek innodb setelah innodb diubah (**Ater**)

```

C:\WINDOWS\system32\cmd. x + v
Copyright (c) 2000, 2022, Oracle and/or its affiliates.

Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

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

mysql> show variables like 'innodb_buffer_pool_size';
+-----+-----+
| Variable_name | Value |
+-----+-----+
| innodb_buffer_pool_size | 132120576 |
+-----+-----+
1 row in set (0.01 sec)

mysql> show variables like 'innodb_buffer_pool_size';
ERROR 2013 (HY000): Lost connection to MySQL server during query
No connection. Trying to reconnect...
Connection id: 8
Current database: *** NONE ***

+-----+-----+
| Variable_name | Value |
+-----+-----+
| innodb_buffer_pool_size | 4294967296 |
+-----+-----+
1 row in set (0.06 sec)

mysql>

```

6. lakukan perubahan terhadap password root.

```
1 row in set (0.00 sec)

mysql> alter user 'root'@'localhost' identified by 'ria12345';
Query OK, 0 rows affected (0.02 sec)

mysql> |
```

```
mysql> show databases;
+-----+
| Database |
+-----+
| database |
| info     |
| mysql    |
| test     |
+-----+
mysql> use database;
Database changed
mysql> show tables;
+-----+
| Tables_in_database |
+-----+
| database            |
| info                |
| mysql               |
| test                |
+-----+
mysql> use info;
Database changed
mysql> show tables;
+-----+
| Tables_in_info |
+-----+
| info            |
+-----+
mysql> |
```

7. Buat database dengan nama: kelompok_AB_nama_mhs

```
mysql> CREATE DATABASE KELOMPOK_9;
Query OK, 1 row affected (0.01 sec)

mysql> USE KELOMPOK_9;
Database changed
mysql> |
```

8. Semua Langkah-langkah konfigurasi diatas, lakukan dengan command prompt.

DAFTAR PUSTAKA

1. <https://repository.penerbitwidina.com/media/publications/565168-sistem-manajemen-basis-data-menggunakan-1a2d776d.pdf>
2. file:///C:/Users/MSI-GF63/Downloads/272-632-2-PB.pdf